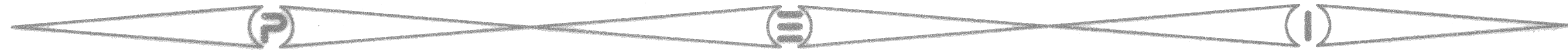


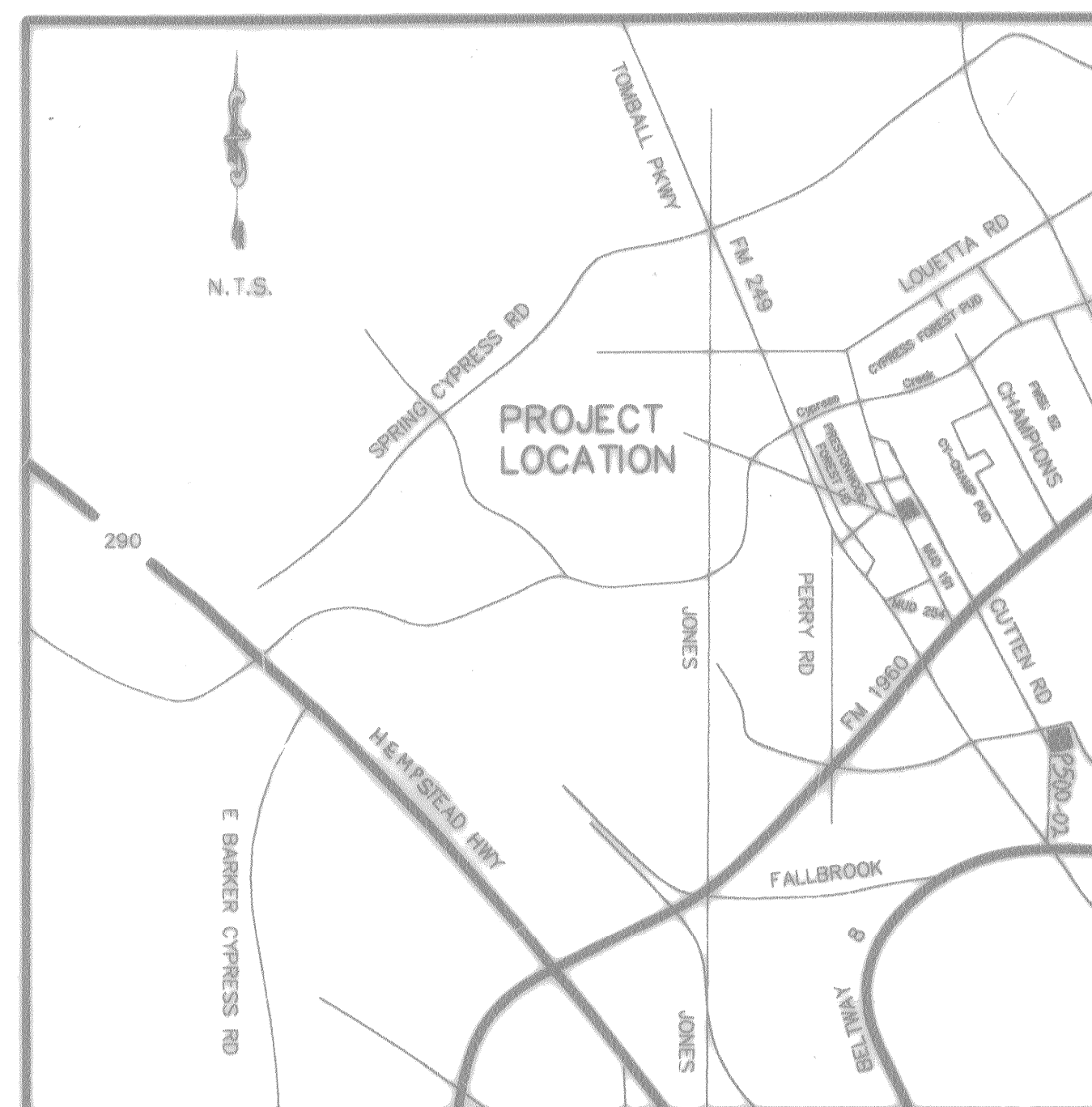
# CHAMPIONS CENTRE MIRAGE



H.C.M.U.D NO. 191

## SANITARY - STORM - WATER - PAVING (PRIVATE STREETS)

TITLE	SHEET NO.
COVER	1
SANITARY & WATER OVERALL	2
PAVING & DRAINAGE OVERALL	3
DRAINAGE MAP & SHEET FLOW	4
GENERAL NOTES	5
PLAN & PROFILES	6 Thru 8
POLLUTION PREVENTION LOCATION	9
SANITARY SEWER FLOWS & BORE LOCATION	10
STORM SEWER DETAILS	11
SANITARY SEWER DETAILS	12
WATER DETAILS	13
PAVING DETAILS	14
TRENCH SAFETY SYSTEM	15
POLLUTION PREVENTION DETAILS	16



VICINITY MAP  
HARRIS COUNTY, TEXAS  
N.T.S.

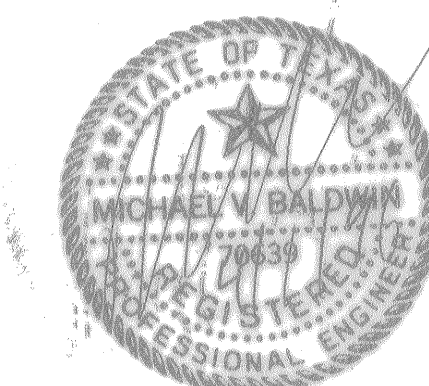
MAP REFERENCY  
KEY MAP NO. 370A-B  
LAMBERT MAP NO. 4966(639)-B-1

CITY OF HOUSTON

*James J. [Signature]* 5-29-91  
DIRECTOR, DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

"... Prior to the construction of such facilities within or by the District, the District or its engineer will give written notice by registered or certified mail to the Director of Public Works and Engineering, stating the date such construction will be commenced..."

JOB NO. 430-U  
DATE: MARCH 1996



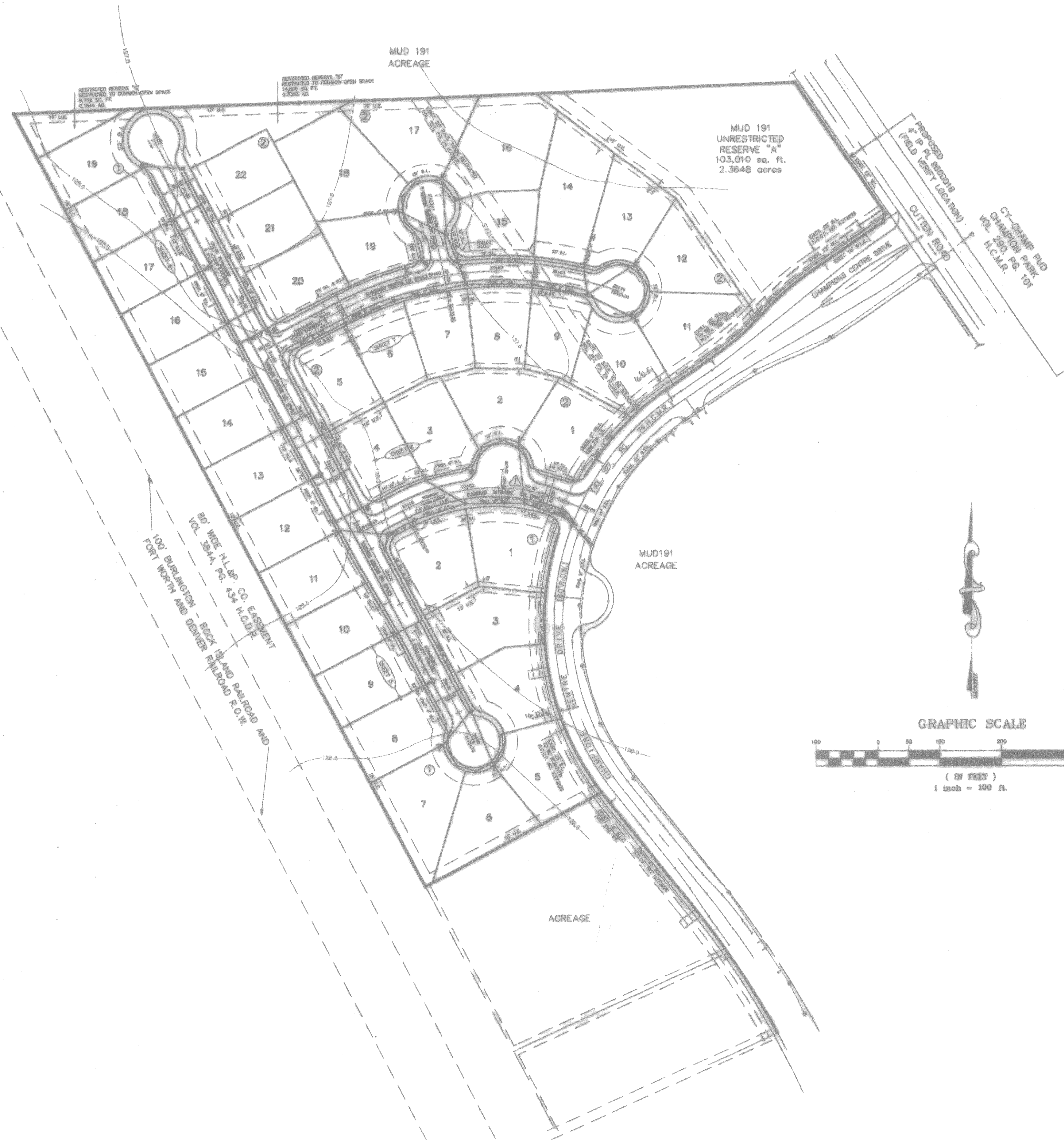
LOG# 95-0719

**PEI** PROVIDENT ENGINEERS, INC.  
12200 N.W. FRWY., SUITE 210  
HOUSTON, TEXAS 77092

MIRAGE P&P

**WARNING**  
 Open-end lines may exist on the property. We have not attempted to locate these lines since they are clearly visible, but you should locate them prior to beginning any construction. Texas law, Section 750, Health & Safety Code, forbids all activities in which persons or things may come within six (6) feet of the overhead high voltage lines. Contractors and owners are legally responsible for the safety of construction workers under this law. This law carries with it criminal and civil liability. To arrange for lines to be turned off or moved, or H.E.P. at 228-7450.

**FLOOD PLAIN NOTE:**  
 THIS TRACT IS IN ZONE "X" AS PER FEMA FLOOD INSURANCE RATE MAP PANEL NO. 48201C0303, HARRIS COUNTY, TX REVISED SEPT. 28, 1990. ZONE "X" IS DESCRIBED AS BEING OUTSIDE THE 500 YEAR FLOOD PLAIN.



**BENCH MARK**

BENCH MARK: NGS STAMPED Y1216 1973  
 BRASS DISK AT CENTERLINE OF N.L. & P. TOWER  
 1ST TOWER NORTH OF E.M. 1960  
 ELEVATION 125.99 1973 ADJ.

**LEGEND**

- UNDERGROUND DISTRIBUTION CABLE
- TERMINAL POLE
- STREET LIGHT ON STEEL STANDARD
- UNDERGROUND STREET LIGHT CABLE
- Exist. Contour
- Exist. Water Line
- Exist. Gate Valve & Box
- Exist. Flushing Valve
- Exist. Plug & Blowoff
- Exist. Sanitary Sewer Line & Manhole
- Exist. Storm Sewer Line & Manhole
- Exist. Inlet
- R1-1 (STOP SIGN)
- SHEET REFERENCE
- PROP. WATER LINE
- PROP. GATE VALVE & BOX
- PROP. FLUSHING VALVE
- PROP. PLUG & BLOWOFF
- PROP. SANITARY SEWER LINE & MANHOLE

△			
△			
△	8-6-96	ADD GATED ENTRANCE	
Rev.	Date	Description	App.
<b>PRIVATE UTILITY LINES SHOWN</b>			
		<i>Calvin L. Waterwall</i>	6/19/96
		ENTEX, INC.	
		<i>[Signature]</i>	6-18-95
		SOUTHWESTERN BELL TELEPHONE CO.	
		Valid for One Year Only	
		<i>[Signature]</i>	10-16-95
		HOUSTON LIGHTING & POWER CO.	
		Approval Only for Crossing Underground	
		Ductlines Unless Noted. Valid at Time of Review Only.	

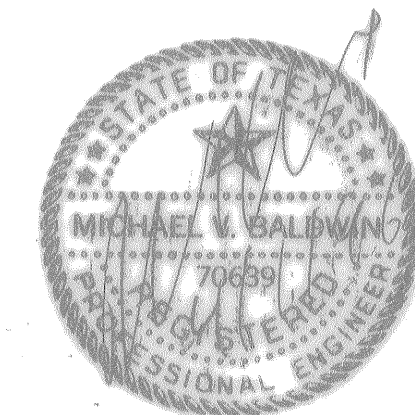
<b>CITY OF HOUSTON</b>	
DEPARTMENT OF PUBLIC WORKS & ENGINEERING	
ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP	
<b>SECTION APPROVALS</b>	
<i>[Signature]</i>	4-10-96
WATER DESIGN	TRAFFIC AND SIGNAL DESIGN
<i>[Signature]</i>	3/24/96
WASTEWATER DESIGN	STREET, BRIDGE AND RIGHT-OF-WAY DESIGN
<i>[Signature]</i>	5/29/96
STORM SEWER DESIGN	CONSTRUCTION

<b>OTHER DEPARTMENTS</b>	
<i>[Signature]</i>	5-29-96
PLANNING AND DEVELOPMENT	SPONSOR DEPARTMENT

<i>[Signature]</i>	5/20/96
CITY ENGINEER	DATE
<i>[Signature]</i>	5-29-96
DIRECTOR OF PUBLIC WORKS AND ENGINEERING	DATE

SUBMITTED:	DESIGNED BY:	TIM
SCALE: 1" = 100'	DRAWN BY:	TIM
DATE: 01-10-98	SHEET NO. 2 OF 16 SHEETS	
SURVEY BY:	CITY	OVERALL DWG
JOB NO: 430-U	DWG NO.	

**CHAMPIONS CENTRE MIRAGE  
 M.U.D. 191  
 SANITARY SEWER AND WATER  
 OVERALL LAYOUT**



**PEI** PROVIDENT ENGINEERS, INC.  
 12200 N.W. FRWY, Suite 210  
 Houston, Texas 77092

**WARNING**  
Overhead lines may exist on the property. We have not attempted to mark these lines since they are clearly visible, but you should locate them prior to installing any construction. Texas Ins. Section 752, Health & Safety Code, forbids activities in which persons or things may come within six (6) feet of the 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 H&S at 228-7455.

**FLOOD PLAIN NOTE:**  
THIS TRACT IS IN ZONE "X" AS PER FEMA FLOOD INSURANCE RATE MAP PANEL NO. 48020C0002, HARRIS COUNTY, TX. REVISION SEPT. 30, 1990. ZONE "X" IS DESCRIBED AS BEING OUTSIDE THE 500 YEAR FLOOD PLAIN.

**STORM SEWER DESIGN**

PROJECT: CHAMPIONS CENTRE MIRAGE  
CITY OF HOUSTON CURVE: #4 Single Family Residential

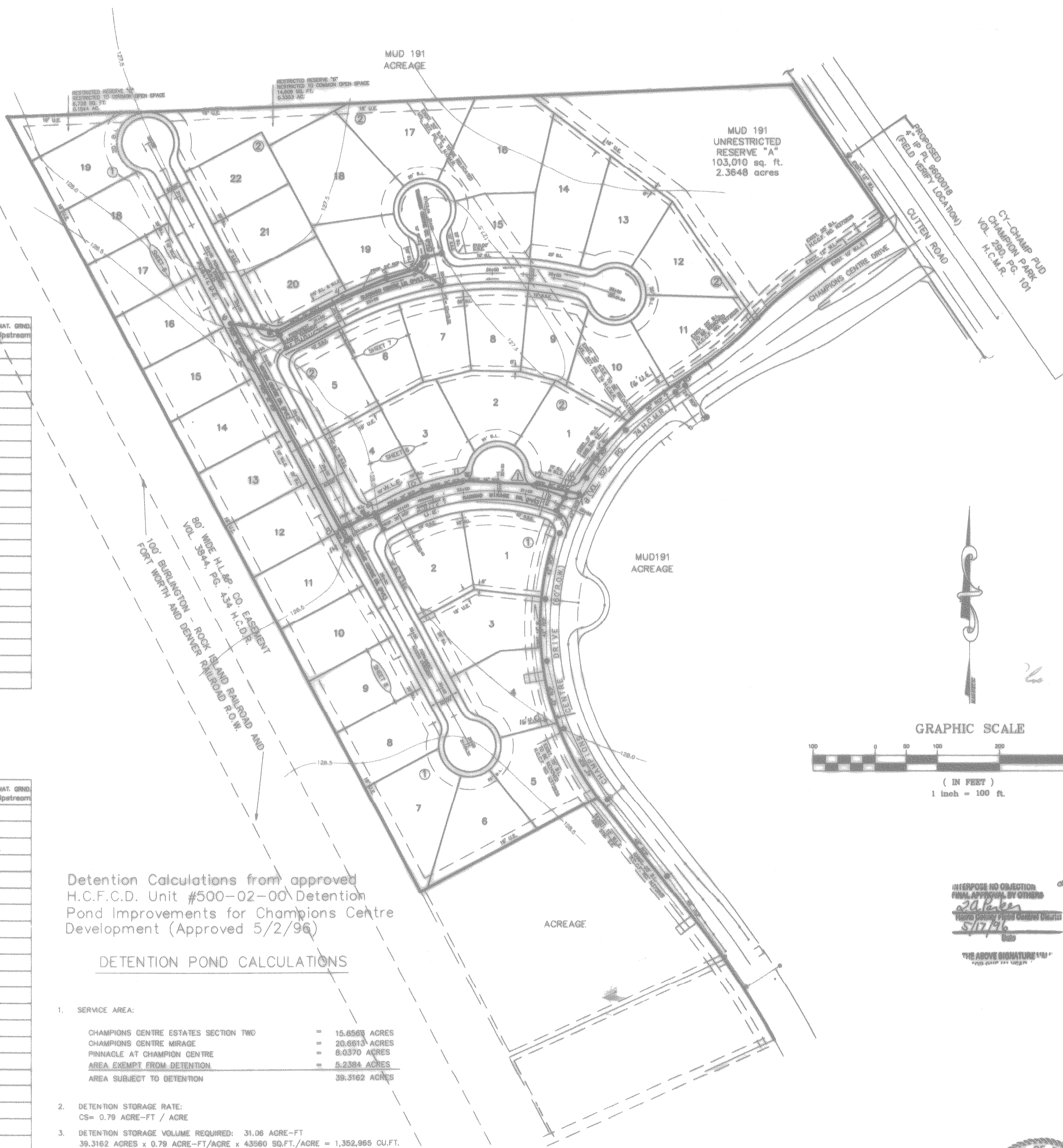
LINE	TO MH	FROM MH	AREA AC	TOTAL AREA AC	t	Ci	Q CFS	REACH FT	LINE SIZE IN	SLOPE %	DESIGN Q CFS	FALL FT	OTHER LOSSES FT	FLOWLINE UP-STREAM	ACT. V FPM	SLOPE TO GRADE %	Δ H FT	ELEV. HYD. GRAD. DOWN-STREAM	TO ELEV. Upstream	NAT. GROUND
1	Intake	1	4.10	4.10	12.0	1.10	4.57	0	20	0.24	11	3.0	0.01	121.75	121.74	1.4	0.04	123.05	123.04	125.84
2	1	2	0	4.15	12.5	1.10	4.57	21	24	0.24	11	3.0	0.05	121.71	121.69	1.4	0.04	123.04	123.03	125.84
3	Intake	2	1.80	6.00	12.0	1.10	6.88	55	24	0.24	11	3.0	0.06	121.80	121.74	1.8	0.07	123.07	123.03	125.95
4	2	3	0	6.05	12.5	1.10	6.88	50	24	0.24	11	3.0	0.17	121.74	121.57	1.8	0.07	123.03	122.97	126.03
5	3	4	0	6.05	12.5	1.10	6.88	75	24	0.24	11	3.0	0.18	121.57	121.39	1.8	0.07	122.99	122.94	126.03
6	4	5	0	6.05	12.5	1.10	6.88	120	24	0.24	11	3.0	0.24	121.39	121.10	1.8	0.07	122.94	122.86	126.25
7	Intake	5	2.20	8.25	13.0	1.10	8.99	5	24	0.24	11	3.0	0.01	121.11	121.10	2.0	0.10	122.87	122.86	126.15
8	5	6	0	6.25	13.0	1.10	8.99	27	24	0.24	11	3.0	0.16	121.10	120.92	2.0	0.10	122.86	122.74	125.81
9	6	7	7.86	16.08	14.0	1.07	12.22	68	38	0.18	28	3.0	0.16	120.92	120.74	2.0	0.08	122.74	122.70	126.15
10	Intake	7	2.60	18.77	15.0	1.08	16.80	5	38	0.18	28	3.0	0.01	120.74	120.74	2.0	0.08	122.70	122.70	125.89
11	7	8	0	18.77	15.0	1.08	16.80	308	38	0.18	28	3.0	0.47	120.74	120.28	2.0	0.08	122.70	122.42	125.89
12	Intake	14	3.00	3.00	11.0	1.13	3.39	5	24	0.24	11	3.0	0.01	121.08	121.07	1.0	0.03	122.44	122.43	126.44
13	14	8	0	3.00	11.0	1.13	3.39	28	24	0.24	11	3.0	0.05	121.07	120.92	1.0	0.03	122.43	122.42	126.44
14	8	9	0	21.77	18.0	1.05	22.88	64	38	0.15	28	3.0	0.10	121.07	119.92	3.0	0.12	122.42	122.31	126.44
15	Intake	9	4.30	26.15	17.0	1.04	27.20	5	38	0.15	28	3.0	0.01	119.92	119.92	3.0	0.14	122.35	122.34	126.44
16	9	10	0	26.15	17.0	1.04	27.20	68	38	0.15	28	3.0	0.13	119.92	119.74	3.0	0.14	122.34	122.20	126.44
17	10	11	0	26.15	17.0	1.04	27.20	68	38	0.15	28	3.0	0.06	119.74	119.68	3.0	0.14	122.20	122.09	127.00
18	11	12	0	26.15	17.0	1.04	27.20	119	38	0.15	28	3.0	0.16	119.68	119.51	3.0	0.14	122.09	121.95	127.58
19	12	13	0	26.15	17.0	1.04	27.20	79	38	0.15	28	3.0	0.09	119.51	119.42	3.0	0.14	121.95	121.88	127.72
20	Intake	10	1.02	26.15	17.0	1.04	27.20	5	24	0.22	11	3.0	0.02	119.44	119.42	6.8	0.01	121.88	121.88	127.59
21	15	13	0	26.15	17.0	1.04	27.20	20	38	0.15	28	3.0	0.03	119.42	119.39	3.0	0.16	121.88	121.83	127.59

**STORM SEWER DESIGN**

PROJECT: MUD 191 REVISED DRAINAGE CALCULATION  
CITY OF HOUSTON CURVE: #4 & #2

LINE	TO MH	FROM MH	AREA AC	TOTAL AREA AC	t	Ci	Q CFS	REACH FT	LINE SIZE IN	SLOPE %	DESIGN Q CFS	FALL FT	OTHER LOSSES FT	FLOWLINE UP-STREAM	ACT. V FPM	SLOPE TO GRADE %	Δ H FT	ELEV. HYD. GRAD. DOWN-STREAM	TO ELEV. Upstream	NAT. GROUND
1	1	2	92.61	92.61	18.0	1.02	63.56	180	84	0.15	73	4.8			3.8	0.08	0.14	120.44	120.30	
2	2	3	4.73	97.34	20.0	1.01	67.01	140	84	0.15	73	4.8			3.8	0.08	0.13	120.30	120.17	
3	3	4	1.83	99.17	20.0	1.01	68.88	120	72	0.12	130	5.0			2.2	0.02	0.02	120.17	120.15	
4	4	5	4.68	103.85	20.0	1.01	68.37	250	72	0.12	130	5.0			2.4	0.03	0.08	120.15	120.09	
5	5	6	17.28	121.13	21.0	1.00	81.02	140	72	0.12	130	5.0			3.0	0.04	0.06	120.09	120.03	
6	6	7	1.20	122.33	21.0	1.00	82.22	130	84	0.12	200	5.5			2.2	0.02	0.02	120.03	120.01	
7	7	8	4.21	126.54	21.0	1.00	86.43	90	84	0.12	200	5.5			2.5	0.02	0.02	120.01	119.89	
8	10	14	0.59	127.13	22.0	1.01	87.89	100	84	0.12	200	5.0			2.3	0.02	0.02	119.89	119.87	
9	14	15	14.25	141.38	23.0	1.08	105.37	120	84	0.12	200	5.5			2.6	0.03	0.04	119.87	119.83	
10	15	16	0	141.38	23.0	1.08	105.37	170	84	0.12	200	5.5			2.9	0.03	0.05	119.83	119.80	
11	16	17	0	141.38	23.0	1.08	105.37	170	84	0.12	200	5.5			2.9	0.03	0.05	119.80	119.83	
12	17	18	9.34	150.72	24.0	1.11	122.76	180	84	0.12	200	5.5			3.4	0.04	0.05	119.83	119.75	
13	18	19	0	150.72	24.0	1.11	122.76	40	84	0.12	200	5.5			3.4	0.04	0.02	119.75	119.73	
14	19	20	0	150.72	24.0	1.11	122.76	90	84	0.12	200	5.5			3.4	0.04	0.04	119.73	119.68	
15	20	21	0	150.72	24.0	1.11	122.76	80	84	0.12	200	5.5			3.4	0.04	0.04	119.68	119.65	
16	21	22	4.01	154.73	25.0	1.12	128.37	60	84	0.12	200	5.5			3.0	0.04	0.05	119.65	119.60	
17	22	23	0	154.73	25.0	1.12	128.37	70	84	0.12	200	5.5			3.0	0.04	0.04	119.60	119.58	
18	23	24	2.89	157.62	26.0	1.12	131.30	100	84	0.12	200	5.5			3.5	0.04	0.05	119.58	119.61	
19	24	25	2.85	160.47	27.0	1.13	135.95	90	84	0.12	200	5.5			3.8	0.05	0.05	119.61	119.46	
20	25	26	0	160.47	27.0	1.13	135.95	100	84	0.12	200	5.5			3.8	0.05	0.05	119.46	119.41	
21	26	27	0	160.47	27.0	1.13	135.95	40	90	0.12	240	5.5			3.2	0.03	0.01	119.41	119.40	
22	27	28	13.33	173.80	28.0	1.16	154.69	470	90	0.12	240	5.5			3.8	0.04	0.21	119.40	119.19	
23	28	29	5.37	179.17	29.0	1.17	162.30	320	90	0.12	240	5.5			3.8	0.05	0.19	119.19	119.03	
24	29	30	3.88	183.05	29.0	1.17	166.96	510	90	0.12	240	5.5			4.0	0.05	0.18	119.03	118.77	
25	30	31	0	183.05	29.0	1.17	166.96	230	90	0.12	240	5.5			4.0	0.05	0.12	118.77	118.69	
26	31	32	142.70	197.75	30.0	1.17	186.96	500	98	0.05	270	5.5			3.6	0.03	0.15	118.69	118.50*	

\* 2.5 FT. STORM ELEVATION IN PISO-DD-DD.



Detention Calculations from approved H.C.F.C.D. Unit #500-02-00 Detention Pond Improvements for Champions Centre Development (Approved 5/2/96)

**DETENTION POND CALCULATIONS**

- SERVICE AREA:
  - CHAMPIONS CENTRE ESTATES SECTION TWO = 15.8568 ACRES
  - CHAMPIONS CENTRE MIRAGE = 20.6013 ACRES
  - PINNACLE AT CHAMPION CENTRE = 8.0370 ACRES
  - AREA EXEMPT FROM DETENTION = 5.2384 ACRES
  - AREA SUBJECT TO DETENTION = 39.3162 ACRES
- DETENTION STORAGE RATE:
  - CS = 0.79 ACRE-FT / ACRE
- DETENTION STORAGE VOLUME REQUIRED: 31.06 ACRE-FT
  - 39.3162 ACRES x 0.79 ACRE-FT/ACRE x 435660 SQ.FT./ACRE = 1,352,965 CU.FT.
- DETENTION STORAGE VOLUME PROVIDED:
  - V (area 1) = 137' x 205' x (112.6-104.5) = 227,488 cu ft
  - V (area 2) = 70' x 225' x (113.5-104.3) = 144,900 cu ft
  - V (area 3) = 570' x 255' x (106.3-104.4) x .5 = 138,082 cu ft
  - V (area 4) = 320' x 142' x (113.6-104.8) = 399,872 cu ft
  - V (area 5) = 375' x 142' x (114.8-104.8) = 475,700 cu ft
  - Total V = 227,488+144,900+138,082+399,872+475,700 = 1,389,043 cu ft
  - Total V = 31.06 ac-ft
  - For areas 1,2,3,4,& 5 see shaded areas this page
- MAXIMUM DESIGN WATER SURFACE ELEVATION = 115.00
- MAXIMUM OUTFLOW RATE ALLOWED = OUTFALL INSTALLED BY OTHERS
- MAXIMUM OUTFLOW RATE PROVIDED = OUTFALL INSTALLED BY OTHERS
- RESTRICTOR SIZE = RESTRICTOR INSTALLED BY OTHERS

**BENCH MARK**  
BENCH MARK: NPS STAMPED 1216 1973  
BRASS DISK AT CENTERLINE OF H.C.F.D.  
TOWERS 1ST TOWER NORTH OF F.M. 1960  
ELEVATION 125.79 1973 ADS.

**LEGEND**

- UNDERGROUND DISTRIBUTION CABLE
- TERMINAL POLE
- STREET LIGHT ON STEEL STANDARD
- UNDERGROUND STREET LIGHT CABLE
- Exist. Contour
- Exist. Water Line
- Exist. Gate Valve & Box
- Exist. Flushing Valve
- Exist. Plug & Blowoff
- Exist. Sanitary Sewer Line & Manhole
- Exist. Storm Sewer Line & Manhole
- Exist. Inlet
- R1-1 (STOP SIGN)
- SHEET REFERENCE
- PROP. STORM SEWER LINE & MANHOLE
- PROP. INLET
- DRAINAGE AREA DIVIDE

Rev.	Date	Description	App.
8-6-96		ADD GATED ENTRANCE	
PRIVATE UTILITY LINES SHOWN			
		ENXET, INC.	6-18-94
		SOUTHWESTERN BELL TELEPHONE CO.	10-16-95
HOUSTON LIGHTING & POWER CO. Approval Only for Crossing Underground Ductlines Unless Noted. Valid at Time of Review Only.			

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

**SECTION APPROVALS**

DESIGNER	DATE	DESIGN
WATER DESIGN	3/24/96	TRAFFIC AND SIGNAL DESIGN
WASTEWATER DESIGN	3/24/96	STREET, BRIDGE AND RIGHT-OF-WAY DESIGN
STORM SEWER DESIGN	5/17/96	CONSTRUCTION

**OTHER DEPARTMENTS**

PLANNING AND DEVELOPMENT

SPONSOR DEPARTMENT

CITY ENGINEER: [Signature] DATE: 5/28/96

DIRECTOR OF PUBLIC WORKS AND ENGINEERING: [Signature] DATE: 5/19/96

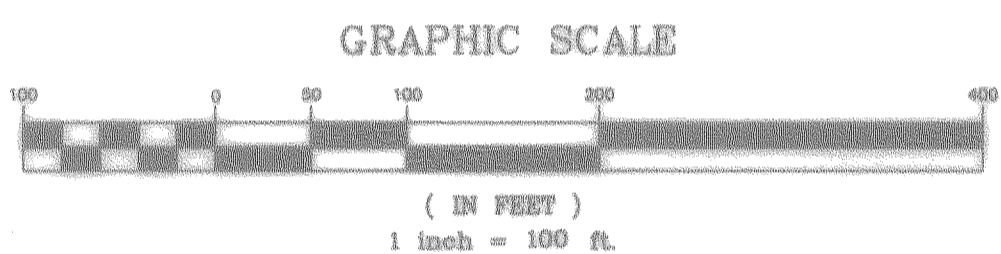
SUBMITTED: [Signature] DESIGNED BY: TIM

SCALE: 1" = 100' DRAWN BY: TIM

DATE: 01-10-96 SHEET NO. 3 OF 16 SHEETS

SURVEY BY: [Signature] CITY OVERALL DWG

JOB NO: 430-U CITY DWS NO.

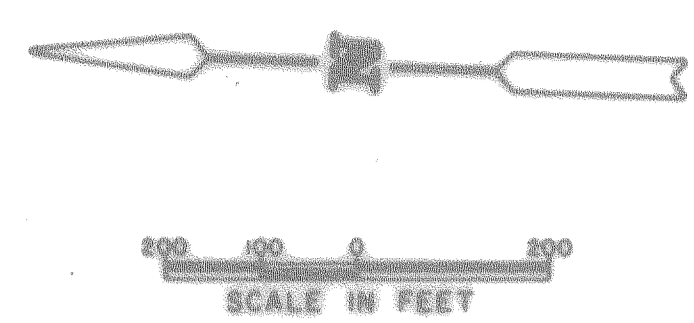


IMPOSE NO OBSTRUCTION  
FROM APPROVAL BY OTHERS  
3/24/96  
MUD 191 Detention Pond Calculations  
5/17/96

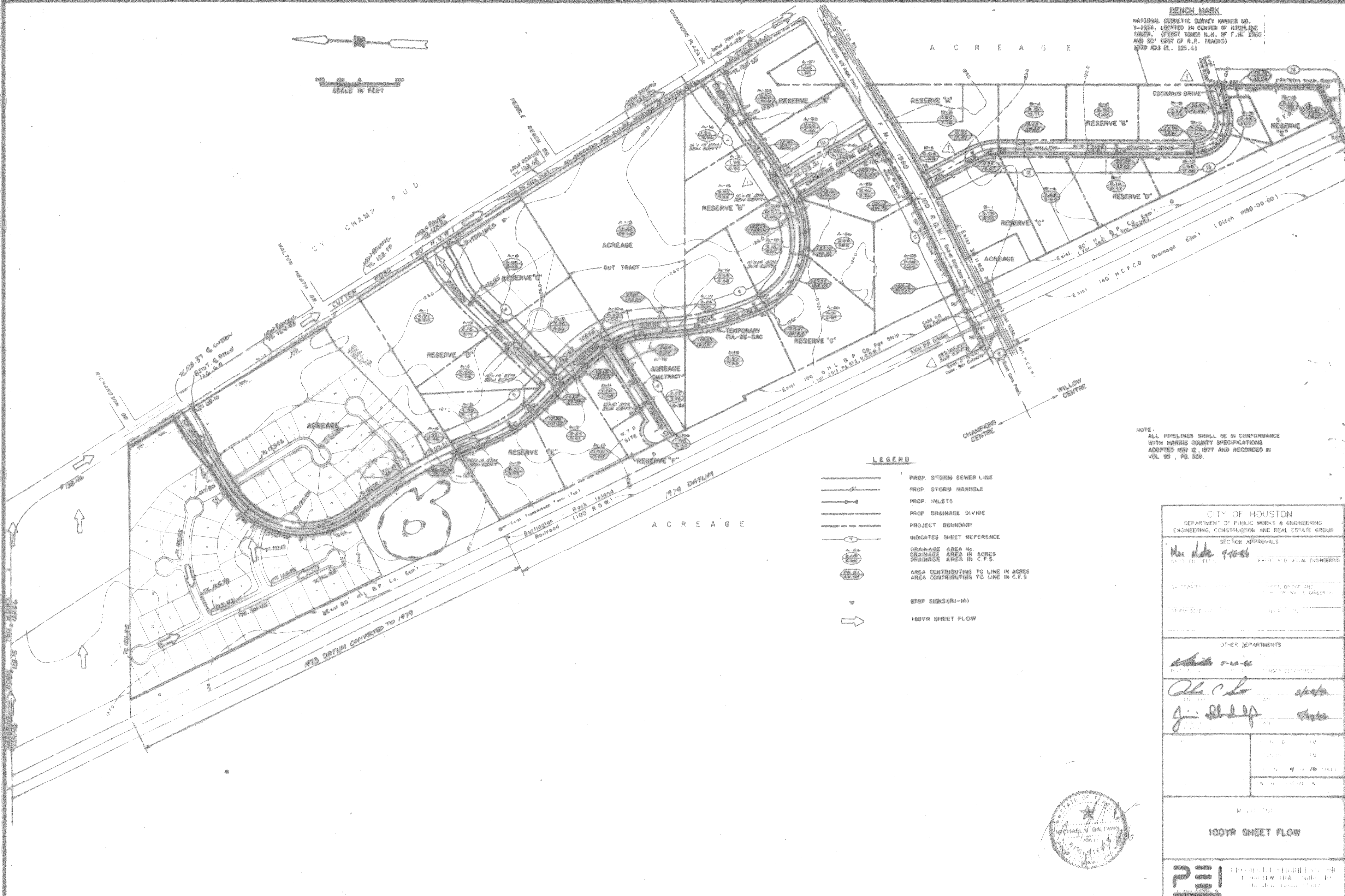


**CHAMPIONS CENTRE MIRAGE**  
M.U.D. 191  
**STORM SEWER**  
**OVERALL LAYOUT**

**PEI** PROVIDENT ENGINEERS, INC.  
12200 N.W. FRWY, Suite 210  
Houston, Texas 77092



**BENCH MARK**  
 NATIONAL GEODETIC SURVEY MARKER NO. V-1216, LOCATED IN CENTER OF HIGH LINE TOWER. (FIRST TOWER N.W. OF F.M. 1960 AND 80' EAST OF R.R. TRACKS) 1979 ADJ. EL. 125.41



**LEGEND**

- PROP. STORM SEWER LINE
- PROP. STORM MANHOLE
- PROP. INLETS
- PROP. DRAINAGE DIVIDE
- PROJECT BOUNDARY
- INDICATES SHEET REFERENCE
- DRAINAGE AREA No.  
DRAINAGE AREA IN ACRES  
DRAINAGE AREA IN C.F.S.
- AREA CONTRIBUTING TO LINE IN ACRES  
AREA CONTRIBUTING TO LINE IN C.F.S.
- STOP SIGNS (R1-1A)
- 100YR SHEET FLOW

NOTE:  
 ALL PIPELINES SHALL BE IN CONFORMANCE WITH HARRIS COUNTY SPECIFICATIONS ADOPTED MAY 12, 1977 AND RECORDED IN VOL. 95, PG. 528.

<b>CITY OF HOUSTON</b> DEPARTMENT OF PUBLIC WORKS & ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP	
SECTION APPROVALS	
Max Noto 9-10-06 <small>DATE: 9/10/06</small> <small>PLANNING AND SOCIAL ENGINEERING</small>	<small>PLANNING AND SOCIAL ENGINEERING</small>
<small>SEWERAGE AND WATERWORKS ENGINEERING</small>	<small>SEWERAGE AND WATERWORKS ENGINEERING</small>
<small>STREET, BRIDGE AND TRAFFIC ENGINEERING</small>	<small>STREET, BRIDGE AND TRAFFIC ENGINEERING</small>
OTHER DEPARTMENTS	
<small>ENGINEERING DEPARTMENT</small>	<small>ENGINEERING DEPARTMENT</small>
<small>INSPECTION</small>	<small>INSPECTION</small>
<small>PERMITTING</small>	<small>PERMITTING</small>
<small>UTILITY</small>	<small>UTILITY</small>
<small>CONSTRUCTION</small>	<small>CONSTRUCTION</small>
<small>OPERATIONS</small>	<small>OPERATIONS</small>
<small>SALES</small>	<small>SALES</small>
<small>TRAINING</small>	<small>TRAINING</small>
<small>RESEARCH</small>	<small>RESEARCH</small>
<small>INFORMATION</small>	<small>INFORMATION</small>
<small>LEGAL</small>	<small>LEGAL</small>
<small>FINANCE</small>	<small>FINANCE</small>
<small>ADMINISTRATION</small>	<small>ADMINISTRATION</small>
<small>COMMUNITY RELATIONS</small>	<small>COMMUNITY RELATIONS</small>
<small>PLANNING</small>	<small>PLANNING</small>
<small>RECORDS</small>	<small>RECORDS</small>
<small>GENERAL SERVICES</small>	<small>GENERAL SERVICES</small>
<small>SAFETY</small>	<small>SAFETY</small>
<small>TELECOMMUNICATIONS</small>	<small>TELECOMMUNICATIONS</small>
<small>UTILITY</small>	<small>UTILITY</small>
<small>CONSTRUCTION</small>	<small>CONSTRUCTION</small>
<small>OPERATIONS</small>	<small>OPERATIONS</small>
<small>SALES</small>	<small>SALES</small>
<small>TRAINING</small>	<small>TRAINING</small>
<small>RESEARCH</small>	<small>RESEARCH</small>
<small>INFORMATION</small>	<small>INFORMATION</small>
<small>LEGAL</small>	<small>LEGAL</small>
<small>FINANCE</small>	<small>FINANCE</small>
<small>ADMINISTRATION</small>	<small>ADMINISTRATION</small>
<small>COMMUNITY RELATIONS</small>	<small>COMMUNITY RELATIONS</small>
<small>PLANNING</small>	<small>PLANNING</small>
<small>RECORDS</small>	<small>RECORDS</small>
<small>GENERAL SERVICES</small>	<small>GENERAL SERVICES</small>
<small>SAFETY</small>	<small>SAFETY</small>
<small>TELECOMMUNICATIONS</small>	<small>TELECOMMUNICATIONS</small>
<small>UTILITY</small>	<small>UTILITY</small>
<small>CONSTRUCTION</small>	<small>CONSTRUCTION</small>
<small>OPERATIONS</small>	<small>OPERATIONS</small>
<small>SALES</small>	<small>SALES</small>
<small>TRAINING</small>	<small>TRAINING</small>
<small>RESEARCH</small>	<small>RESEARCH</small>
<small>INFORMATION</small>	<small>INFORMATION</small>
<small>LEGAL</small>	<small>LEGAL</small>
<small>FINANCE</small>	<small>FINANCE</small>
<small>ADMINISTRATION</small>	<small>ADMINISTRATION</small>
<small>COMMUNITY RELATIONS</small>	<small>COMMUNITY RELATIONS</small>
<small>PLANNING</small>	<small>PLANNING</small>
<small>RECORDS</small>	<small>RECORDS</small>
<small>GENERAL SERVICES</small>	<small>GENERAL SERVICES</small>
<small>SAFETY</small>	<small>SAFETY</small>
<small>TELECOMMUNICATIONS</small>	<small>TELECOMMUNICATIONS</small>
<small>UTILITY</small>	<small>UTILITY</small>
<small>CONSTRUCTION</small>	<small>CONSTRUCTION</small>
<small>OPERATIONS</small>	<small>OPERATIONS</small>
<small>SALES</small>	<small>SALES</small>
<small>TRAINING</small>	<small>TRAINING</small>
<small>RESEARCH</small>	<small>RESEARCH</small>
<small>INFORMATION</small>	<small>INFORMATION</small>
<small>LEGAL</small>	<small>LEGAL</small>
<small>FINANCE</small>	<small>FINANCE</small>
<small>ADMINISTRATION</small>	<small>ADMINISTRATION</small>
<small>COMMUNITY RELATIONS</small>	<small>COMMUNITY RELATIONS</small>
<small>PLANNING</small>	<small>PLANNING</small>
<small>RECORDS</small>	<small>RECORDS</small>
<small>GENERAL SERVICES</small>	<small>GENERAL SERVICES</small>
<small>SAFETY</small>	<small>SAFETY</small>
<small>TELECOMMUNICATIONS</small>	<small>TELECOMMUNICATIONS</small>
<small>UTILITY</small>	<small>UTILITY</small>
<small>CONSTRUCTION</small>	<small>CONSTRUCTION</small>
<small>OPERATIONS</small>	<small>OPERATIONS</small>
<small>SALES</small>	<small>SALES</small>
<small>TRAINING</small>	<small>TRAINING</small>
<small>RESEARCH</small>	<small>RESEARCH</small>
<small>INFORMATION</small>	<small>INFORMATION</small>
<small>LEGAL</small>	<small>LEGAL</small>
<small>FINANCE</small>	<small>FINANCE</small>
<small>ADMINISTRATION</small>	<small>ADMINISTRATION</small>
<small>COMMUNITY RELATIONS</small>	<small>COMMUNITY RELATIONS</small>
<small>PLANNING</small>	<small>PLANNING</small>
<small>RECORDS</small>	<small>RECORDS</small>
<small>GENERAL SERVICES</small>	<small>GENERAL SERVICES</small>
<small>SAFETY</small>	<small>SAFETY</small>
<small>TELECOMMUNICATIONS</small>	<small>TELECOMMUNICATIONS</small>
<small>UTILITY</small>	<small>UTILITY</small>
<small>CONSTRUCTION</small>	<small>CONSTRUCTION</small>
<small>OPERATIONS</small>	<small>OPERATIONS</small>
<small>SALES</small>	<small>SALES</small>
<small>TRAINING</small>	<small>TRAINING</small>
<small>RESEARCH</small>	<small>RESEARCH</small>
<small>INFORMATION</small>	<small>INFORMATION</small>
<small>LEGAL</small>	<small>LEGAL</small>
<small>FINANCE</small>	<small>FINANCE</small>
<small>ADMINISTRATION</small>	<small>ADMINISTRATION</small>
<small>COMMUNITY RELATIONS</small>	<small>COMMUNITY RELATIONS</small>
<small>PLANNING</small>	<small>PLANNING</small>
<small>RECORDS</small>	<small>RECORDS</small>
<small>GENERAL SERVICES</small>	<small>GENERAL SERVICES</small>
<small>SAFETY</small>	<small>SAFETY</small>
<small>TELECOMMUNICATIONS</small>	<small>TELECOMMUNICATIONS</small>
<small>UTILITY</small>	<small>UTILITY</small>
<small>CONSTRUCTION</small>	<small>CONSTRUCTION</small>
<small>OPERATIONS</small>	<small>OPERATIONS</small>
<small>SALES</small>	<small>SALES</small>
<small>TRAINING</small>	<small>TRAINING</small>
<small>RESEARCH</small>	<small>RESEARCH</small>
<small>INFORMATION</small>	<small>INFORMATION</small>
<small>LEGAL</small>	<small>LEGAL</small>
<small>FINANCE</small>	<small>FINANCE</small>
<small>ADMINISTRATION</small>	<small>ADMINISTRATION</small>
<small>COMMUNITY RELATIONS</small>	<small>COMMUNITY RELATIONS</small>
<small>PLANNING</small>	<small>PLANNING</small>
<small>RECORDS</small>	<small>RECORDS</small>
<small>GENERAL SERVICES</small>	<small>GENERAL SERVICES</small>
<small>SAFETY</small>	<small>SAFETY</small>
<small>TELECOMMUNICATIONS</small>	<small>TELECOMMUNICATIONS</small>
<small>UTILITY</small>	<small>UTILITY</small>
<small>CONSTRUCTION</small>	<small>CONSTRUCTION</small>
<small>OPERATIONS</small>	<small>OPERATIONS</small>
<small>SALES</small>	<small>SALES</small>
<small>TRAINING</small>	<small>TRAINING</small>
<small>RESEARCH</small>	<small>RESEARCH</small>
<small>INFORMATION</small>	<small>INFORMATION</small>
<small>LEGAL</small>	<small>LEGAL</small>
<small>FINANCE</small>	<small>FINANCE</small>
<small>ADMINISTRATION</small>	<small>ADMINISTRATION</small>
<small>COMMUNITY RELATIONS</small>	<small>COMMUNITY RELATIONS</small>
<small>PLANNING</small>	<small>PLANNING</small>
<small>RECORDS</small>	<small>RECORDS</small>
<small>GENERAL SERVICES</small>	<small>GENERAL SERVICES</small>
<small>SAFETY</small>	<small>SAFETY</small>
<small>TELECOMMUNICATIONS</small>	<small>TELECOMMUNICATIONS</small>
<small>UTILITY</small>	<small>UTILITY</small>
<small>CONSTRUCTION</small>	<small>CONSTRUCTION</small>
<small>OPERATIONS</small>	<small>OPERATIONS</small>
<small>SALES</small>	<small>SALES</small>
<small>TRAINING</small>	<small>TRAINING</small>
<small>RESEARCH</small>	<small>RESEARCH</small>
<small>INFORMATION</small>	<small>INFORMATION</small>
<small>LEGAL</small>	<small>LEGAL</small>
<small>FINANCE</small>	<small>FINANCE</small>
<small>ADMINISTRATION</small>	<small>ADMINISTRATION</small>
<small>COMMUNITY RELATIONS</small>	<small>COMMUNITY RELATIONS</small>
<small>PLANNING</small>	<small>PLANNING</small>
<small>RECORDS</small>	<small>RECORDS</small>
<small>GENERAL SERVICES</small>	<small>GENERAL SERVICES</small>
<small>SAFETY</small>	<small>SAFETY</small>
<small>TELECOMMUNICATIONS</small>	<small>TELECOMMUNICATIONS</small>
<small>UTILITY</small>	<small>UTILITY</small>
<small>CONSTRUCTION</small>	<small>CONSTRUCTION</small>
<small>OPERATIONS</small>	<small>OPERATIONS</small>
<small>SALES</small>	<small>SALES</small>
<small>TRAINING</small>	<small>TRAINING</small>
<small>RESEARCH</small>	<small>RESEARCH</small>
<small>INFORMATION</small>	<small>INFORMATION</small>
<small>LEGAL</small>	<small>LEGAL</small>
<small>FINANCE</small>	<small>FINANCE</small>
<small>ADMINISTRATION</small>	<small>ADMINISTRATION</small>
<small>COMMUNITY RELATIONS</small>	<small>COMMUNITY RELATIONS</small>
<small>PLANNING</small>	<small>PLANNING</small>
<small>RECORDS</small>	<small>RECORDS</small>
<small>GENERAL SERVICES</small>	<small>GENERAL SERVICES</small>
<small>SAFETY</small>	<small>SAFETY</small>
<small>TELECOMMUNICATIONS</small>	<small>TELECOMMUNICATIONS</small>
<small>UTILITY</small>	<small>UTILITY</small>
<small>CONSTRUCTION</small>	<small>CONSTRUCTION</small>
<small>OPERATIONS</small>	<small>OPERATIONS</small>
<small>SALES</small>	<small>SALES</small>
<small>TRAINING</small>	<small>TRAINING</small>
<small>RESEARCH</small>	<small>RESEARCH</small>
<small>INFORMATION</small>	<small>INFORMATION</small>
<small>LEGAL</small>	<small>LEGAL</small>
<small>FINANCE</small>	<small>FINANCE</small>
<small>ADMINISTRATION</small>	<small>ADMINISTRATION</small>
<small>COMMUNITY RELATIONS</small>	<small>COMMUNITY RELATIONS</small>
<small>PLANNING</small>	<small>PLANNING</small>
<small>RECORDS</small>	<small>RECORDS</small>
<small>GENERAL SERVICES</small>	<small>GENERAL SERVICES</small>
<small>SAFETY</small>	<small>SAFETY</small>
<small>TELECOMMUNICATIONS</small>	<small>TELECOMMUNICATIONS</small>
<small>UTILITY</small>	<small>UTILITY</small>
<small>CONSTRUCTION</small>	<small>CONSTRUCTION</small>
<small>OPERATIONS</small>	<small>OPERATIONS</small>
<small>SALES</small>	<small>SALES</small>
<small>TRAINING</small>	<small>TRAINING</small>
<small>RESEARCH</small>	<small>RESEARCH</small>
<small>INFORMATION</small>	<small>INFORMATION</small>
<small>LEGAL</small>	<small>LEGAL</small>
<small>FINANCE</small>	<small>FINANCE</small>
<small>ADMINISTRATION</small>	<small>ADMINISTRATION</small>
<small>COMMUNITY RELATIONS</small>	<small>COMMUNITY RELATIONS</small>
<small>PLANNING</small>	<small>PLANNING</small>
<small>RECORDS</small>	<small>RECORDS</small>
<small>GENERAL SERVICES</small>	<small>GENERAL SERVICES</small>
<small>SAFETY</small>	<small>SAFETY</small>
<small>TELECOMMUNICATIONS</small>	<small>TELECOMMUNICATIONS</small>
<small>UTILITY</small>	<small>UTILITY</small>
<small>CONSTRUCTION</small>	<small>CONSTRUCTION</small>
<small>OPERATIONS</small>	<small>OPERATIONS</small>
<small>SALES</small>	<small>SALES</small>
<small>TRAINING</small>	<small>TRAINING</small>
<small>RESEARCH</small>	<small>RESEARCH</small>
<small>INFORMATION</small>	<small>INFORMATION</small>
<small>LEGAL</small>	<small>LEGAL</small>
<small>FINANCE</small>	<small>FINANCE</small>
<small>ADMINISTRATION</small>	<small>ADMINISTRATION</small>
<small>COMMUNITY RELATIONS</small>	<small>COMMUNITY RELATIONS</small>
<small>PLANNING</small>	<small>PLANNING</small>
<small>RECORDS</small>	<small>RECORDS</small>
<small>GENERAL SERVICES</small>	<small>GENERAL SERVICES</small>
<small>SAFETY</small>	<small>SAFETY</small>
<small>TELECOMMUNICATIONS</small>	<small>TELECOMMUNICATIONS</small>
<small>UTILITY</small>	<small>UTILITY</small>
<small>CONSTRUCTION</small>	<small>CONSTRUCTION</small>
<small>OPERATIONS</small>	<small>OPERATIONS</small>
<small>SALES</small>	<small>SALES</small>
<small>TRAINING</small>	<small>TRAINING</small>
<small>RESEARCH</small>	<small>RESEARCH</small>
<small>INFORMATION</small>	<small>INFORMATION</small>
<small>LEGAL</small>	<small>LEGAL</small>
<small>FINANCE</small>	<small>FINANCE</small>
<small>ADMINISTRATION</small>	<small>ADMINISTRATION</small>
<small>COMMUNITY RELATIONS</small>	<small>COMMUNITY RELATIONS</small>
<small>PLANNING</small>	<small>PLANNING</small>
<small>RECORDS</small>	<small>RECORDS</small>
<small>GENERAL SERVICES</small>	<small>GENERAL SERVICES</small>
<small>SAFETY</small>	<small>SAFETY</small>
<small>TELECOMMUNICATIONS</small>	<small>TELECOMMUNICATIONS</small>
<small>UTILITY</small>	<small>UTILITY</small>
<small>CONSTRUCTION</small>	<small>CONSTRUCTION</small>
<small>OPERATIONS</small>	<small>OPERATIONS</small>
<small>SALES</small>	<small>SALES</small>
<small>TRAINING</small>	<small>TRAINING</small>
<small>RESEARCH</small>	<small>RESEARCH</small>
<small>INFORMATION</small>	<small>INFORMATION</small>
<small>LEGAL</small>	<small>LEGAL</small>
<small>FINANCE</small>	<small>FINANCE</small>
<small>ADMINISTRATION</small>	<small>ADMINISTRATION</small>
<small>COMMUNITY RELATIONS</small>	<small>COMMUNITY RELATIONS</small>
<small>PLANNING</small>	<small>PLANNING</small>
<small>RECORDS</small>	<small>RECORDS</small>
<small>GENERAL SERVICES</small>	<small>GENERAL SERVICES</small>
<small>SAFETY</small>	<small>SAFETY</small>
<small>TELECOMMUNICATIONS</small>	<small>TELECOMMUNICATIONS</small>
<small>UTILITY</small>	<small>UTILITY</small>
<small>CONSTRUCTION</small>	<small>CONSTRUCTION</small>
<small>OPERATIONS</small>	<small>OPERATIONS</small>
<small>SALES</small>	<small>SALES</small>
<small>TRAINING</small>	<small>TRAINING</small>
<small>RESEARCH</small>	<small>RESEARCH</small>
<small>INFORMATION</small>	<small>INFORMATION</small>
<small>LEGAL</small>	<small>LEGAL</small>
<small>FINANCE</small>	<small>FINANCE</small>
<small>ADMINISTRATION</small>	<small>ADMINISTRATION</small>
<small>COMMUNITY RELATIONS</small>	<small>COMMUNITY RELATIONS</small>
<small>PLANNING</small>	<small>PLANNING</small>
<small>RECORDS</small>	<small>RECORDS</small>
<small>GENERAL SERVICES</small>	<small>GENERAL SERVICES</small>
<small>SAFETY</small>	<small>SAFETY</small>
<small>TELECOMMUNICATIONS</small>	<small>TELECOMMUNICATIONS</small>
<small>UTILITY</small>	<small>UTILITY</small>
<small>CONSTRUCTION</small>	<small>CONSTRUCTION</small>
<small>OPERATIONS</small>	<small>OPERATIONS</small>
<small>SALES</small>	<small>SALES</small>
<small>TRAINING</small>	<small>TRAINING</small>
<small>RESEARCH</small>	<small>RESEARCH</small>
<small>INFORMATION</small>	<small>INFORMATION</small>
<small>LEGAL</small>	<small>LEGAL</small>
<small>FINANCE</small>	<small>FINANCE</small>
<small>ADMINISTRATION</small>	<small>ADMINISTRATION</small>
<small>COMMUNITY RELATIONS</small>	<small>COMMUNITY RELATIONS</small>
<small>PLANNING</small>	<small>PLANNING</small>
<small>RECORDS</small>	<small>RECORDS</small>
<small>GENERAL SERVICES</small>	<small>GENERAL SERVICES</small>
<small>SAFETY</small>	<small>SAFETY</small>
<small>TELECOMMUNICATIONS</small>	<small>TELECOMMUNICATIONS</small>
<small>UTILITY</small>	<small>UTILITY</small>
<small>CONSTRUCTION</small>	<small>CONSTRUCTION</small>
<small>OPERATIONS</small>	<small>OPERATIONS</small>
<small>SALES</small>	<small>SALES</small>
<small>TRAINING</small>	<small>TRAINING</small>
<small>RESEARCH</small>	<small>RESEARCH</small>
<small>INFORMATION</small>	<small>INFORMATION</small>
<small>LEGAL</small>	<small>LEGAL</small>
<small>FINANCE</small>	<small>FINANCE</small>
<small>ADMINISTRATION</small>	<small>ADMINISTRATION</small>
<small>COMMUNITY RELATIONS</small>	<small>COMMUNITY RELATIONS</small>
<small>PLANNING</small>	<small>PLANNING</small>
<small>RECORDS</small>	<small>RECORDS</small>
<small>GENERAL SERVICES</small>	<small>GENERAL SERVICES</small>
<small>SAFETY</small>	<small>SAFETY</small>
<small>TELECOMMUNICATIONS</small>	<small>TELECOMMUNICATIONS</small>
<small>UTILITY</small>	<small>UTILITY</small>
<small>CONSTRUCTION</small>	<small>CONSTRUCTION</small>
<small>OPERATIONS</small>	<small>OPERATIONS</small>
<small>SALES</small>	<small>SALES</small>
<small>TRAINING</small>	<small>TRAINING</small>
<small>RESEARCH</small>	<small>RESEARCH</small>
<small>INFORMATION</small>	<small>INFORMATION</small>
<small>LEGAL</small>	<small>LEGAL</small>
<small>FINANCE</small>	<small>FINANCE</small>

BENCH MARK: NGS STAMPED Y1216 1973  
BRASS DISK AT CENTERLINE OF H.L.&P. TOWER  
1ST TOWER NORTH OF F.M. 1960  
ELEVATION 125.99 1973 ADJ.

SANITARY SEWER NOTES:

1. If PVC (ALL TYPES) or any other type sanitary sewer pipe or manhole type not mentioned in the E-14-62 is chosen, then a letter of permission must be obtained from the Wastewater Design Section Capital Projects Dept.
2. Sanitary sewer joints (ALL TYPES PVC INCLUDED) shall be rubber gasket equipped ball and spigot type. Chemically welded sanitary sewer joints are acceptable only on ARMO TRUSS PIPE.
3. Any Pipe types not listed below take modified class "AA" bedding unless otherwise specified in a special letter of permission. Standard bedding for sanitary sewers:  
Concrete Pipe - "A" or Modified "AA"  
ES. Clay - "A" or Modified "AA"  
PVC - Modified "AA"  
Truss - Modified "AA"  
Hobas - Modified "AA"  
Spiralite - Modified Class "AA"  
Ductile Iron - "C" With Polyethylene Wrap
4. Design and construction of sanitary sewer shall conform to City of Houston publication E-14-62 with all amendments thereto, and city publication General Design Requirements for Sanitary Sewers, Storm Sewers, Water Lines, and Paving, Revision 1.
5. All manhole rims shall be above the 100 year flood elevation or the manhole top shall be sealed and vented with a detail of a vented manhole to be included in the plans.
6. City of Houston Signatures affixed to plans shall be valid for 1 year only after the date of said signatures. Any changes made to the plans after said date will require replacement and/or update of the signatures on the plans. When the signatures are being updated, design changes may be ordered for any unbuild items found on the plans. [Note: this item does not apply to City of Houston Capital Projects Dept. Plans]
7. Deflection Testing shall be performed for all non-rigid pipe types. Deflection testing shall be conducted after the gravity sanitary sewer has been in place for at least 30 days. No pipe shall exceed a deflection of 5%. The deflection test shall be conducted using a rigid ball or mandrel having an inside diameter equal to 95% of the interior diameter of the pipe. The test shall be performed without mechanical pulling devices. I. & E. test for sanitary sewer system shall be in accordance with City of Houston requirements.
8. Special Backfill - See ADDENDUM SEWER SPECIFICATION E-14-62, City of Houston sewer specifications for cement stabilized backfill of sanitary and trenches under or within (1) ft. of proposed or existing pavement.
9. Wye branches, stacks and tees for house service connection shall be centered between side lot lines unless otherwise shown. Contractor shall provide engineer with drawings of actual field ties of the wyes, stacks and tees locating them from the nearest downstream manhole.
10. All manhole rims located outside of the proposed paving will be set 3" above top of curb elevation when within street right-of-way or 3" to 6" above surrounding level of finished grade elsewhere with sloped fill added for storm drainage away from the manhole rim.
11. All sanitary sewer materials, construction and testing will be in accordance with city of Houston E-14-62 (1977 printing and all subsequent amendments thereto).
12. Contractor to obtain all construction permits required by the "Regulations of Harris County, Texas for Flood Plain Management".
13. For use in wet sand construction areas, use C/H Spec. Sec. No. 5, DWG No. 485-s (E-14-62) (1977 printing and all subsequent amendments thereto).
14. PVC to be SDR-26.

GENERAL NOTES - STORM SEWERS

1. STORM SEWER SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF HOUSTON E-14-62 AS CURRENTLY AMENDED.
2. REINFORCED CONCRETE PIPE (C-76 CLASS III) STORM SEWER SHALL BE INSTALLED BEDDED AND BACKFILLED IN ACCORDANCE WITH CITY OF HOUSTON DRAWINGS 520-S-1, 530-S-1 and 530-S-2 AS APPLICABLE.
3. ALL SEWERS UNDER OR WITHIN ONE (1) FT. OF PROPOSED OR FUTURE PAVEMENT SHALL BE BACKFILLED WITH 1 SACK CEMENT STABILIZED SAND TO WITHIN ONE (1) FT. OF SUBGRADE.
4. ALL STORM SEWERS CONSTRUCTED IN SLOPE EASEMENTS SHALL BE R.C.P. (C-76 CLASS III) AND SHALL BE BEDDED IN ACCORDANCE WITH CITY OF HOUSTON DRAWINGS 520-S-1, 530-S-1 and 530-S-2 AS APPLICABLE. TWENTY (20) FT. WIDE EASEMENT SHALL BE PROVIDED.
5. ALL PROPOSED PIPE STUB-OUTS FROM MANHOLES OR INLETS ARE TO BE PLUGGED WITH 6" BRICK WALLS UNLESS OTHERWISE NOTED.
6. THE CONTRACTOR SHALL NOTIFY HARRIS COUNTY ENGINEERING DEPARTMENT 24 HOURS IN ADVANCE OF COMMENCING CONSTRUCTION, (755-8210), AND WRITTEN NOTIFICATION 48 HOURS IN ADVANCE.
7. CONTRACTOR TO OBTAIN ALL CONSTRUCTION PERMITS REQUIRED BY THE "REGULATIONS OF HARRIS COUNTY, TEXAS FOR FLOOD PLAIN MANAGEMENT."
8. ALL MANHOLE RIMS LOCATED OUTSIDE OF THE PROPOSED PAVING WILL BE SET 3" TO 6" ABOVE SURROUNDING LEVEL OF FINISHED GRADE WITH SLOPED FILL ADDED FOR STORM WATER DRAINAGE AWAY FROM THE MANHOLE RIM.
9. BEFORE UTILITY CONSTRUCTION BEGINS, ADEQUATE DRAINAGE MUST BE PROVIDED SO THAT NO SHEET FLOW FLOODING OF ROADWAY OR ADJOINING PROPERTIES OCCURS.
10. THE CONTRACTOR MAY USE A BACKHOE FOR TRENCH EXCAVATION IN LIEU OF A TRENCHING MACHINE.
11. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE OWNING AUTHORITY. ALL CONSTRUCTION STORM RUNOFF SHALL COMPLY WITH THE FINAL DRAFT OF STORMWATER MANAGEMENT HANDBOOK FOR CONSTRUCTION ACTIVITIES AS PREPARED BY HARRIS COUNTY/HCFCD, AND THE CITY OF HOUSTON ALL IN COMPLIANCE WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) REQUIREMENTS.
12. EXISTING PAVEMENTS, CURBS, SIDEWALKS, AND DRIVEWAY DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO CITY OF HOUSTON STANDARDS.
13. CONDITION OF THE ROAD AND/OR RIGHT-OF-WAY, UPON COMPLETION OF JOB, SHALL BE AS GOOD AS OR BETTER THAN THE CONDITION PRIOR TO STARTING WORK.

GENERAL NOTES - WATER

1. ALL WATER LINES TO HAVE A MINIMUM OF FOUR (4) FEET OF COVER TO TOP OF CURB.
2. WATER MAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF HOUSTON SPECIFICATIONS (SEE GENERAL NOTES FOR WATER MAIN PROJECTS IN THE CITY'S ETJ)
3. ALL FLUSHING VALVES SHALL BE SET THREE (3) FEET BEHIND BACK OF CURB.
4. STEEL WATER LINE SECTION TO EXTEND A MINIMUM OF FIVE (5) FEET MINIMUM BEYOND 45° BENDS.
5. THE CONTRACTOR MAY USE A BACKHOE FOR TRENCH EXCAVATION IN LIEU OF A TRENCHING MACHINE.
6. WHENEVER SANITARY SEWERS CROSS UNDER WATER MAINS, A 6" MINIMUM CLEARANCE IS REQUIRED. WHENEVER SANITARY SEWERS CROSS OVER WATER MAINS, A 2' MINIMUM CLEARANCE IS REQUIRED. ONE 18" JOINT OF DUCTILE PIPE SHALL BE INSTALLED IN THE SEWER LINE AND CENTERED AT THE WATER LINE CROSSING.
7. DUCTILE IRON PIPE SHALL BE MINIMUM THICKNESS CLASS 50. THE PRESSURE RATING FOR BOTH THE PIPE AND THE JOINTS SHALL BE 150 PSI OR GREATER.
8. WHENEVER SANITARY SEWERS CROSS OVER WATER MAINS, AND THE CUT-TO-OUT PIPE CLEARANCE IS LESS THAN 24", A CENTERED 18" JOINT OF DUCTILE IRON PIPE SHALL BE USED.
9. WHENEVER WATER MAINS CROSS UNDER SANITARY SEWERS, AND THE MINIMUM PIPE CLEARANCE IS 2' OR GREATER, BUT LESS THAN 9', A CENTERED 20' OF CEMENT STABILIZED SAND BACKFILL (2 SACKS OF CEMENT PER CUBIC YARD OF SAND) STARTING AT A POINT 1/4 OF THE PIPE DIAMETER ABOVE THE BOTTOM OF SANITARY SEWER TO 1-FOOT ABOVE THE TOP OF SANITARY SEWER, OR ONE SANITARY DIAMETER, WHICHEVER IS LARGER. CENTER ONE JOINT OF SANITARY SEWER PIPE ABOUT THE WATER MAIN.
10. ALL P.V.C. WATER MAINS SHALL BE F C-900, DR 18, CLASS 150.
11. ALL WATER METERS MUST HAVE INDIVIDUAL SERVICE LEADS AS PER CITY OF HOUSTON STANDARDS. W.D.-6 (EFFECTIVE 6-28-87).

GENERAL NOTES FOR WATER MAIN PROJECTS IN THE CITY'S ETJ

1. Water main/meter construction shall be in accordance with City of Houston Specifications for Water Main Construction and Materials and Specifications for Water Taps and Service Lines, 3/4" through 2", and for Large Meter and Sprinkler Connections with latest addenda and amendments thereto.
2. All A.C. water mains used in this project ranging in size from 6 inches thru 16 inches shall be AWWA C-400-80 class 200 or latest revision with maximum pipe length of 6 feet 6 inches.
3. All water mains under street pavement - 4 inches thru 12 inches in diameter, if not specified otherwise, shall be AWWA C-900 PVC pipe.
4. All water meters sized from 3/4" to 2" must have individual service leads and meter boxes as per City of Houston Specification for Water Taps and Service Lines, 3/4" through 2", and for Large Meter and Sprinkler Connections with latest addenda and amendments thereto.
5. All water meters sized 3" or larger shall have approved plan and profile drawings to be installed in a 10' x 20' Water Meter Easement adjacent to public street R.O.W. as per City of Houston Specifications for Water Taps and Service Lines, 3/4" through 2", and for Large Meter and Sprinkler Connections with latest addenda and amendments thereto.
6. All fire lines (loop) shall have approved plan and profile drawings to be installed in a 10' Water Line Easement inside private property as per City of Houston Specification for Water Taps and Service Lines, 3/4" through 2", and for Large Meter and Sprinkler Connections with latest addenda and amendments thereto.
7. Contractor shall provide adequate thrust blocking to withstand test pressure specified in Specification for Water Main Construction and Materials with latest addenda and amendments thereto.

GENERAL NOTES - PAVING

1. PAVING SHALL BE IN ACCORDANCE WITH HARRIS COUNTY "RULES, REGULATIONS AND REQUIREMENTS RELATING TO THE APPROVAL AND ACCEPTANCE OF IMPROVEMENTS IN SUBDIVISIONS OR RE-SUBDIVISIONS" AND THE LATEST REVISIONS AND/OR AMENDMENTS OF SAME.
2. GUIDELINES SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES SHALL BE OBSERVED.
3. ALL RADI AT CURB RETURNS TO BE 25.0' TO BACK OF CURB UNLESS OTHERWISE NOTED.
4. THE CONTRACTOR SHALL NOTIFY HARRIS COUNTY ENGINEERING DEPARTMENT 24 HOURS IN ADVANCE OF COMMENCING CONSTRUCTION, (713-755-8210), AND WRITTEN NOTIFICATION 48 HOURS IN ADVANCE.
5. STOP SIGN (R1 - 1A) TO BE PLACED AT ALL INTERSECTIONS.
6. OWNER TO OBTAIN ALL PERMITS REQUIRED BY HARRIS COUNTY FOR CONSTRUCTION OF UTILITIES AND/OR CULVERTS WITHIN COUNTY ROAD R.O.W.
7. CONTRACTOR TO OBTAIN ALL PERMITS REQUIRED BY REGULATION OF HARRIS COUNTY, TEXAS FOR FLOOD PLAIN MANAGEMENT. PRIOR TO STARTING CONSTRUCTION.
8. OWNER TO OBTAIN ALL PERMITS REQUIRED BY HARRIS COUNTY, TEXAS PRIOR TO STARTING CONSTRUCTION OF UTILITY AND/OR CULVERTS WITHIN COUNTY ROAD RIGHTS OF WAY.

NOTE:  
FORMAL "NOTIFICATION" APPROVED BY COMMISSIONERS COURT REQUIRED PRIOR TO CONSTRUCTION OF UTILITIES WITHIN HARRIS COUNTY R.O.W. CONTACT HARRIS COUNTY PERMIT OFFICE AT 958-3000. CONSTRUCTION TO BE IN ACCORDANCE WITH SPECIFICATIONS DETAILED IN THE APPLICABLE HARRIS COUNTY COMMISSIONERS COURT ORDER.

PRIVATE UTILITY COMPANY NOTES

Houston Lighting and Power Company

Overhead lines may exist on the property. We have not attempted to mark those lines 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 six (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 HL&P at 228-7400.

Entex

Location of Entex main lines (to include United Gas Transmission, and/or Industrial Gas Supply Corporation where applicable) are shown in an approximate location only. Service lines are usually not shown. The contractor shall contact the Utility Coordinating Committee at 223-4567 or 1-800-669-8344 a minimum of 48 hours prior to construction to have main and service lines field located. The contractor shall determine the exact location before commencing work and agree to be fully responsible for any damages caused by his failure to exactly locate and preserve these underground facilities.

Southwestern Bell Telephone Company

The locations of Southwestern Bell Telephone Co. utilities are shown in an approximate way only. The contractor shall determine the exact location before commencing work. He agrees to be fully responsible for any and all damages which might be occasioned by his failure to exactly locate and preserve these underground utilities.

Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN

*Calish A. Walswell* 6/13/96  
ENTEX, INC.

*Sp. J. J.* 6-18-96  
SOUTHWESTERN BELL TELEPHONE CO.  
Valid for One Year Only

*James J.* 10-16-95  
HOUSTON LIGHTING & POWER CO.  
Approved Only for Crossing Underground  
Ductlines Unless Noted. Valid at Time of Review Only.

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

SECTION APPROVALS

<i>W. A. D. A. 6-18-96</i> WATER DESIGN	TRAFFIC AND SIGNAL DESIGN
<i>M. L. G. 5-21-96</i> WASTEWATER DESIGN	STREET, BRIDGE AND RIGHT-OF-WAY DESIGN
STORM SEWER DESIGN	CONSTRUCTION

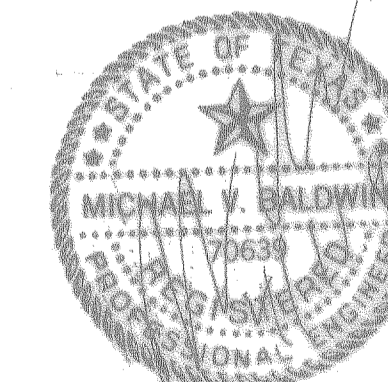
OTHER DEPARTMENTS

<i>W. A. D. A. 5-22-96</i> PLANNING AND DEVELOPMENT	SPONSOR DEPARTMENT
<i>John C. ...</i> CITY ENGINEER	DATE 5/20/96
<i>Jim ...</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING	DATE 5/20/96

SUBMITTED: _____	DESIGNED BY: TIM
SCALE: _____	DRAWN BY: TIM
DATE: MARCH 1996	SHEET NO. 5 OF 16 SHEETS
SURVEY BY: _____	CITY DWG. NO. _____
JOB NO: 430-U	NOTED/DWG _____

H.C.M.U.D. NO. 191

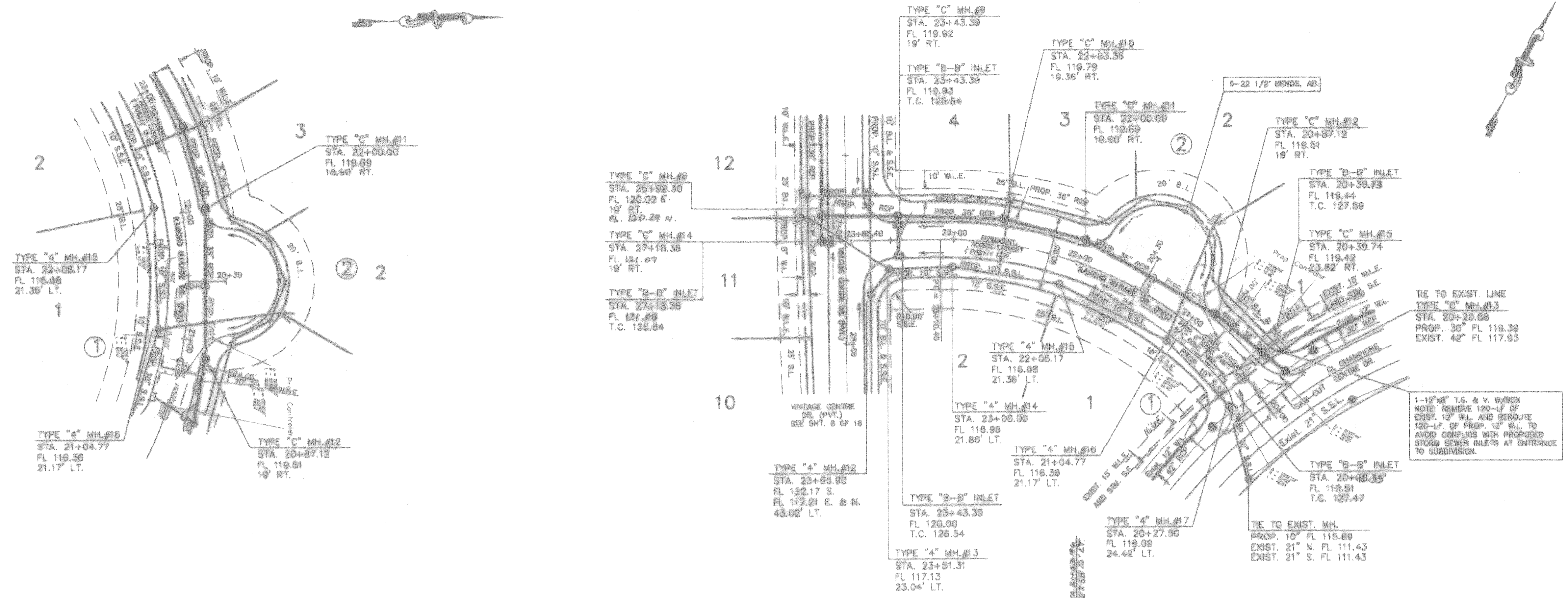
**NOTES**



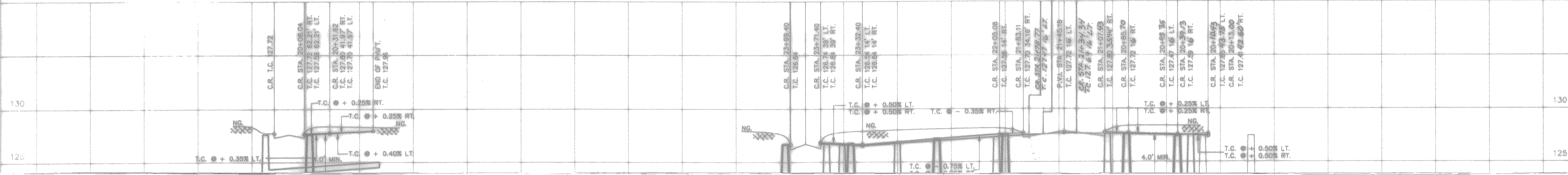
**PEI** PROVIDENT ENGINEERS, INC.  
12200 N.W. FRWY, Suite 210  
Houston, Texas 77062

BENCH MARK

BENCH MARK: NGS STAMPED Y1216 1-7"  
BRASS DISK AT CENTERLINE OF H.L.&P. TOWER  
1ST TOWER NORTH OF F.M. 1960  
ELEVATION 125.99 1973 ADJ.



RANCHO MIRAGE DR. (FVt.)



APPROVED: *Robert A. Call*  
for County Engineer  
6-12-96  
Date

Water & Sanitary Sewer Lines Approved as to Location Only  
The Above Authorization is Valid for 1 Year Only

Rev.	Date	Description	App.
8-6-96		ADD GATED ENTRANCE	

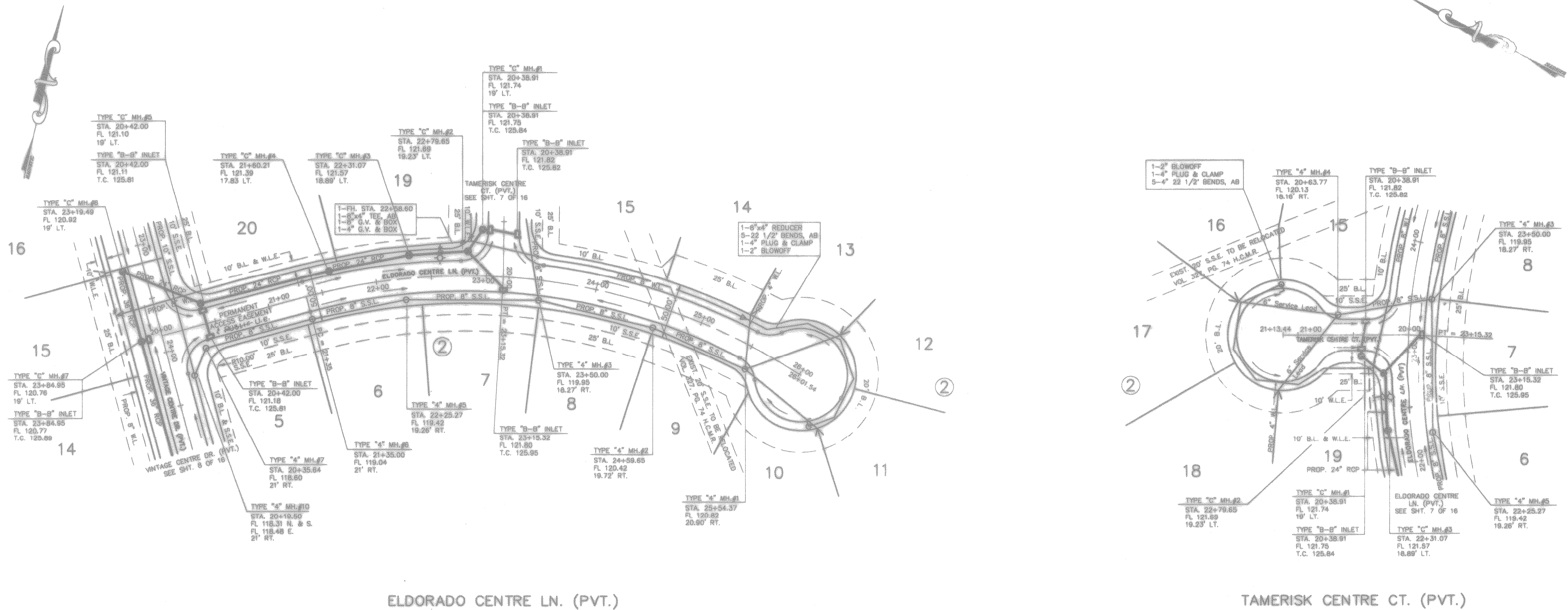
PRIVATE UTILITY LINES SHOWN  
*Calvin A. Waterwall* 6/18/96  
 SOUTHWESTERN BELL TELEPHONE CO.  
 Valid for One Year Only  
*Thomas J. [Signature]* 6-18-96  
 HOUSTON LIGHTING & POWER CO.  
 Approval Only for Crossing Underground  
 Ductlines Unless Noted. Valid at Time of Review Only.

CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
 ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

SECTION APPROVALS  
 WATER DESIGN: *Mike Wade* 9-10-96  
 TRAFFIC AND SIGNAL DESIGN: *Holden [Signature]* 9-10-96

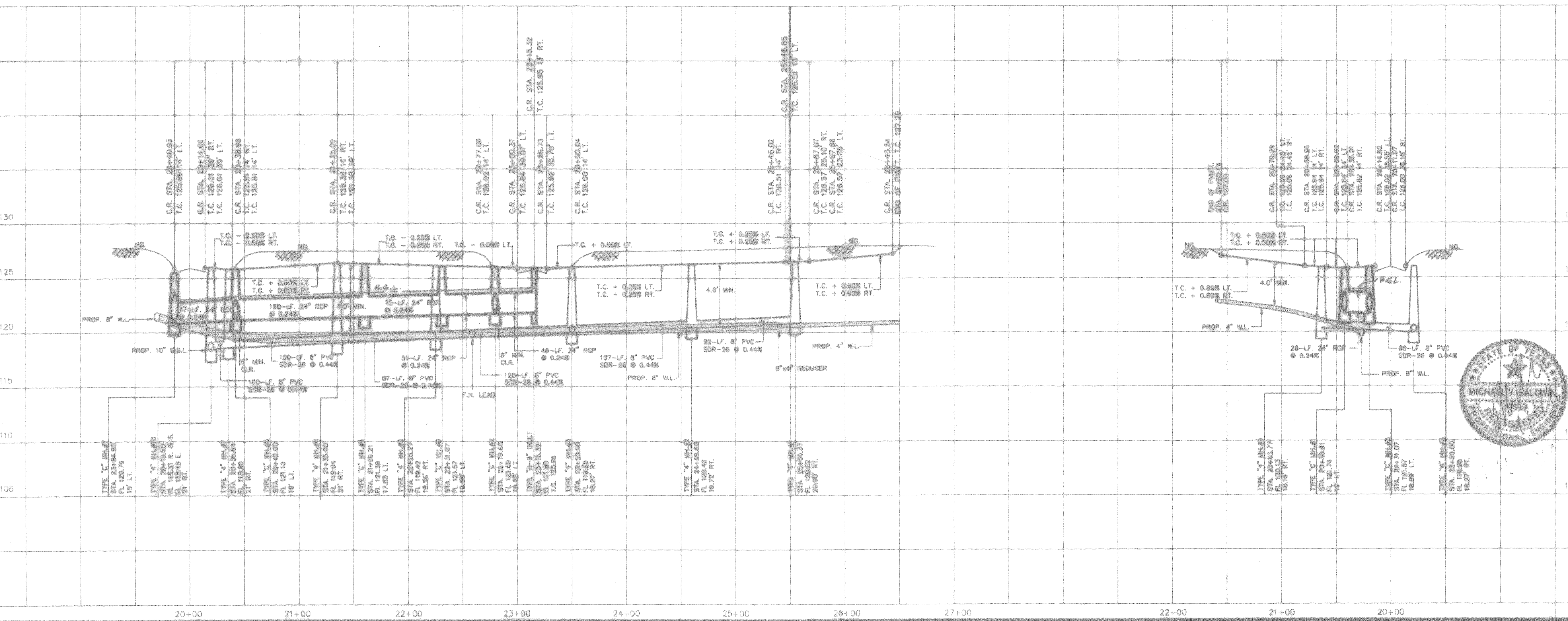
BENCH MARK

BENCH MARK: NGS STAMPED Y1216 1973  
BRASS DISK AT CENTERLINE OF H.L.A.P. TOWER  
1ST TOWER NORTH OF F.M. 1980  
ELEVATION 125.98 1973 ADJ.



ELDORADO CENTRE LN. (PVT.)

TAMERISK CENTRE CT. (PVT.)



Rev.	Date	Description	App.

**PRIVATE UTILITY LINES SHOWN**  
*Colin A. Waterwall* 6/18/96  
 ENTEX, INC.  
 6-15-96

SOUTHWESTERN BELL TELEPHONE CO.  
 Valid for One Year Only  
*John R. [Signature]* 10-16-95

HOUSTON LIGHTING & POWER CO.  
 Approval Only for Crossing Underground  
 Disturbance Unless Noted. Valid at Time of Review Only.

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

**SECTION APPROVALS**

<i>M. [Signature]</i> 9-10-96 WATER DESIGN	<i>[Signature]</i> 5/20/96 TRAFFIC AND SIGNAL DESIGN
<i>[Signature]</i> 3/20/96 WASTEWATER DESIGN	<i>[Signature]</i> 5/20/96 STREET, BRIDGE AND RIGHT-OF-WAY DESIGN
<i>M. [Signature]</i> 5/20/96 STORM SEWER DESIGN	<i>[Signature]</i> CONSTRUCTION

**OTHER DEPARTMENTS**

*[Signature]* 5-20-96  
PLANNING AND DEVELOPMENT

*[Signature]*  
CITY ENGINEER

*[Signature]*  
DIRECTOR OF PUBLIC WORKS AND ENGINEERING

DATE: 5/20/96

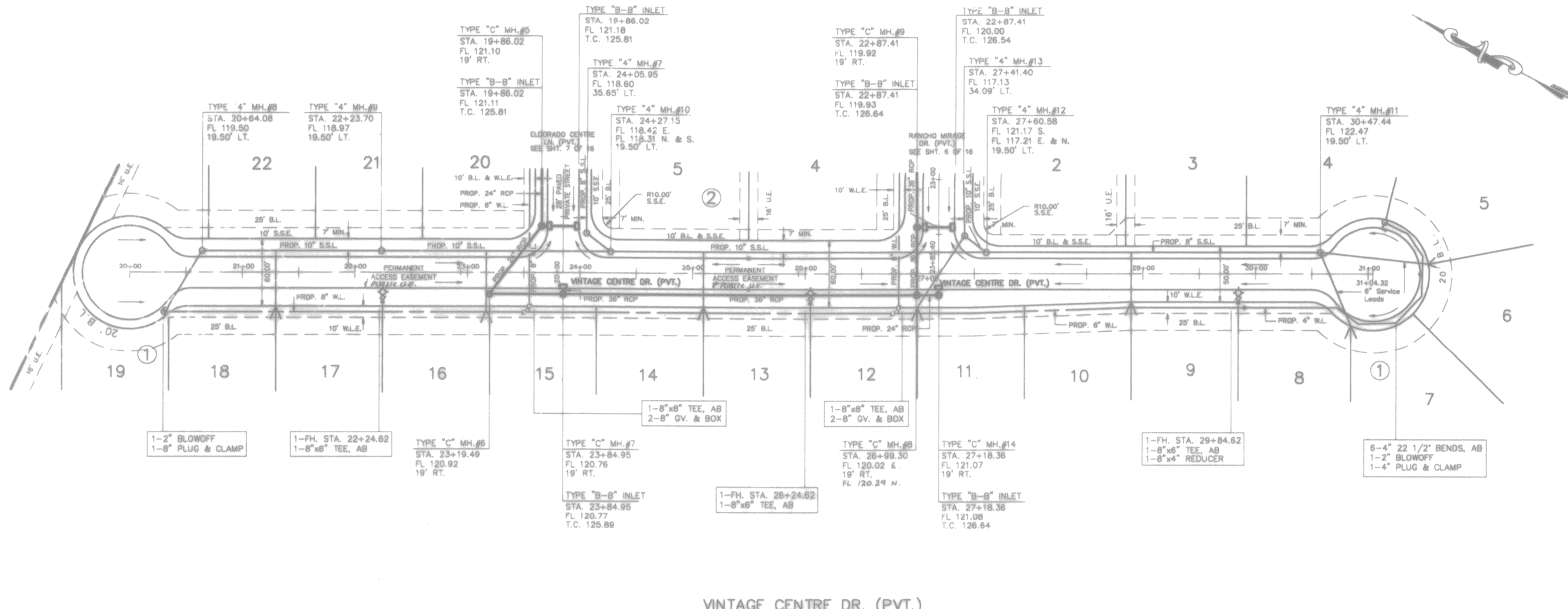
DATE: 5/20/96

SUBMITTED: VI " = 5"  
 SCALE: H. " = 50"  
 DATE: MARCH 1996  
 SURVEY BY: [Signature]  
 JOB NO.: 420-J

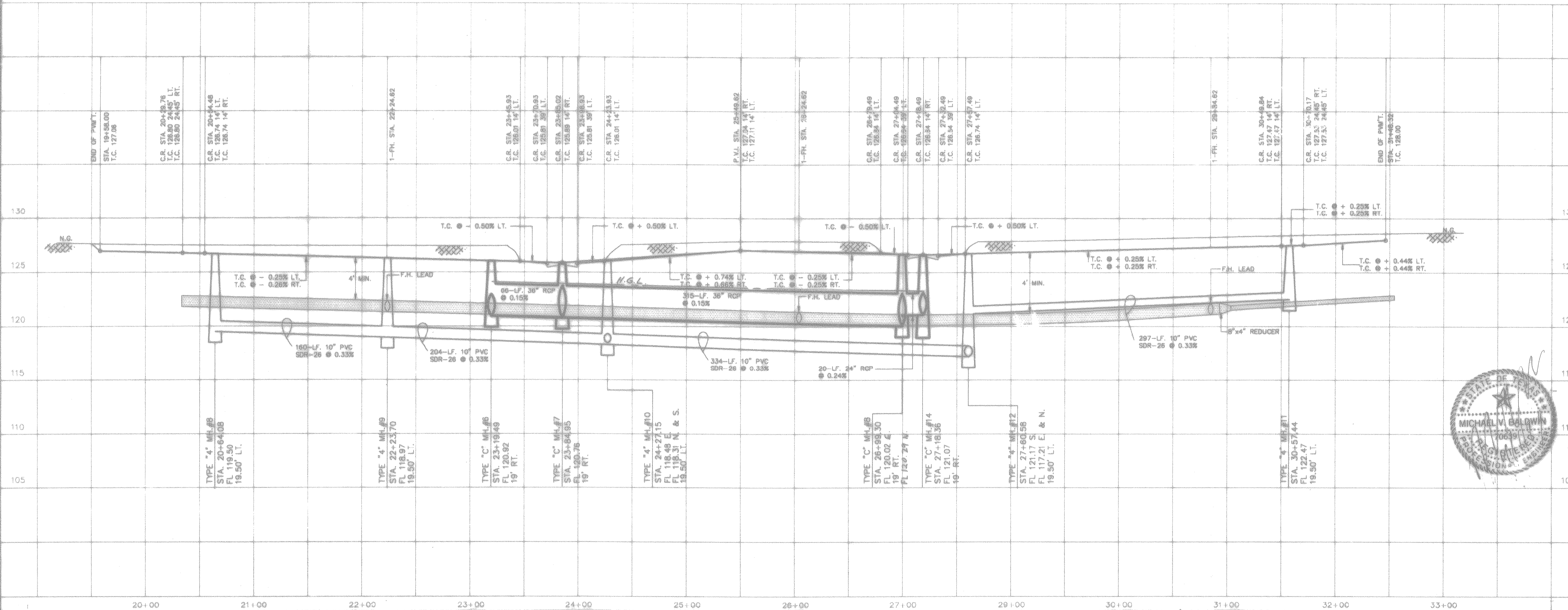
DESIGNED BY: TIM  
 DRAWN BY: TIM  
 SHEET NO. 7 OF 16 SHEETS  
 CITY OF HOUSTON  
 DORADO.DWG  
 DWG. NO.

**H.C.M.U.D. NO. 191**  
**PLAN & PROFILE**  
**TAMERISK CENTRE CT. &**  
**ELDORADO CENTRE LN.**

**PEI** PROVIDENT ENGINEERS, INC.  
 12200 N.W. FRWY, Suite 210  
 Houston, Texas 77092



VINTAGE CENTRE DR. (PVT.)



BENCH MARK

BENCH MARK: NGS STAMPED 14216 1973  
BRASS DISK AT CENTERLINE OF H.L.&P. TOWER  
1ST TOWER NORTH OF F.M. 1960  
ELEVATION 125.99' 1973 ADJ.

Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN  
*Robert A. Watwood* 4/18/96  
 ENTEK, INC.  
 SOUTHWESTERN BELL TELEPHONE CO.  
 Valid for One Year Only  
 6-18-96  
 HOUSTON LIGHTING & POWER CO.  
 Approved Only for Crossing Underground  
 Ductlines Unless Noted. Valid at Time of Review Only.  
 10-16-95

CITY OF HOUSTON  
 DEPARTMENT OF PUBLIC WORKS & ENGINEERING  
 ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

SECTION APPROVALS

WATER DESIGN	TRAFFIC AND SIGNAL DESIGN
WASTEWATER DESIGN	STREET, BRIDGE AND RIGHT-OF-WAY DESIGN
STORM SEWER DESIGN	CONSTRUCTION

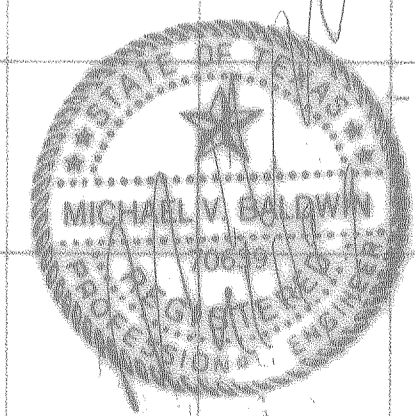
OTHER DEPARTMENTS

PLANNING AND DEVELOPMENT	SPONSOR DEPARTMENT
CITY ENGINEER	DATE 5/19/96
DIRECTOR OF PUBLIC WORKS AND ENGINEERING	DATE 5/29/96

SUBMITTED: W. 1" = 5'  
H. 1" = 50'  
SCALE: MARCH 1996  
DATE: SURVEY BY: JOB NO: 420-U  
DESIGNED BY: TIM  
DRAWN BY: TIM  
SHEET NO. 8 OF 16 SHEETS  
CITY VINTAGE.DWG  
DWG. NO.

H.C.M.U.D. NO. 191  
 PLAN & PROFILE  
 VINTAGE CENTRE DR.

PROVIDENT ENGINEERS, INC.  
 12200 N.W. FRWY, Suite 210  
 Houston, Texas 77092







**BENCH MARK**

BENCH MARK: NGS STAMPED Y1216 1973  
 BRASS DISK AT CENTERLINE OF H.L. 8th TOWER  
 137 FEET NORTH OF E.L. 1980  
 ELEVATION 125.99 ± 973 ASL

**LEGEND**

- Exist. Contours
- Exist. Storm Sewer Line & Manhole
- Exist. Inlet
- PROP. STORM SEWER LINE & MANHOLE
- PROP. INLET
- DRAINAGE AREA DIVIDE
- AREA AT INLET IN ACRES
- AREA CONTRIBUTION TO LINE IN ACRES
- STABILIZED CONSTRUCTION EXIT w/CONC. TRUCK WASHOUT SITE
- INLET PROTECTION LOCATION

Rev.	Date	Description	App.

**PRIVATE UTILITY LINES SHOWN**  
*Clayton A. Waterfall* 4/18/96  
 ENTEK, INC.  
*John H.* 6-18-96  
 SOUTHWESTERN BELL TELEPHONE CO.  
 Valid for One Year Only  
*John R.* 11-18-95  
 HOUSTON LIGHTING & POWER CO.  
 Approval Only for Crossing Underground  
 Ductlines Unless Noted. Valid at Time of Review Only.

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

**SECTION APPROVALS**

<i>Max J. 4-10-96</i> WATER DESIGN	<i>3/24/96</i> TRAFFIC AND SIGNAL DESIGN
<i>W. J. 5-21-96</i> WASTEWATER DESIGN	<i>5/10/96</i> STREET, BRIDGE AND RIGHT-OF-WAY DESIGN
<i>M. J. 5-21-96</i> STORM SEWER DESIGN	<i>5/10/96</i> CONSTRUCTION

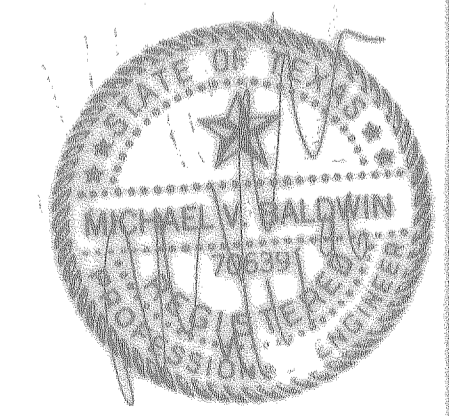
**OTHER DEPARTMENTS**  
*Phelps 5-24-96*  
 PLANNING AND DEVELOPMENT SPONSOR DEPARTMENT

*John C. 5/10/96*  
 CITY ENGINEER DATE  
*Jim J. 5/10/96*  
 DIRECTOR OF PUBLIC WORKS AND ENGINEERING DATE

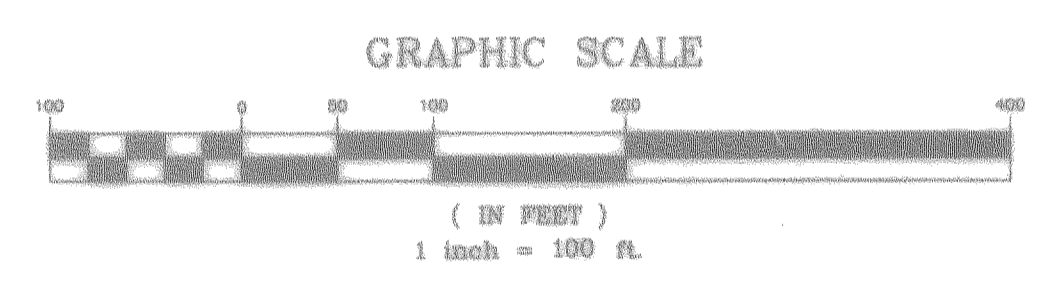
SUBMITTED: _____	DESIGNED BY: TIM
SCALE: 1" = 100'	DRAWN BY: TIM
DATE: MARCH 1998	SHEET NO. 9 OF 16 SHEETS
SURVEY BY: _____	CITY POLLUTE.DWG
JOB NO: 430-U	DWG. NO. _____

**H.C.M.U.D. NO. 191**

**OVERALL LAYOUT  
 POLLUTION CONTROL**



**PEI PROVIDENT ENGINEERS, INC.**  
 12200 N.W. FRWY, Suite 210  
 Houston, Texas 77092





**BENCH MARK**  
 BENCH MARK: NGS STAMPED Y1216 1973  
 BRASS DISK AT CENTERLINE OF H.L. & P. TOWER  
 137' TOWER NORTH OF E.M. 1960  
 ELEVATION 125.99 1973 ADJ.

- LEGEND**
- ① UNDERGROUND DISTRIBUTION CABLE
  - ② TERMINAL POLE
  - ③ STREET LIGHT ON STEEL STANDARD
  - ④ UNDERGROUND STREET LIGHT CABLE
  - Exist. Contours
  - Exist. Water Line
  - Exist. Gas Valve & Box
  - Exist. Flushing Valve
  - Exist. Plug & Blowoff
  - Exist. Sanitary Sewer Line
  - Exist. Storm Sewer Line & Manhole
  - Exist. Inlet
  - ⑤ R1-1 (5'-0" SIGN)
  - ⑥ SHEET REFERENCE
  - PROP. SANITARY SEWER LINE & MANHOLE
  - SOIL BORE LOCATION

Rev.	Date	Description	App.
1	8-6-96	ADD GATED ENTRANCE	
PRIVATE UTILITY LINES SHOWN			
EXTEX, INC.		6-18-96	
SOUTHWESTERN BELL TELEPHONE CO.		6-18-96	
HOUSTON LIGHTING & POWER CO.		10-16-95	

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

**SECTION APPROVALS**

WATER DESIGN	TRAFFIC AND SIGNAL DESIGN
WASTEWATER DESIGN	STREET, BRIDGE AND RIGHT-OF-WAY DESIGN
STORM SEWER DESIGN	CONSTRUCTION

**OTHER DEPARTMENTS**

PLANNING AND DEVELOPMENT

SPONSOR DEPARTMENT

CITY ENGINEER: *[Signature]* DATE: 5/20/96

DIRECTOR OF PUBLIC WORKS AND ENGINEERING: *[Signature]* DATE: 5/20/96

SUBMITTED: \_\_\_\_\_ DESIGNED BY: TM

SCALE: 1" = 100' DRAWN BY: TM

DATE: MARCH 1996 SHEET NO. OF 16 SHEETS

SURVEY BY: \_\_\_\_\_

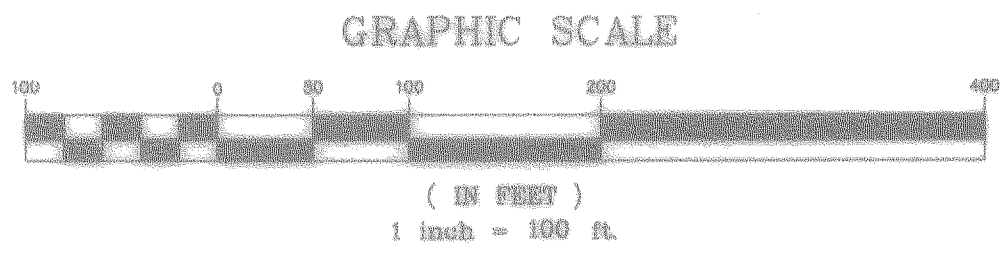
JOB NO: 430-U CITY SANFLOWING DWG. NO.

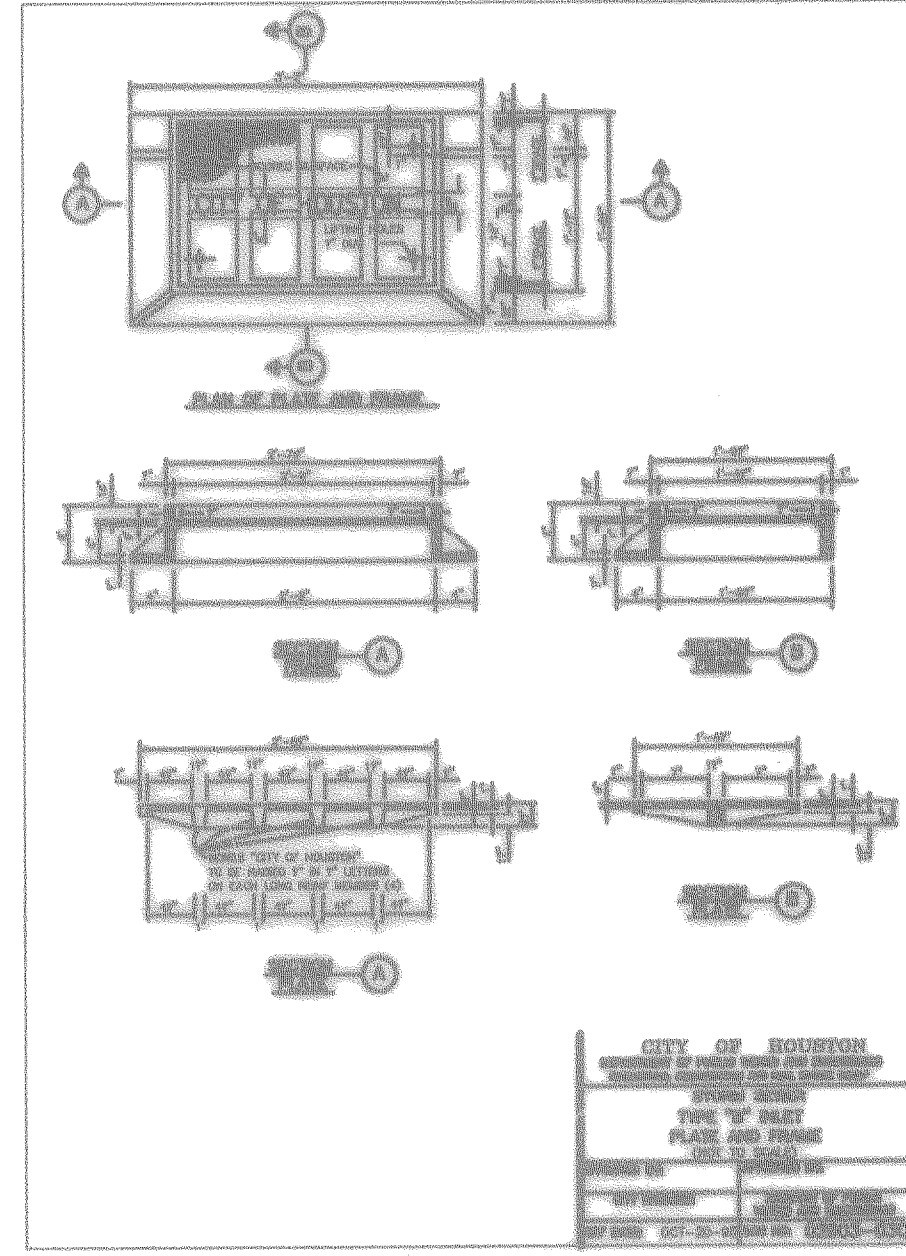
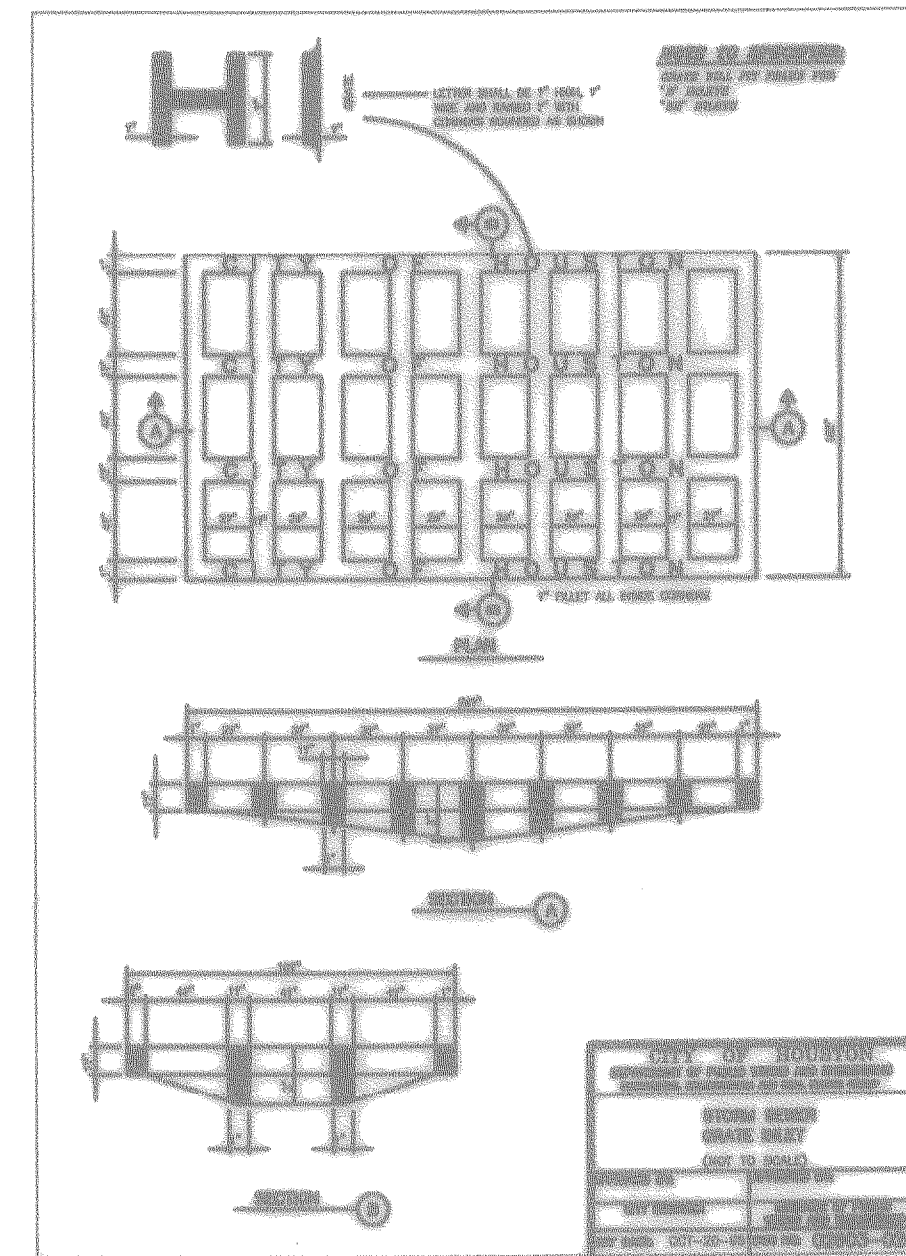
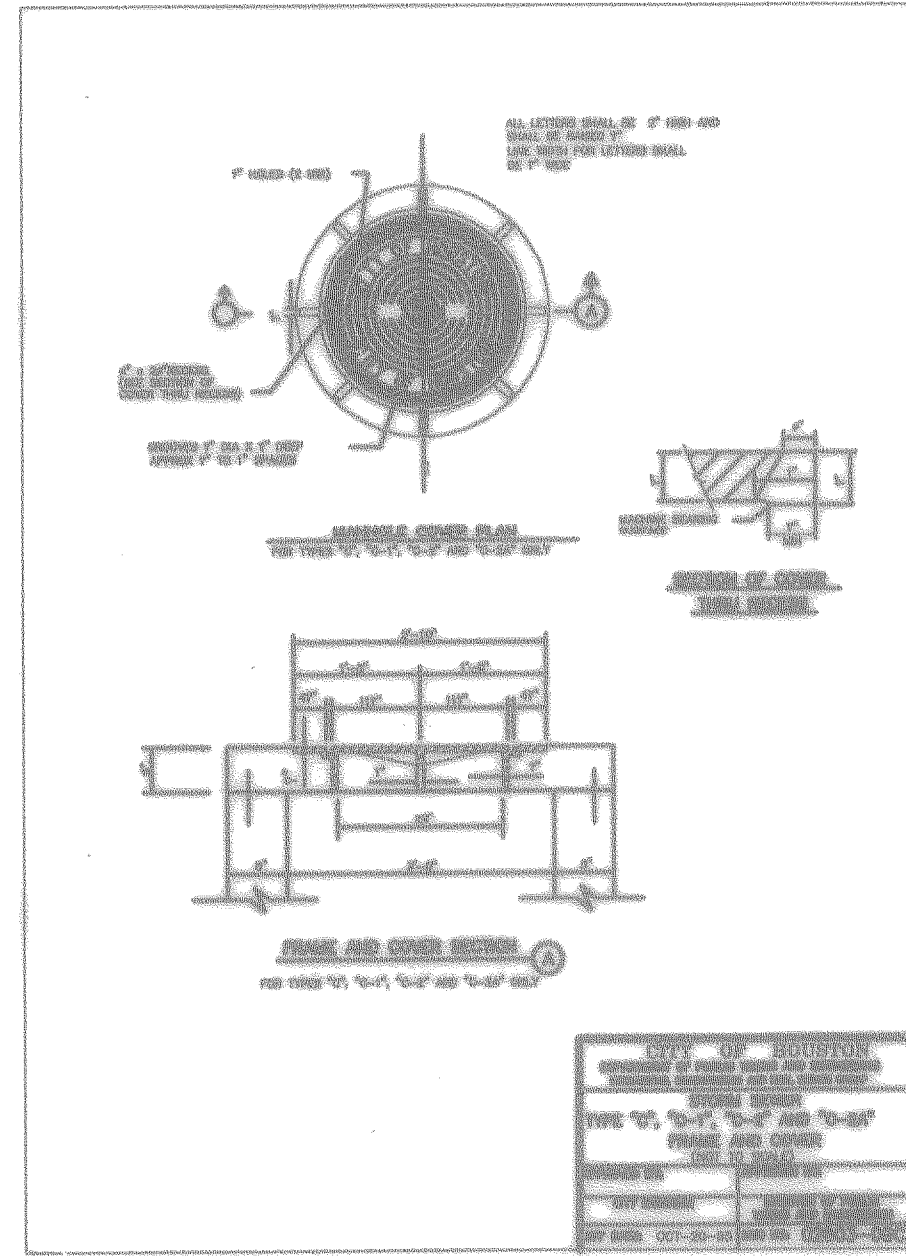
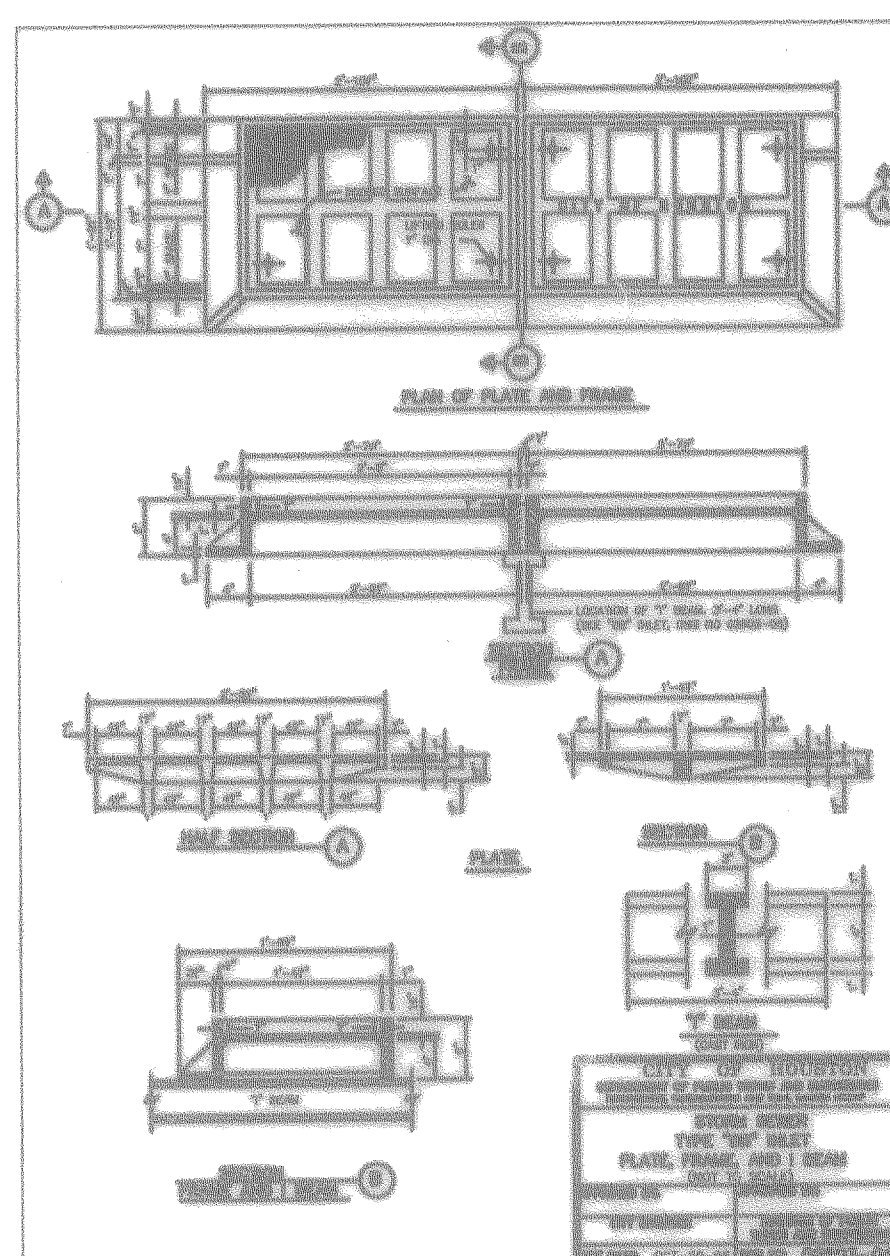
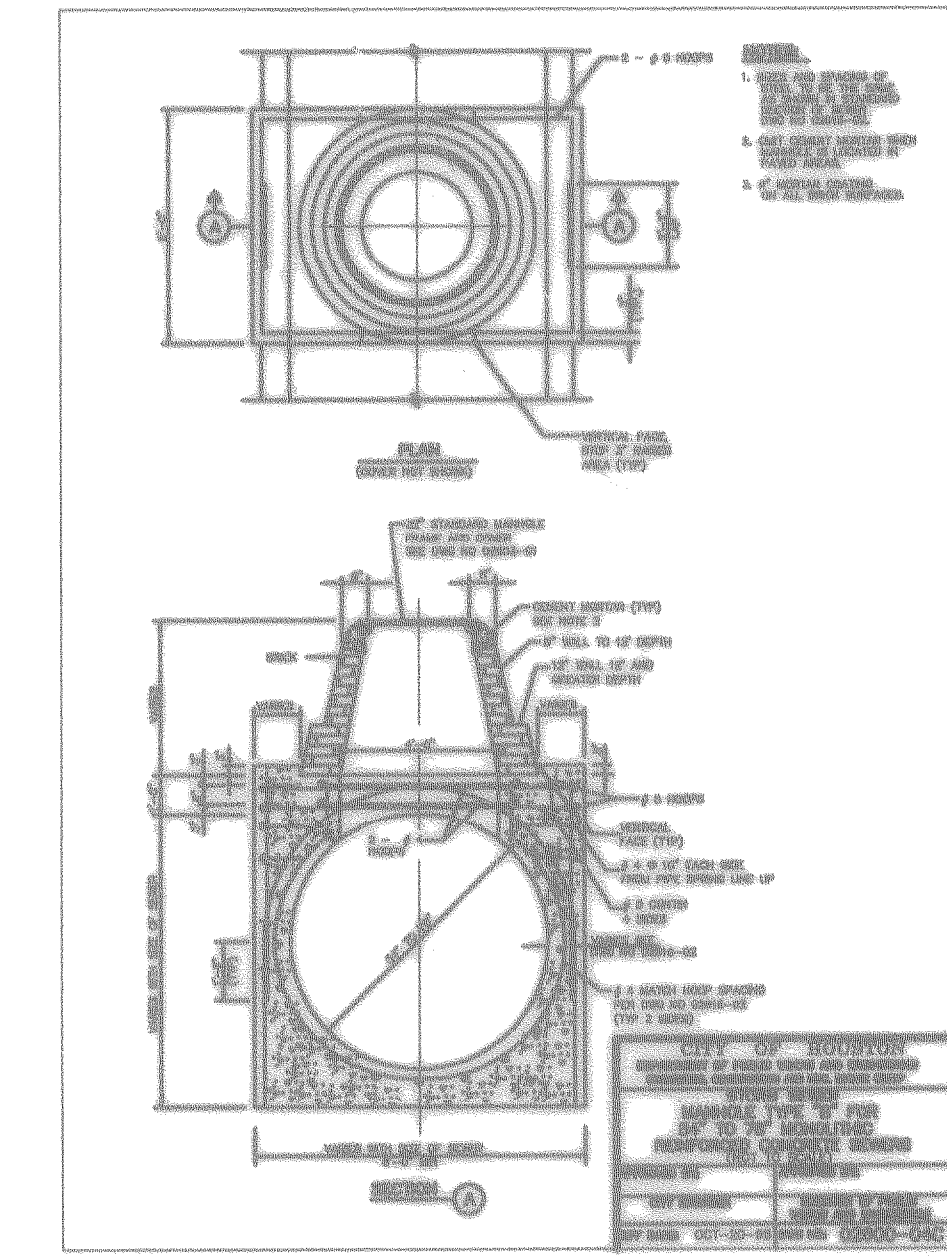
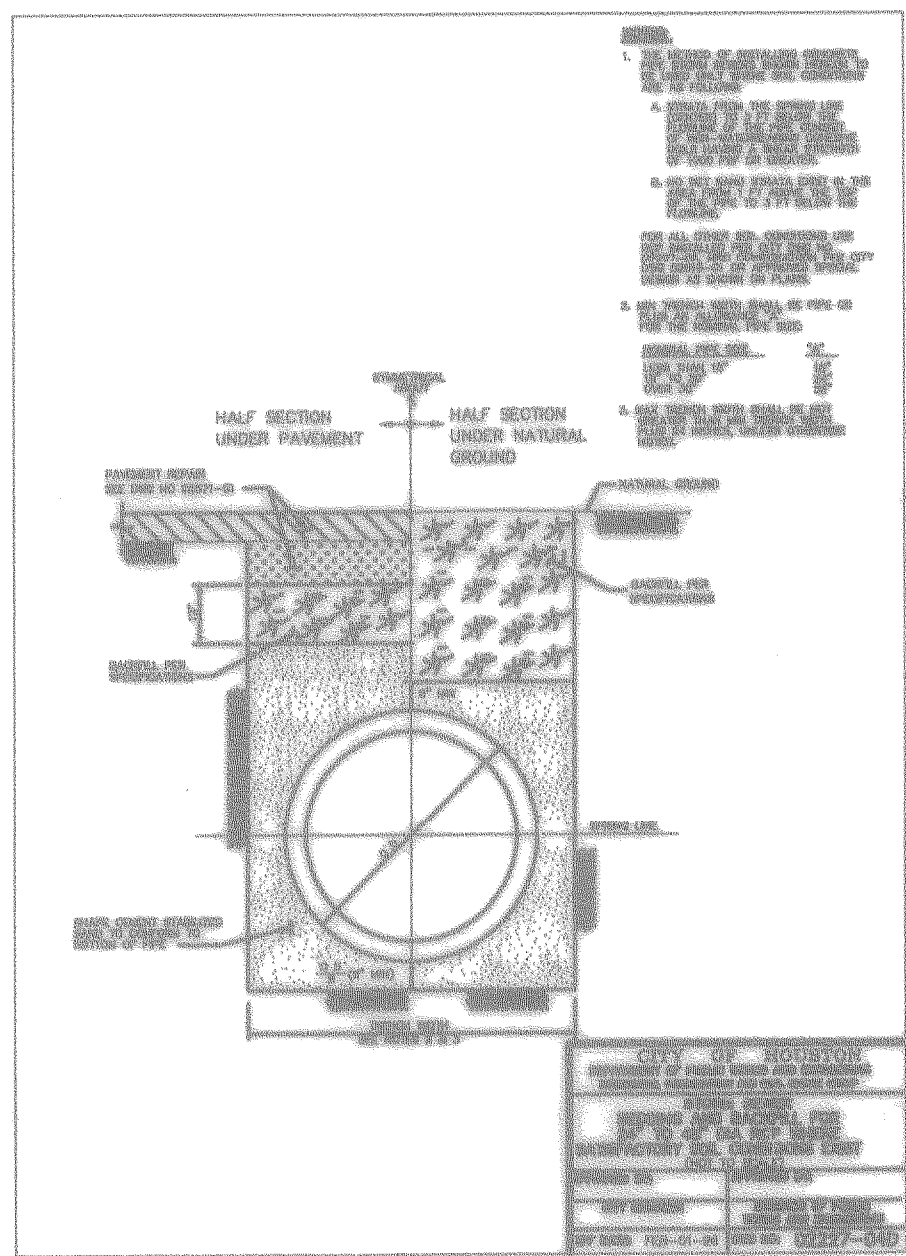
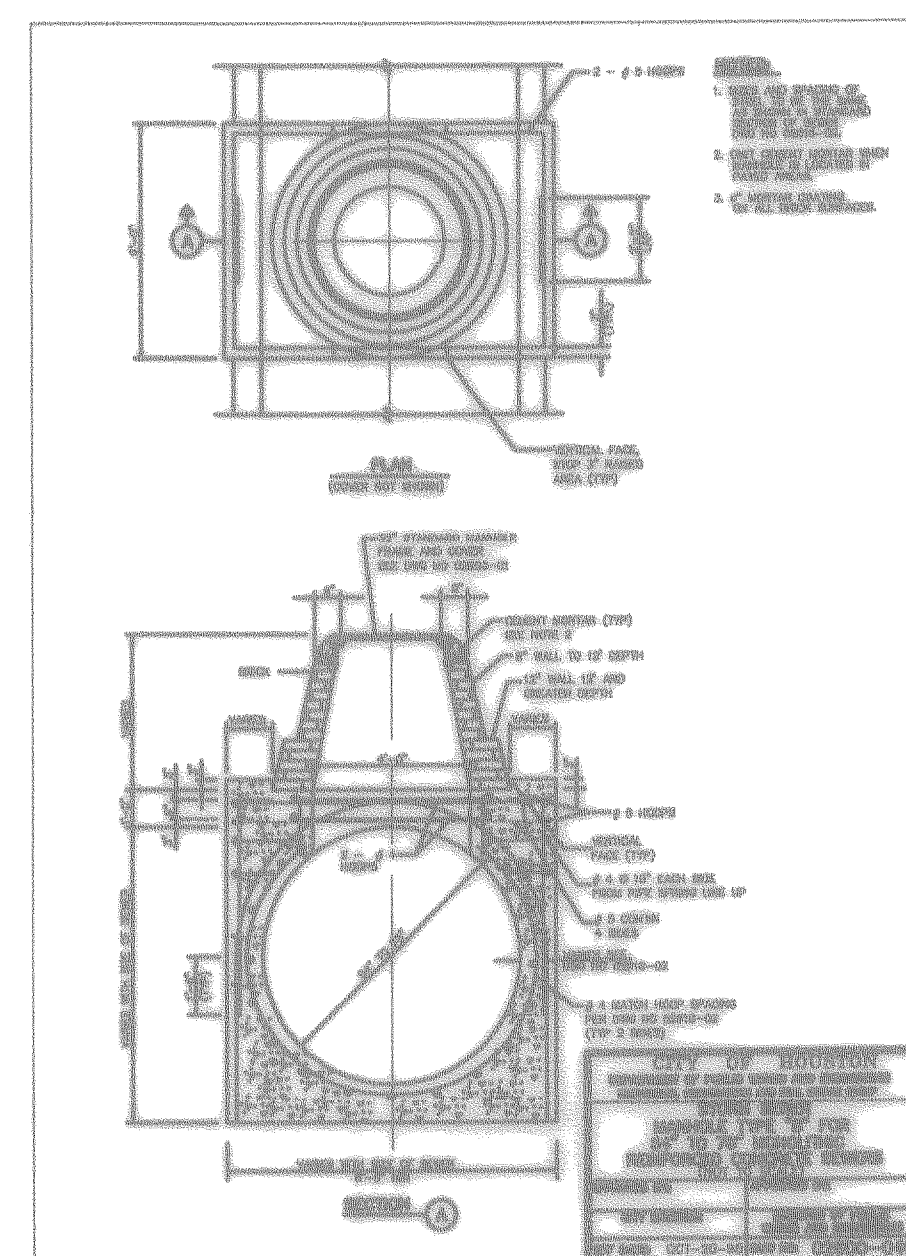
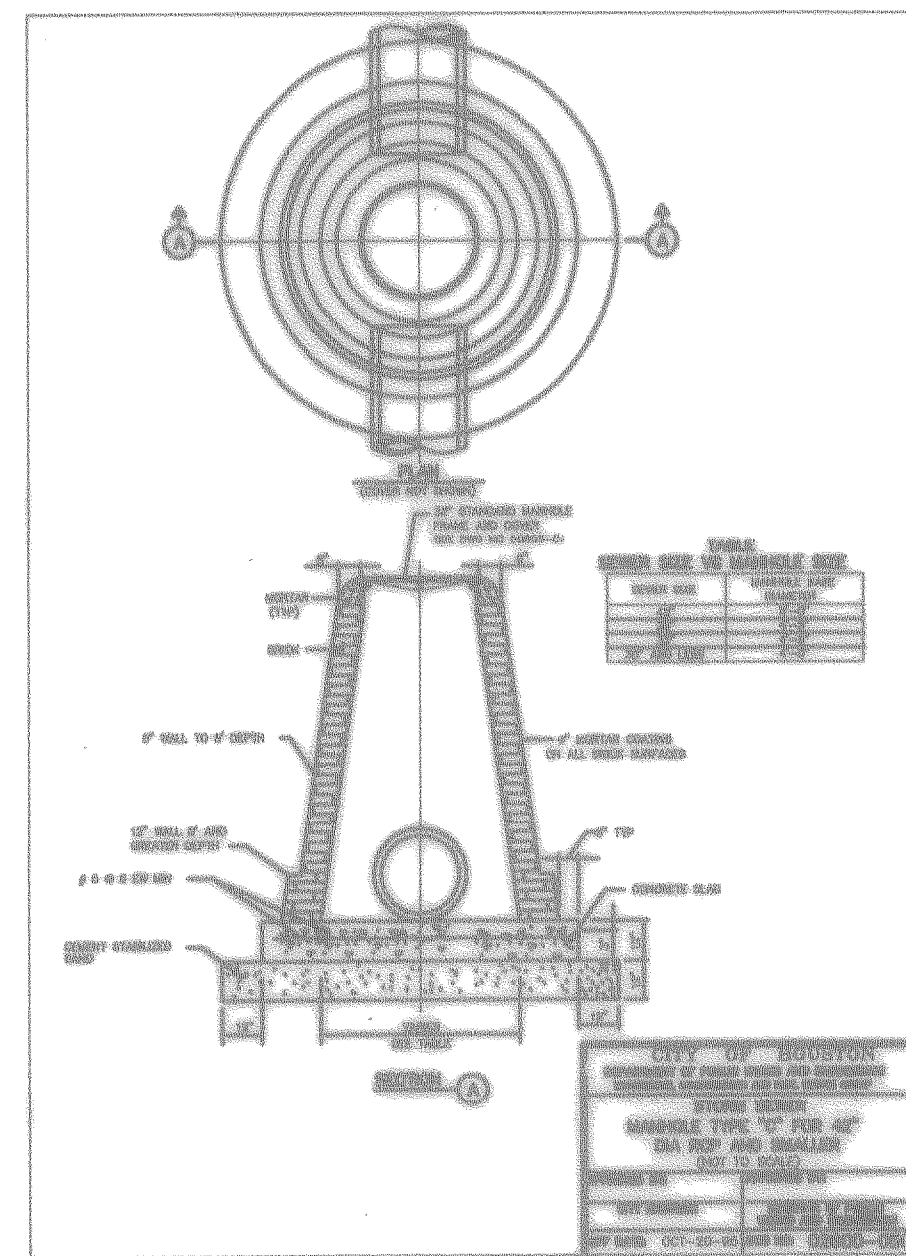
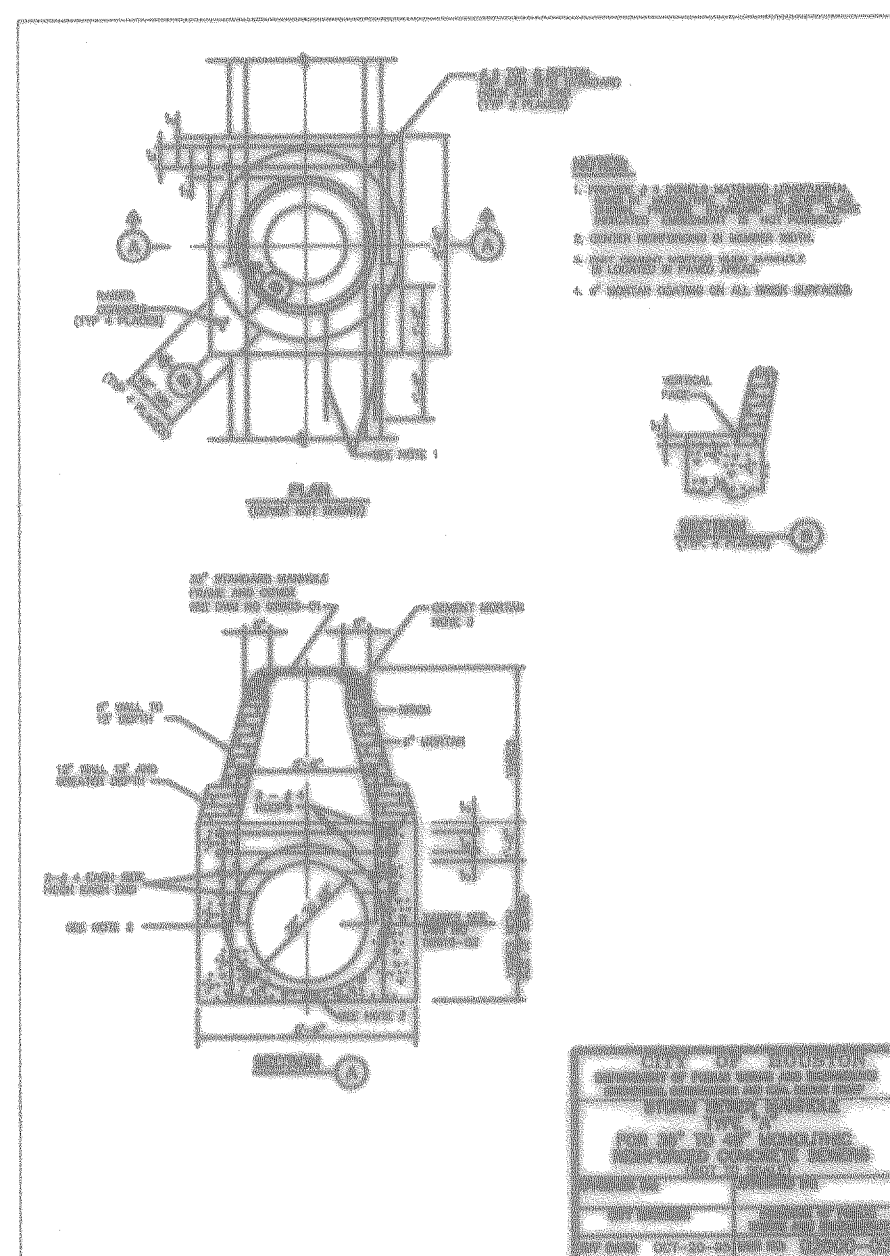
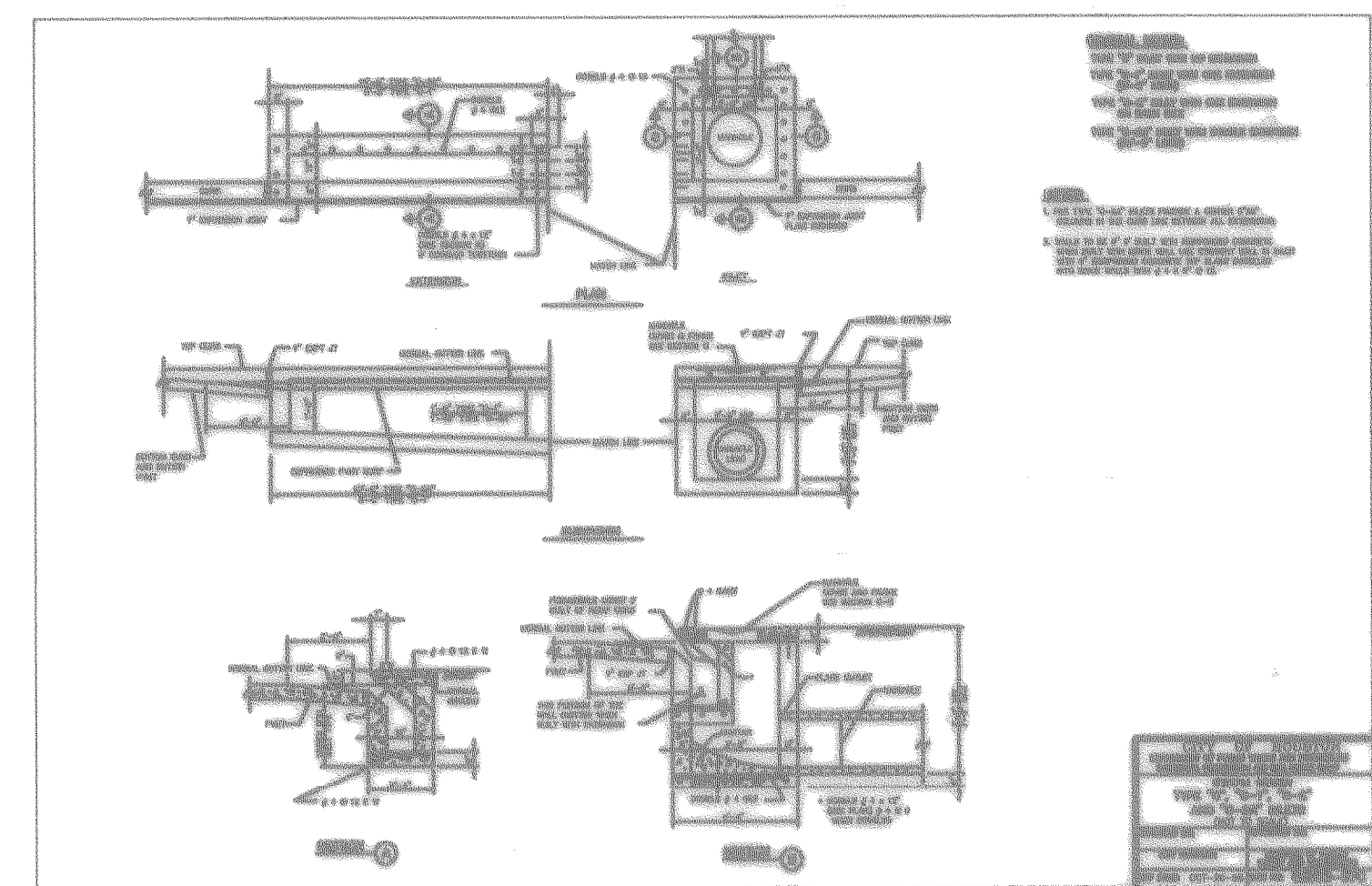
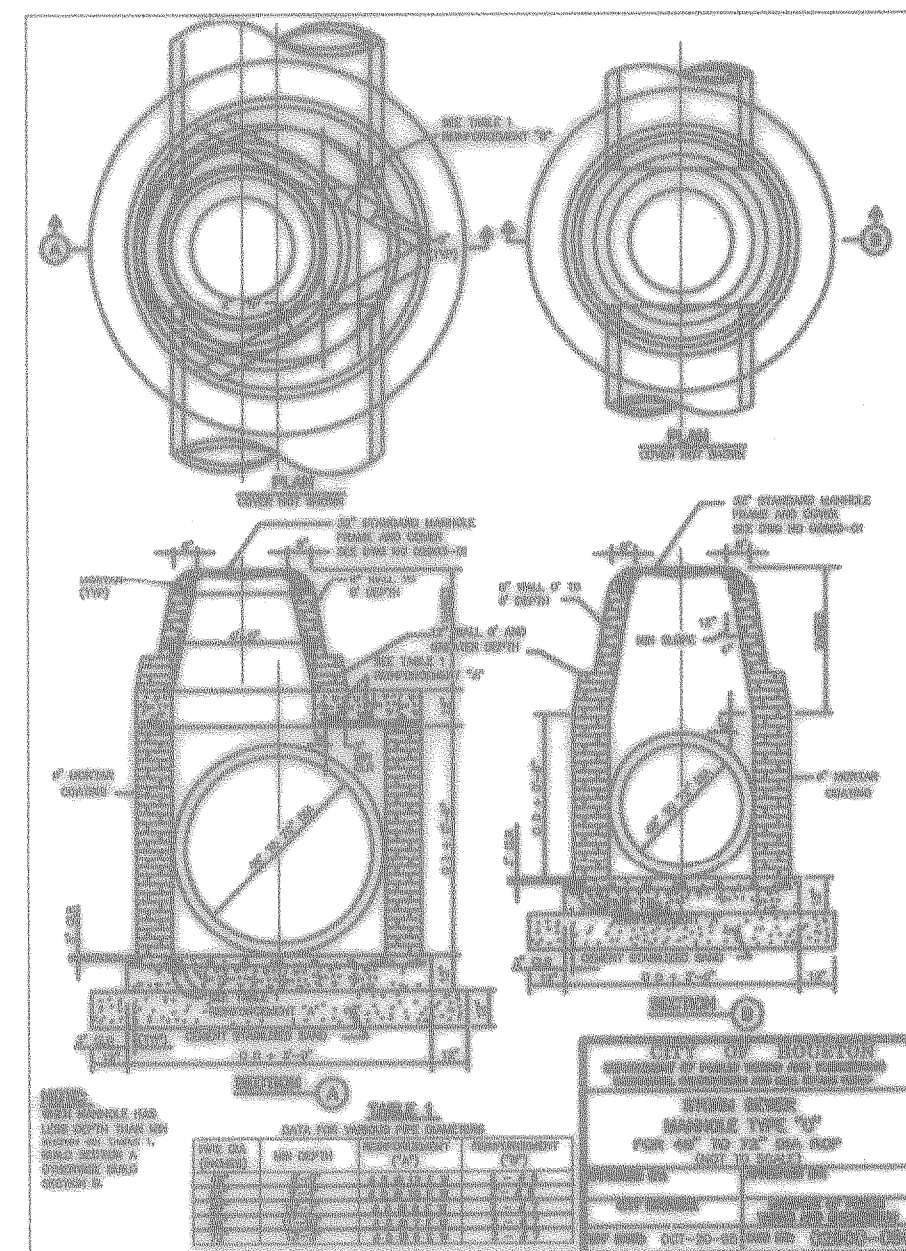
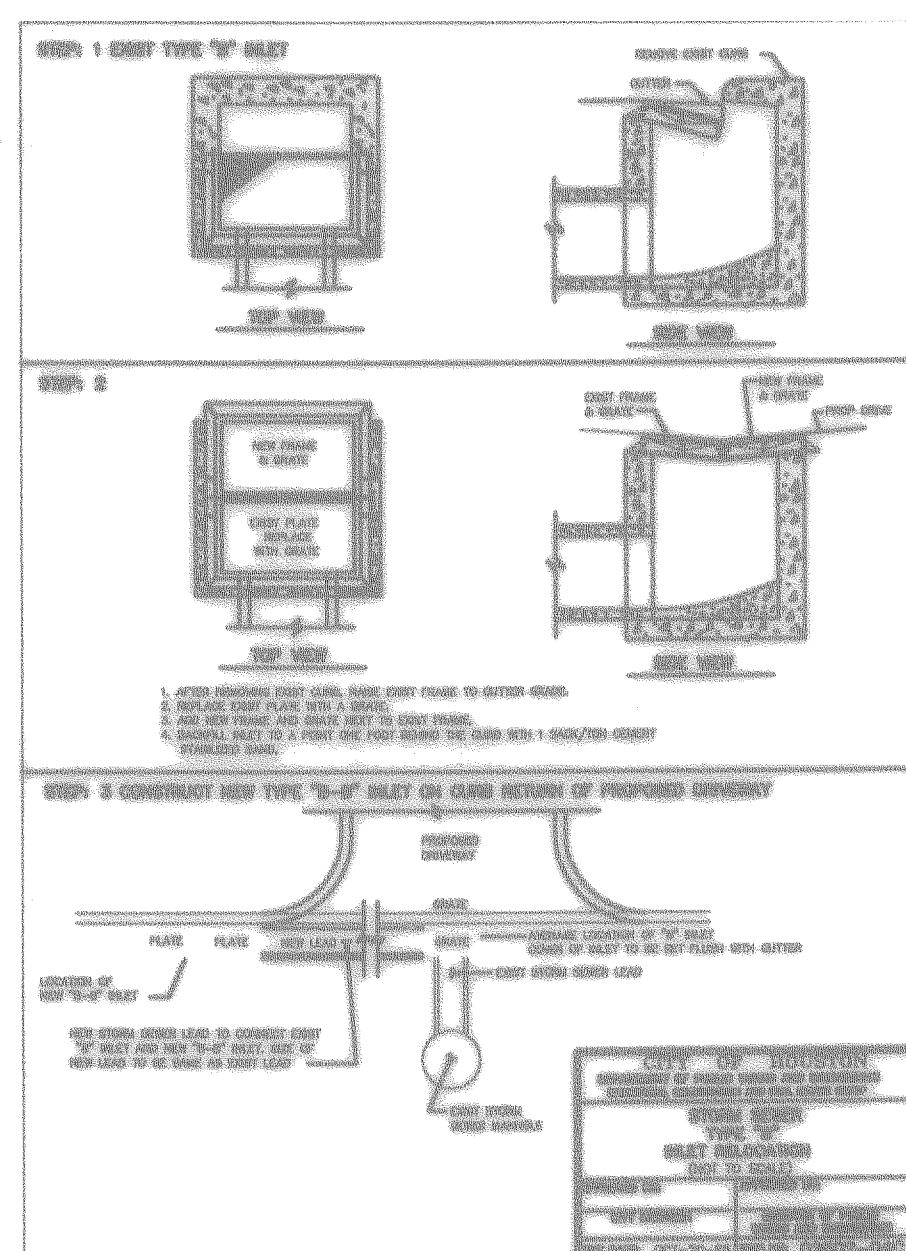
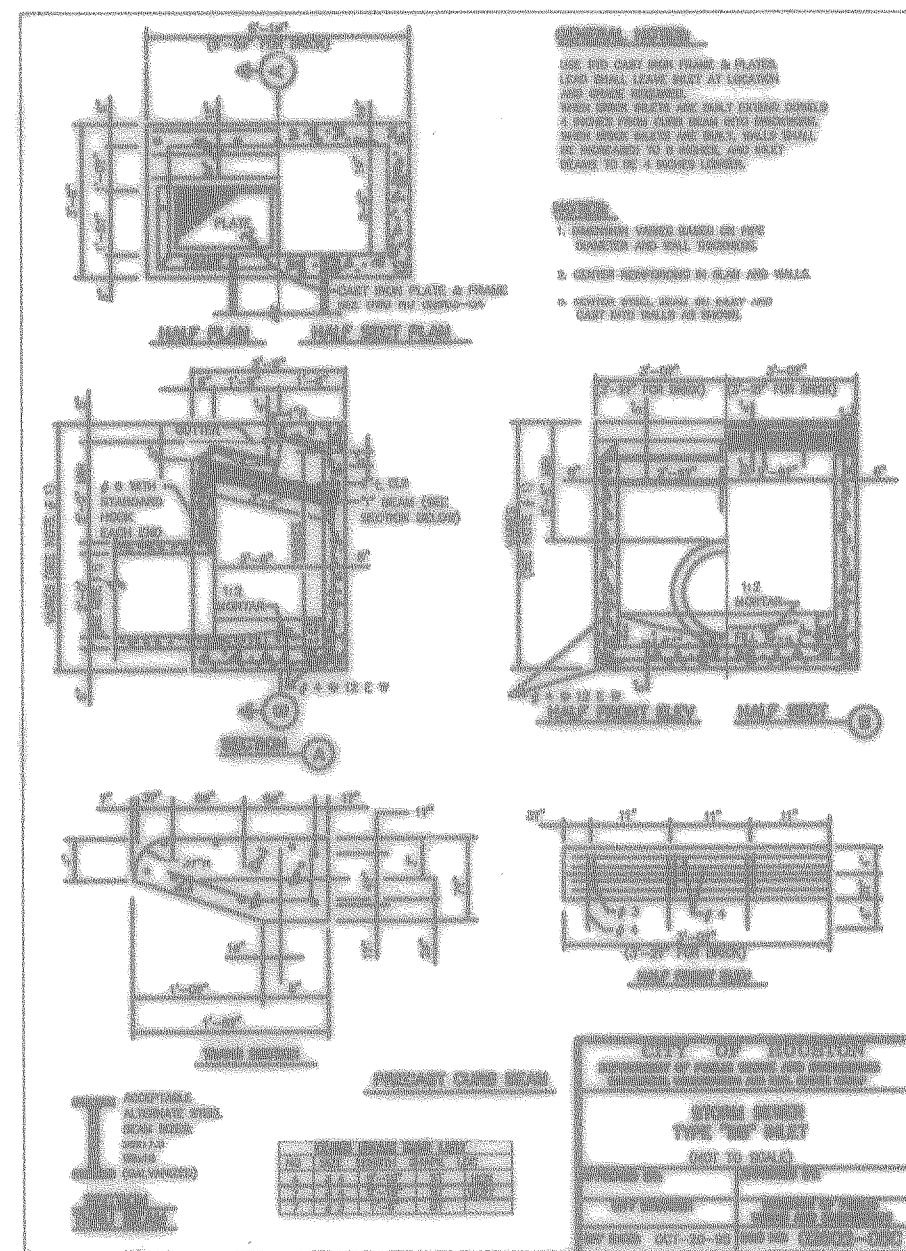
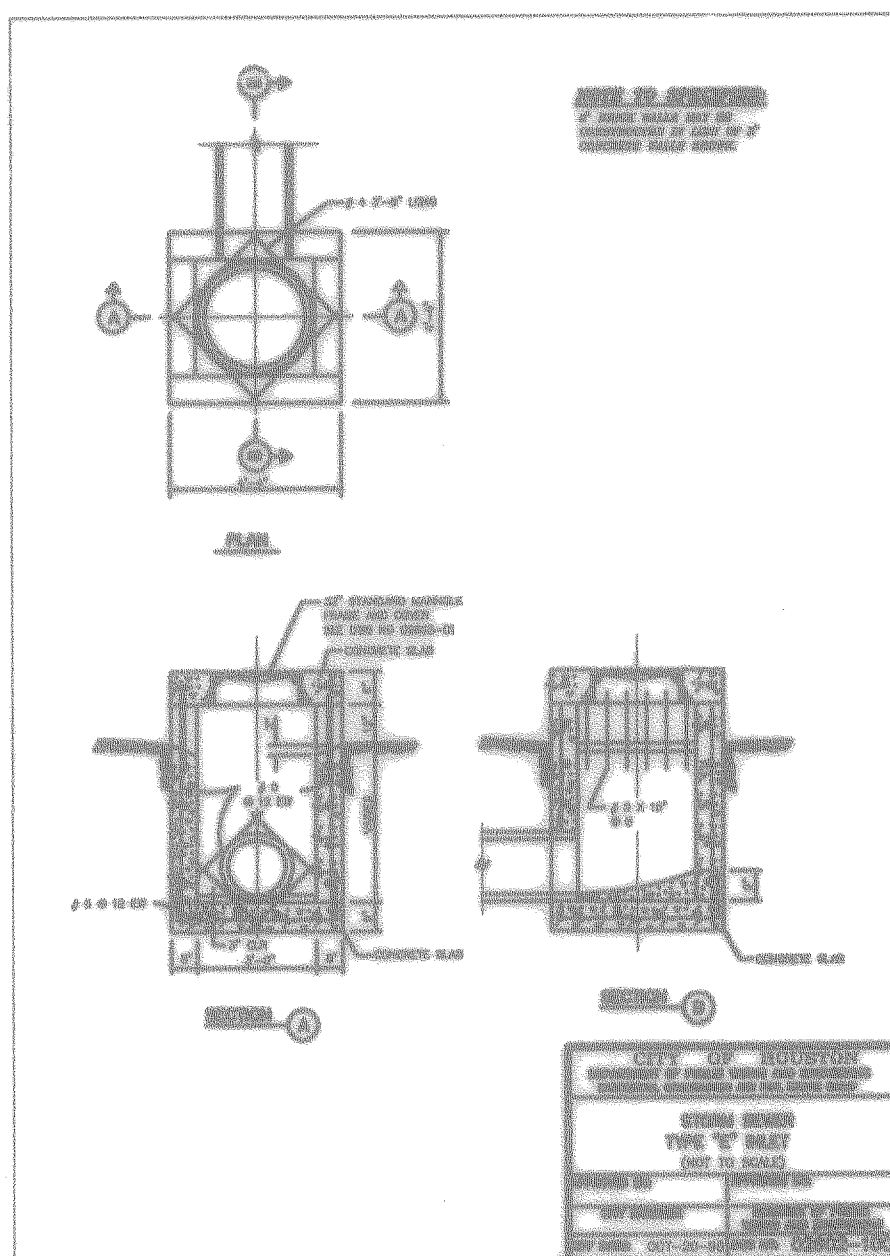


H.C.M.U.D. NO. 191

**SANITARY SEWER FLOWS OVERALL LAYOUT**

**PEI** PROVIDENT ENGINEERS, INC.  
 12200 N.W. FRWY, Suite 210  
 Houston, Texas 77092





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

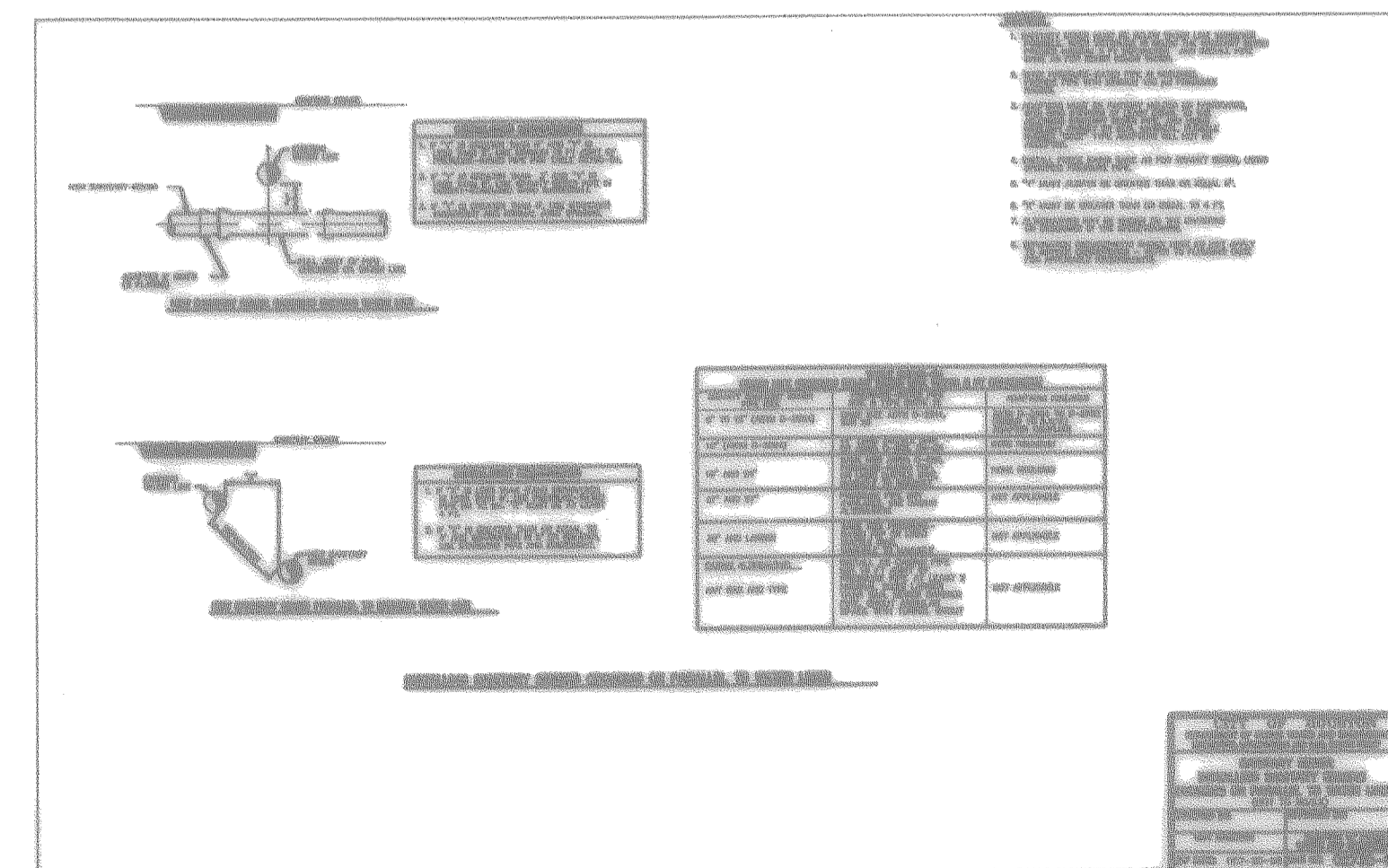
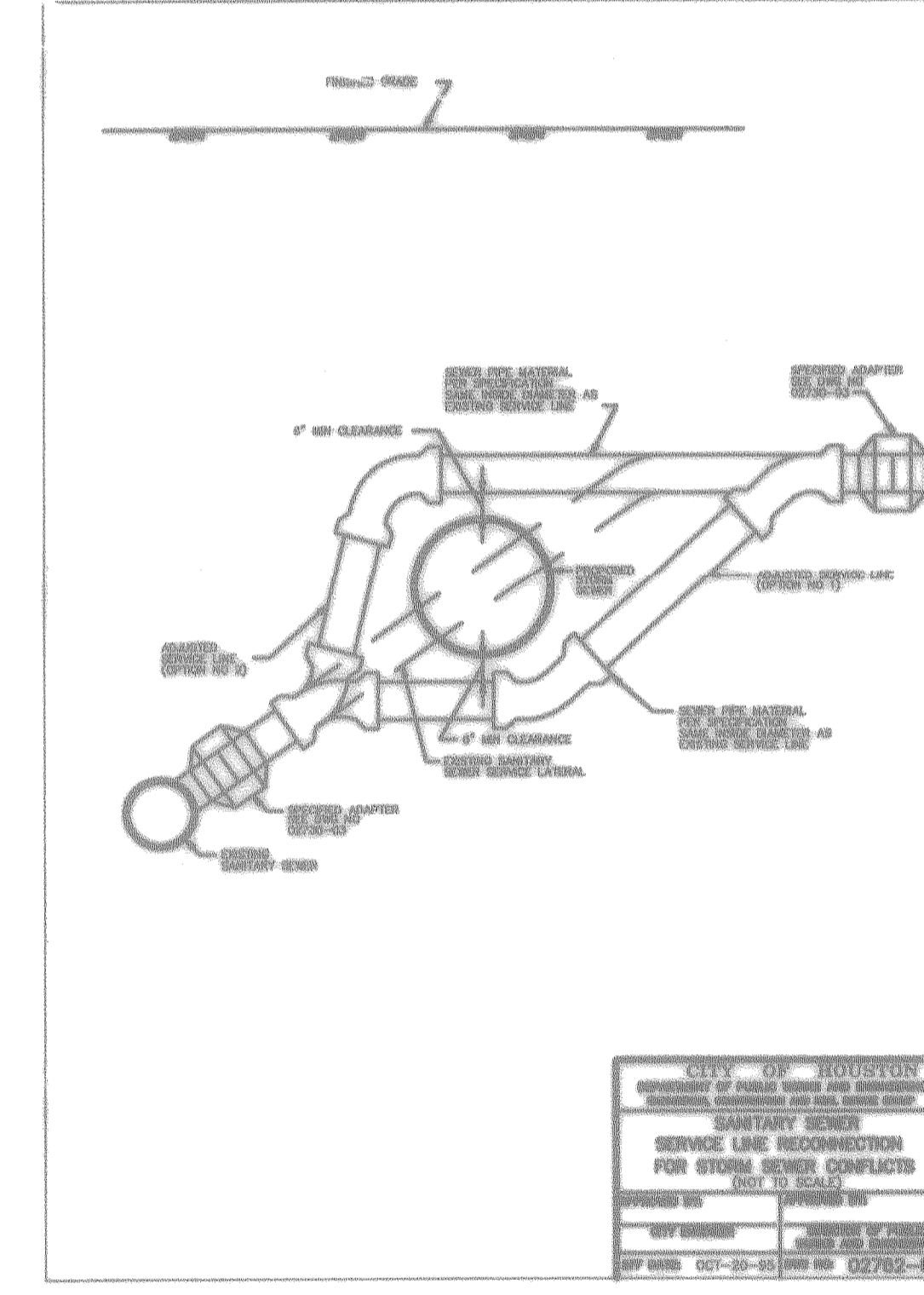
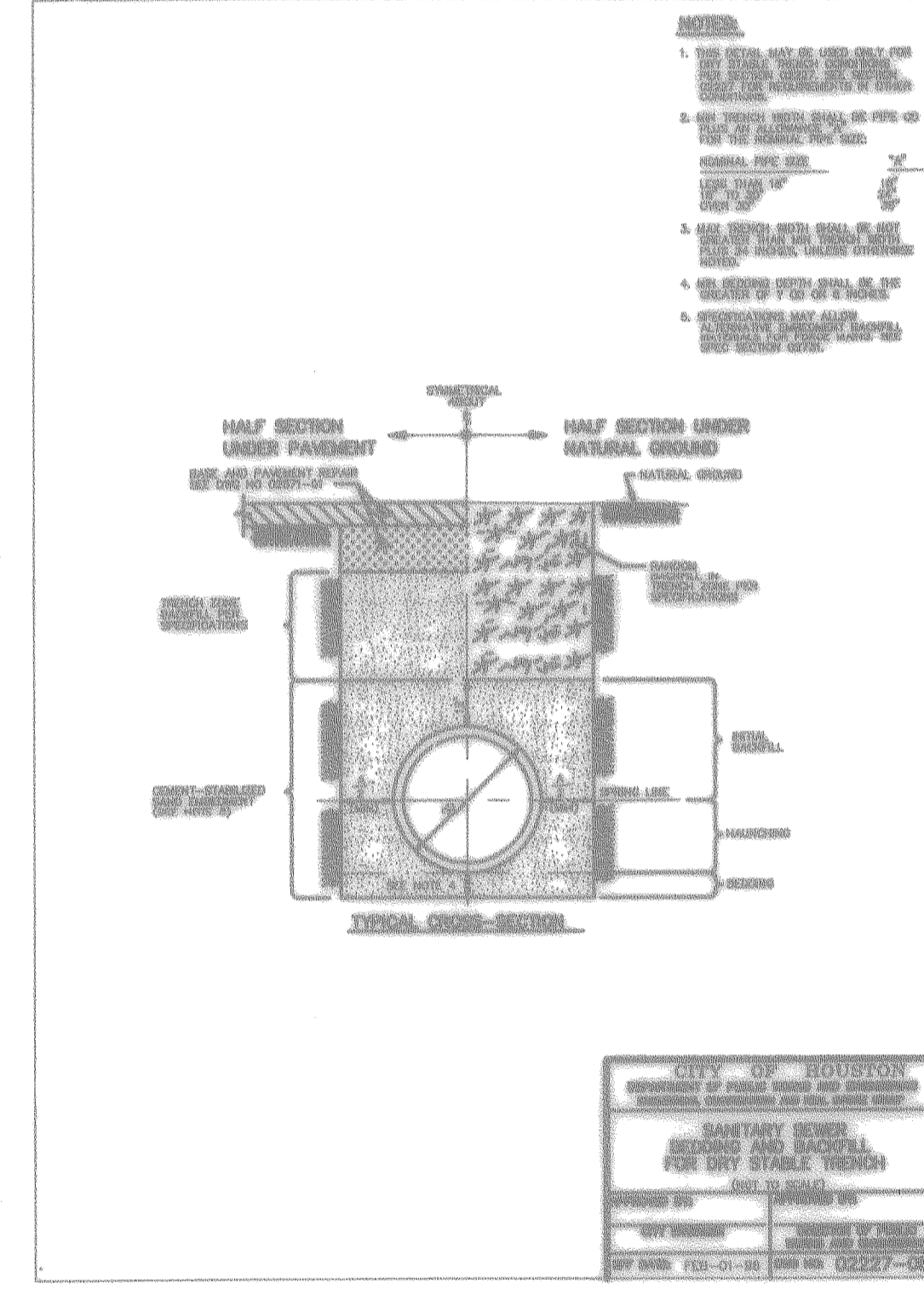
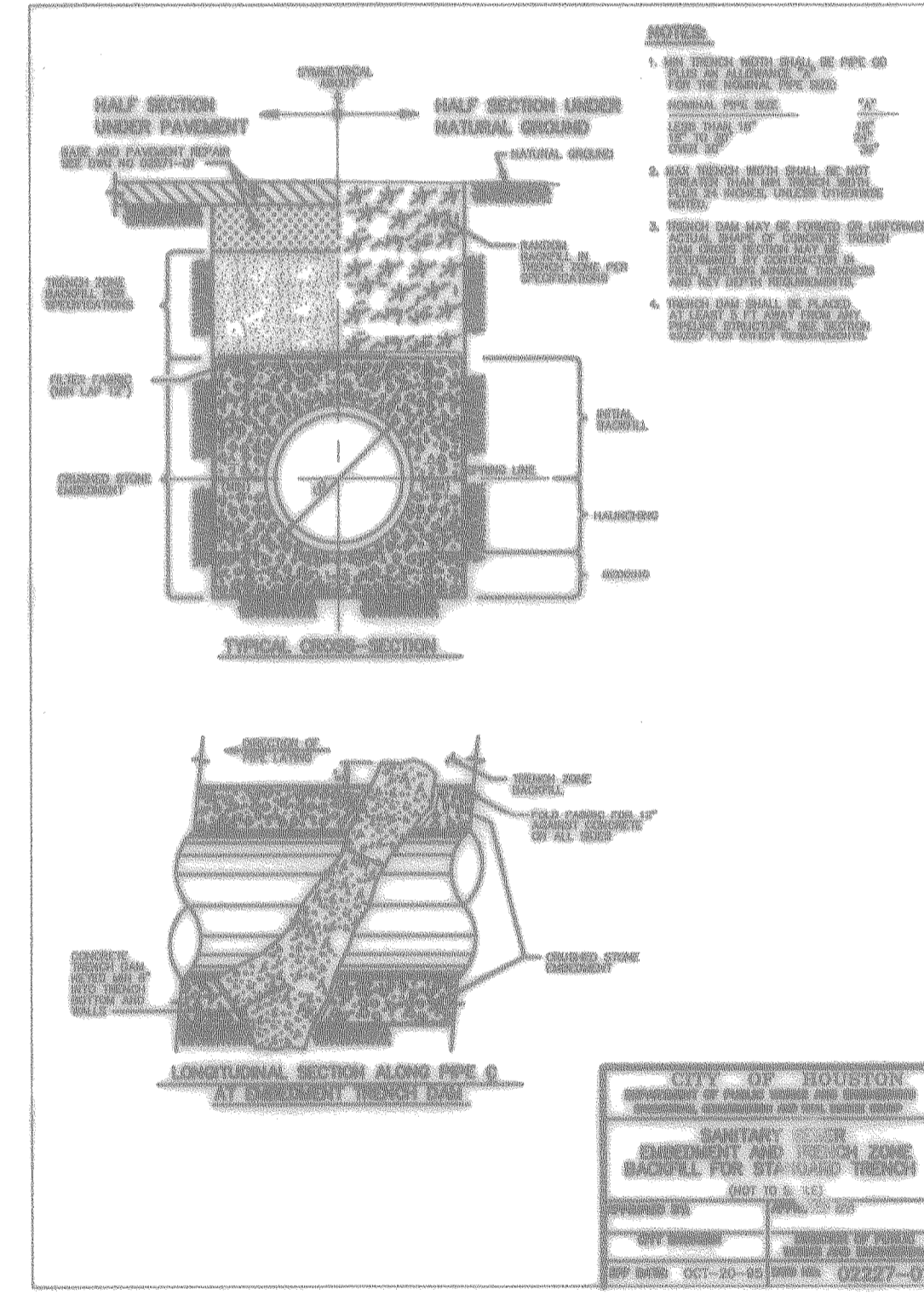
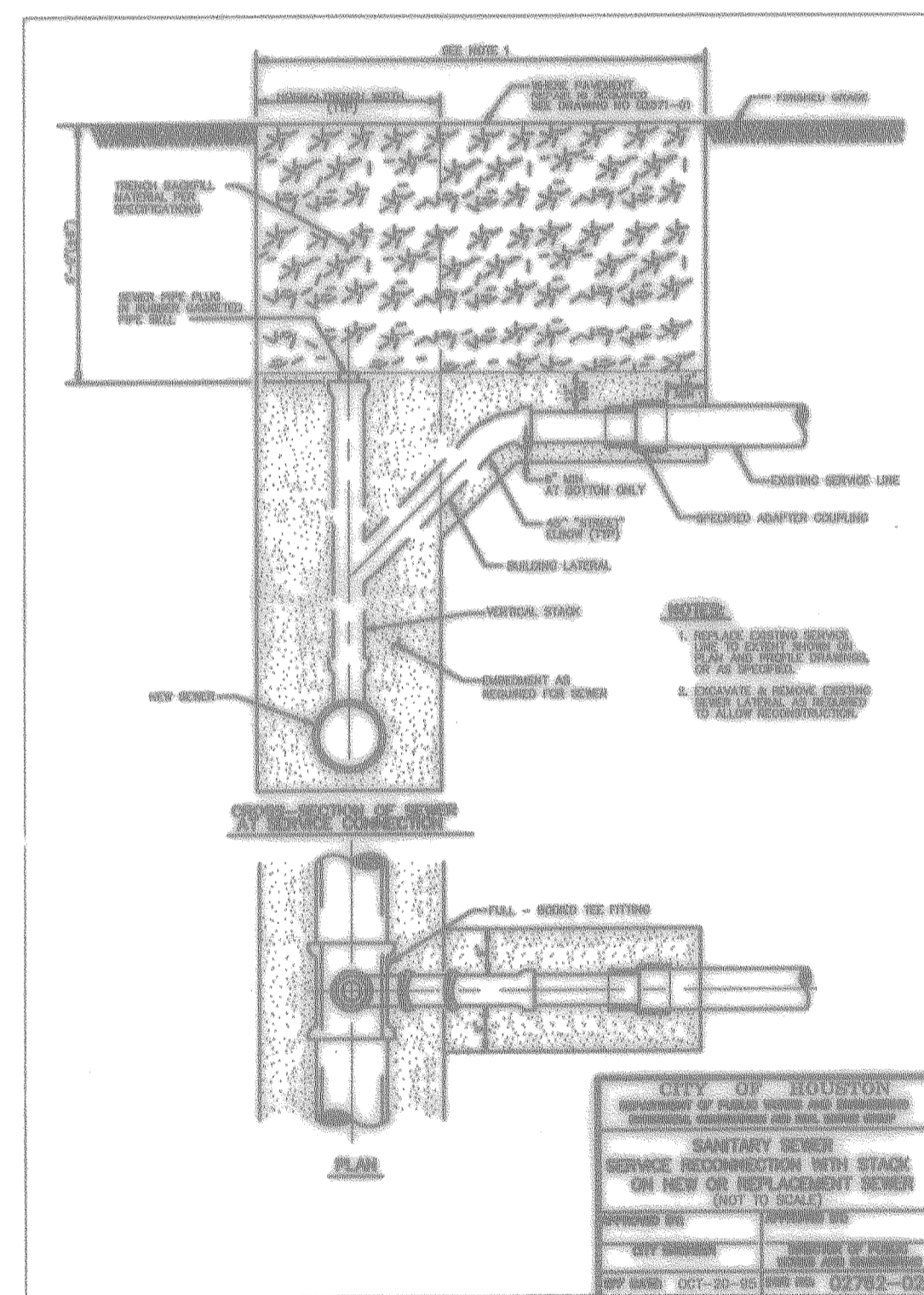
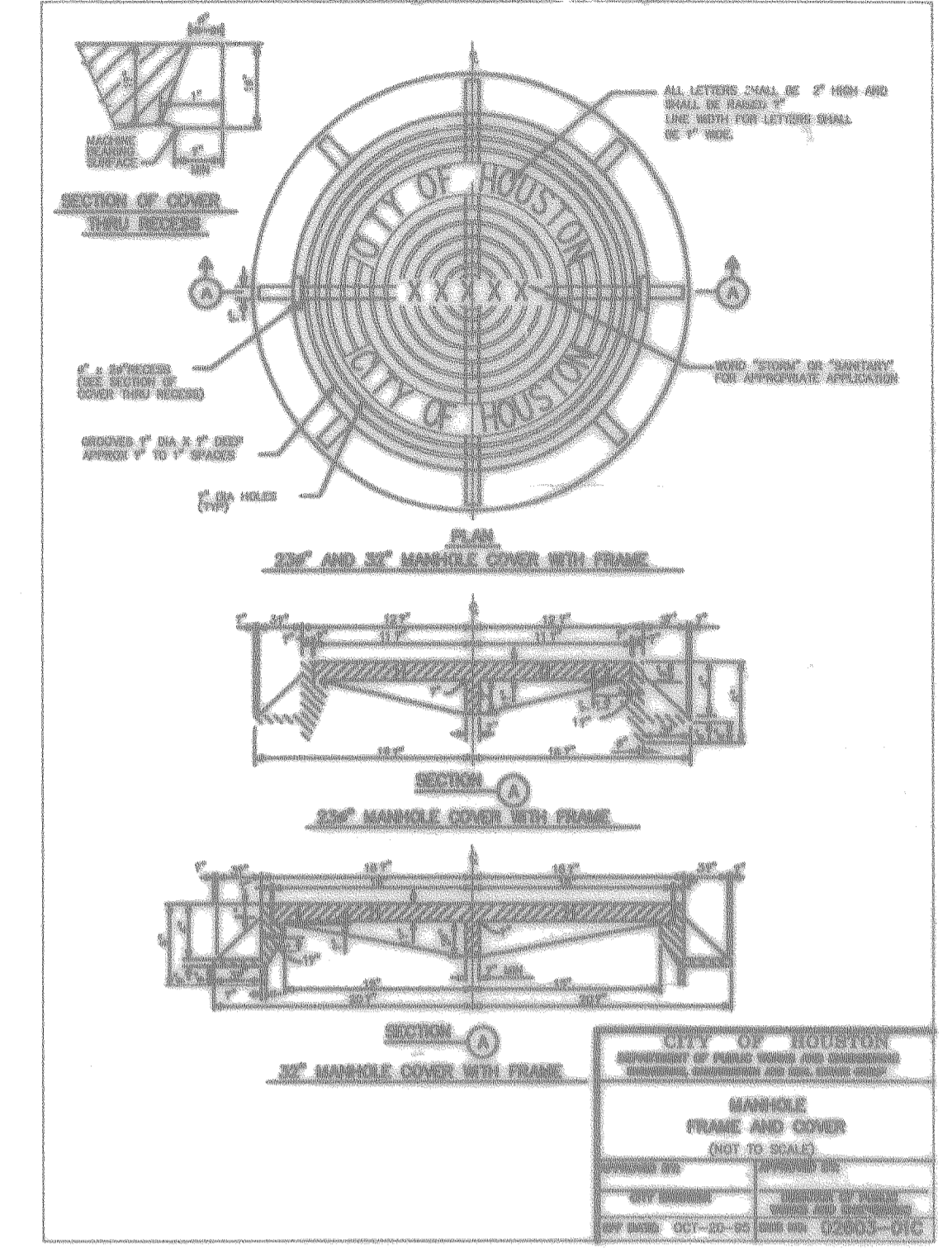
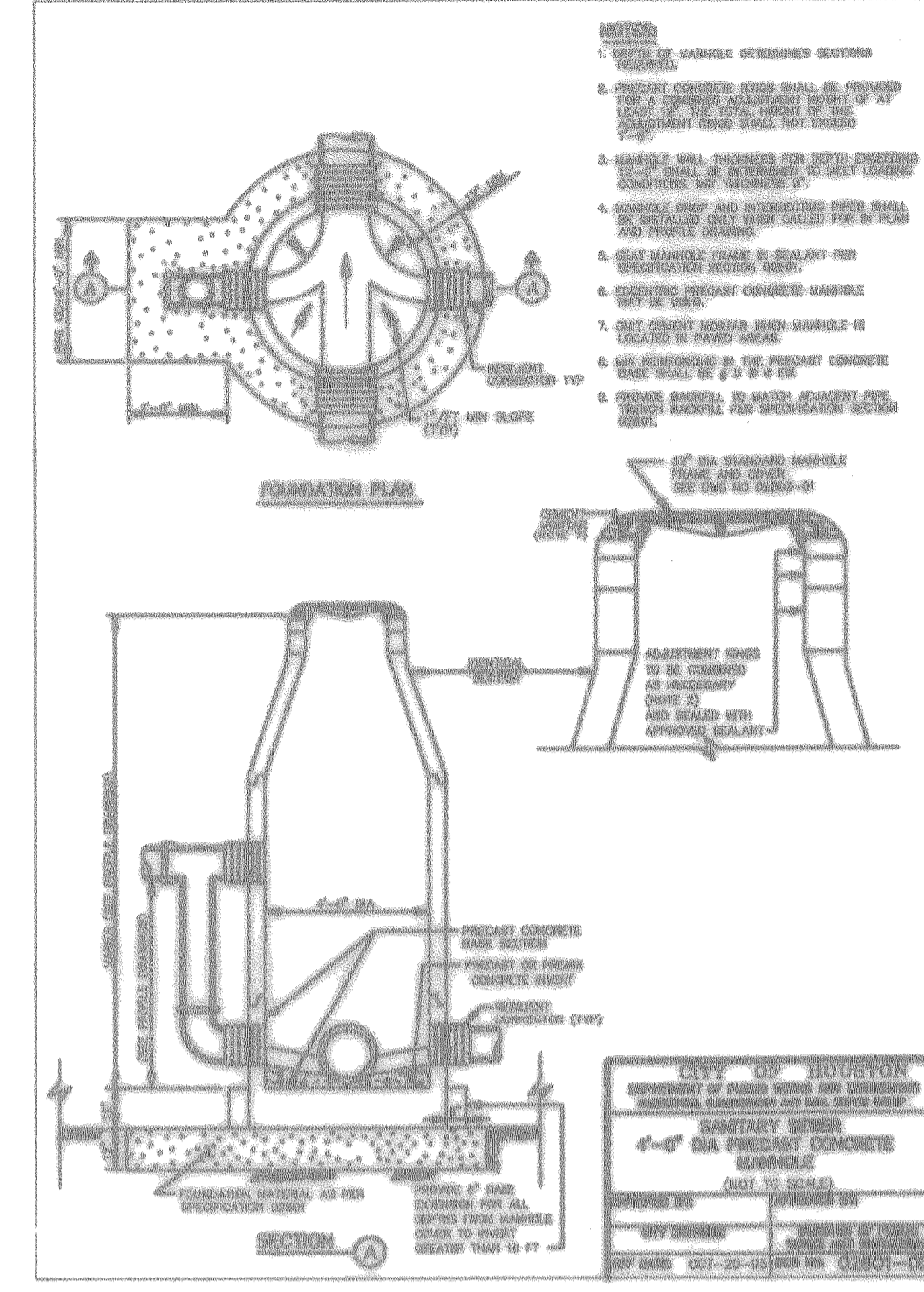
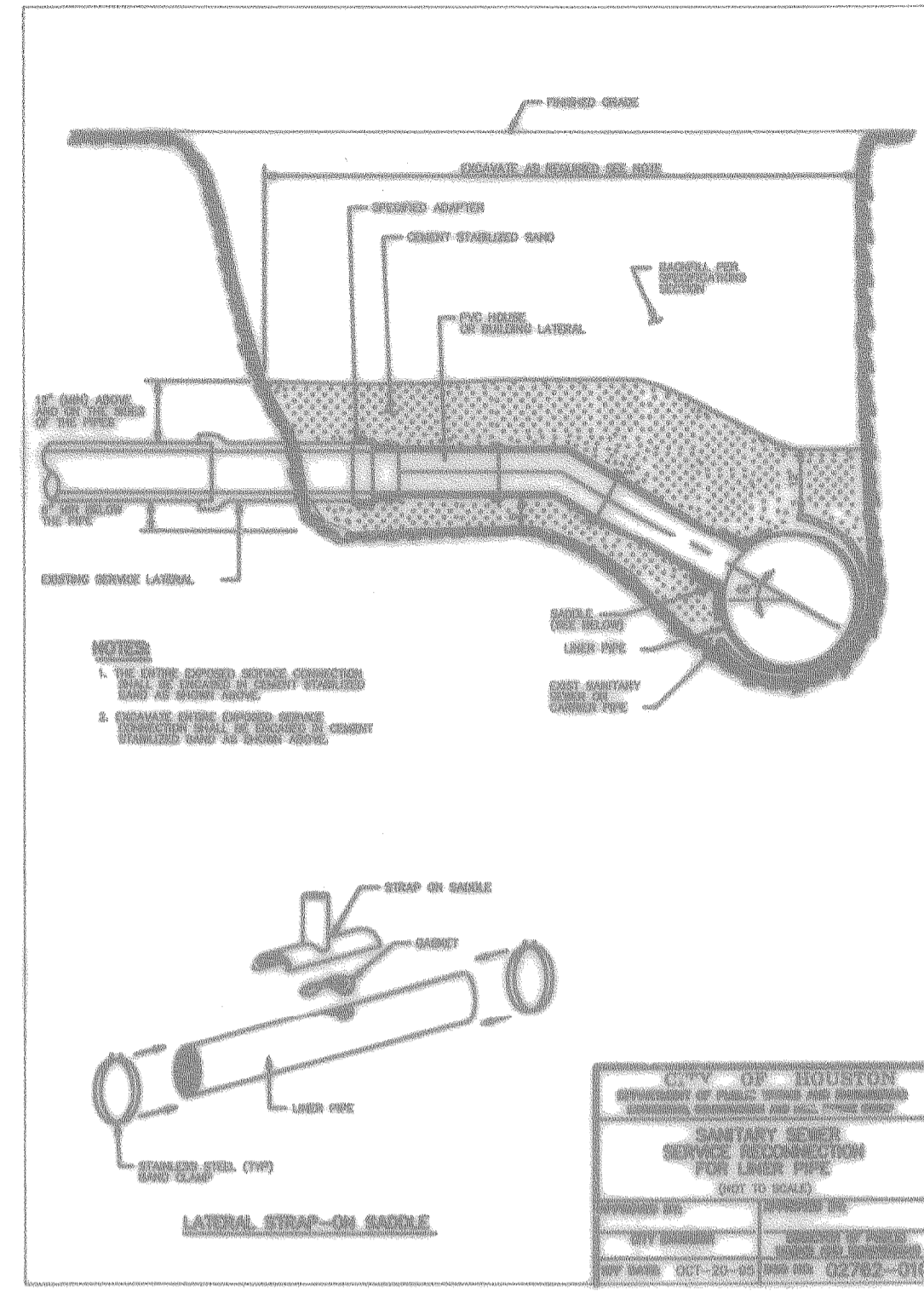
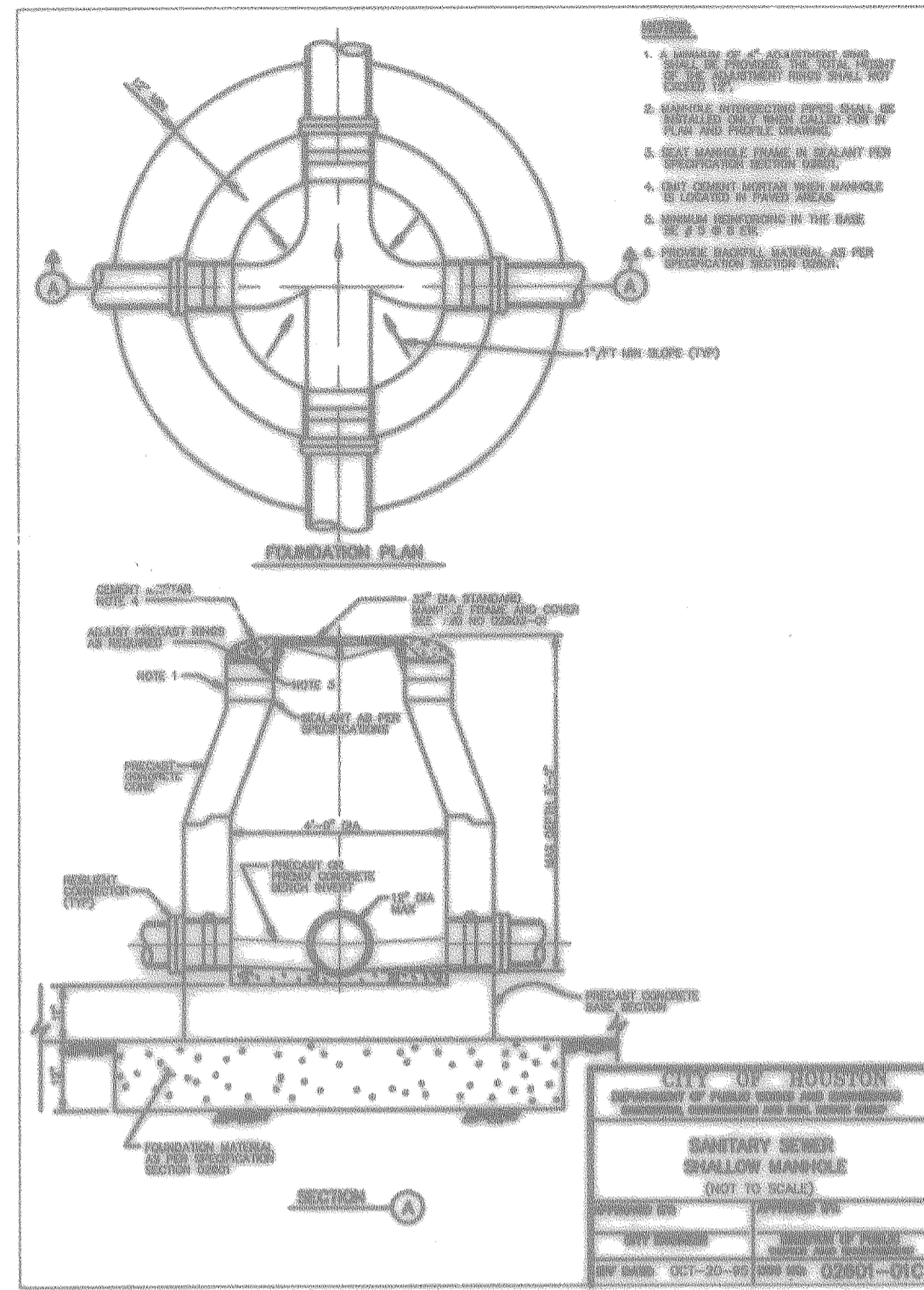
SECTION APPROVALS

<i>M. H. ...</i> WATER ENGINEERING	<i>M. H. ...</i> TRAFFIC AND SIGNAL ENGINEERING
<i>M. H. ...</i> STORM SEWER ENGINEERING	<i>M. H. ...</i> STREET, BRIDGE AND RIGHT-OF-WAY ENGINEERING
OTHER DEPARTMENTS	
<i>M. H. ...</i> PLANNING AND DEVELOPMENT	<i>M. H. ...</i> SPONSOR DEPARTMENT
<i>M. H. ...</i> CITY ENGINEER	<i>M. H. ...</i> DATE
<i>M. H. ...</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING	<i>M. H. ...</i> DATE

SUBMITTED: _____	DESIGNED BY: TIM
SCALE: N/A	DRAWN BY: TIM
DATE: MARCH 1998	SHEET NO. 11 OF 16 SHEETS
SURVEY BY: _____	CITY DWG. NO. STORM
JOB NO: 440-U	

**STORM SEWER DETAILS**

**PEI** PROVIDENT ENGINEERS, INC.  
12200 N.W. FRWY, Suite 210  
Houston, Texas 77092



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

**SECTION APPROVALS**

*M. Adams 9-10-88*  
WATER ENGINEERING

*M. Adams 5-21-88*  
WASTEWATER ENGINEERING  
STORM SEWER ENGINEERING

*[Signature]*  
TRAFFIC AND SIGNAL ENGINEERING

*[Signature]*  
STREET, BRIDGE AND RIGHT-OF-WAY ENGINEERING

*[Signature]*  
CONSTRUCTION

**OTHER DEPARTMENTS**

*[Signature]*  
PLANNING AND DEVELOPMENT

*[Signature]*  
SPONSOR DEPARTMENT

*[Signature]*  
CITY ENGINEER

*[Signature]*  
DIRECTOR OF PUBLIC WORKS AND ENGINEERING

DATE: 5/29/88

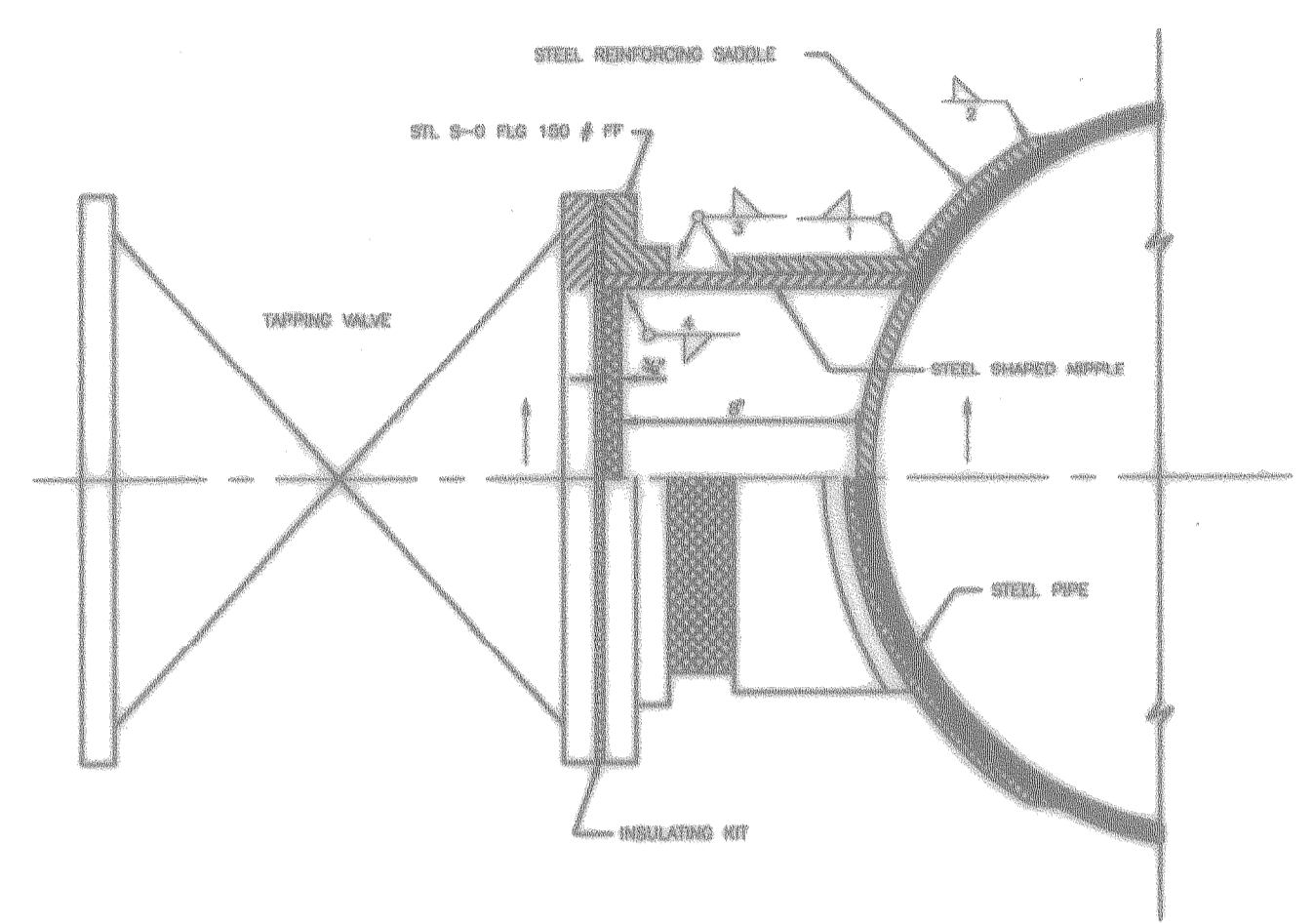
SUBMITTED: \_\_\_\_\_  
SCALE: N/A  
DATE: MARCH 1988  
SURVEY BY: \_\_\_\_\_  
JOB NO: 440-U

DESIGNED BY: TM  
DRAWN BY: TM  
SHEET NO. 12 OF 16 SHEETS  
CITY OWS NO. SANITARY

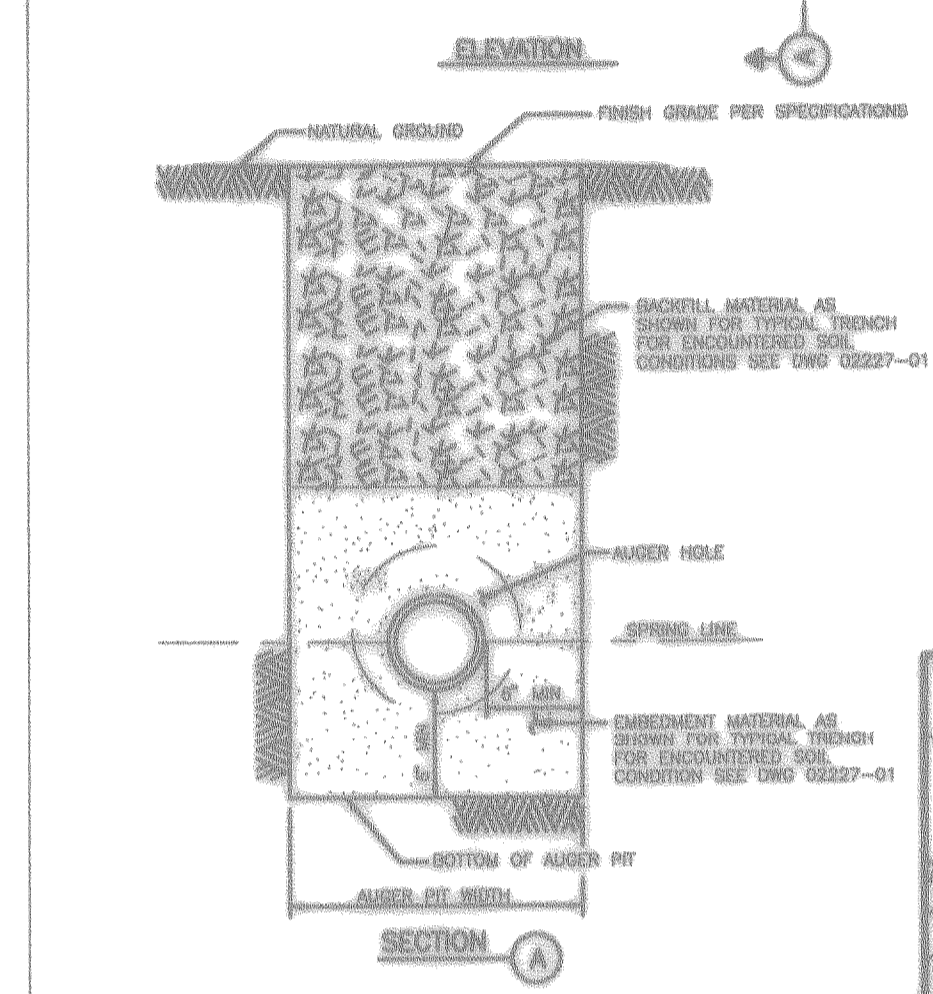
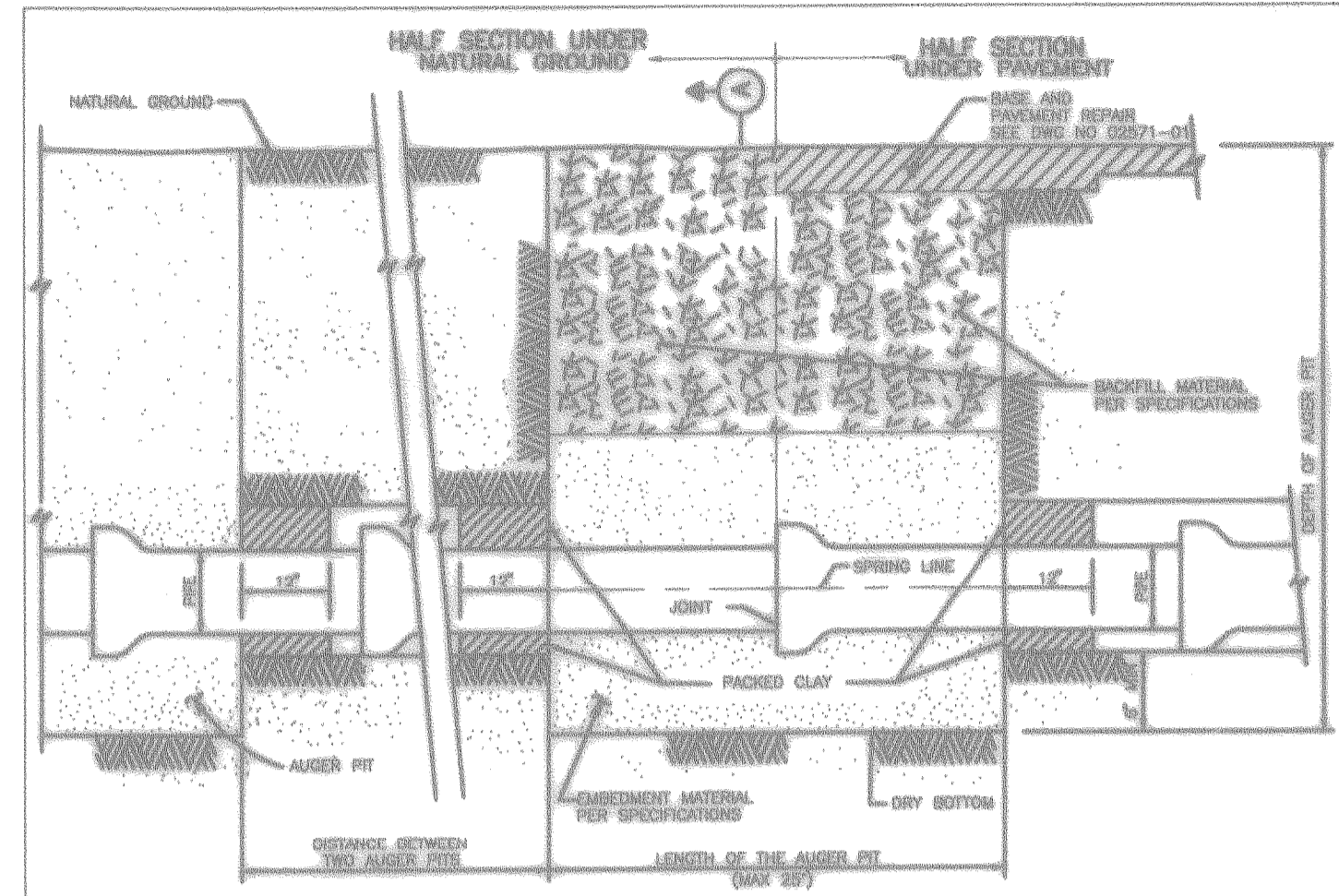
**SANITARY SEWER DETAILS**

**PEI** PROVIDENT ENGINEERS, INC.  
12200 N.W. FRWY, Suite 210  
Houston, Texas 77092

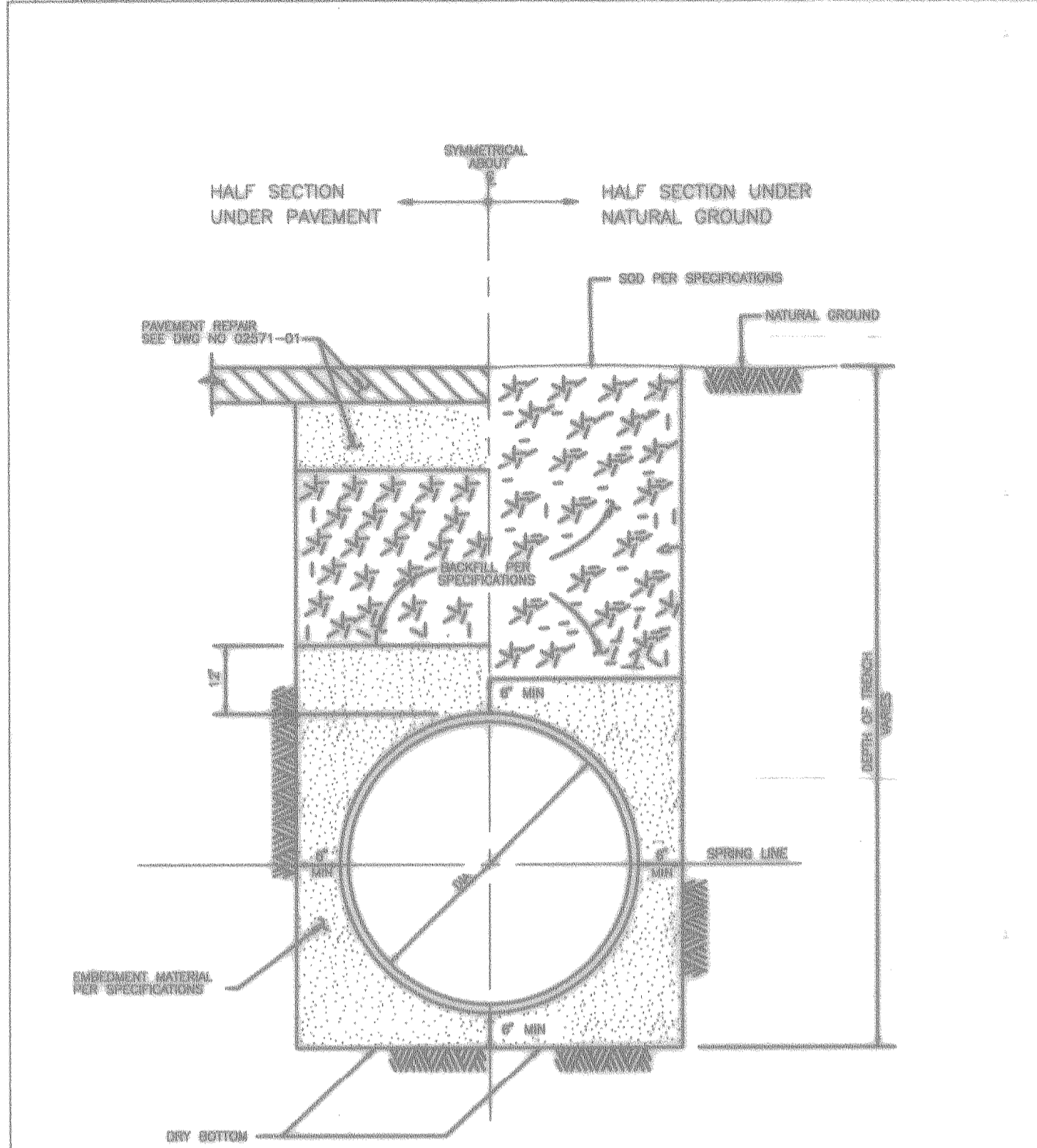
- NOTES:**
1. CHAMFER WELDS SHALL BE CUT SQUARE TO THE AXIS OF THE PIPE TO A TOLERANCE OF 0.01" AND SHALL BE CHAMFER TO FIT THE 90° OF THE SIZES PIPE.
  2. WELDING REQUIREMENTS SHALL BE AS NOTED IN WELD SYMBOLS.
  3. WELDED SHALL USE CAUTION IN ASSURING THAT LEGS & 90° ANGLES CORRECTLY LINED UP AND SECURELY TACKED PRIOR TO STARTING WELD.
  4. INSULATING FIT SHALL BE IN ACCORDANCE WITH WATER MAIN STANDARD SPECIFICATIONS.



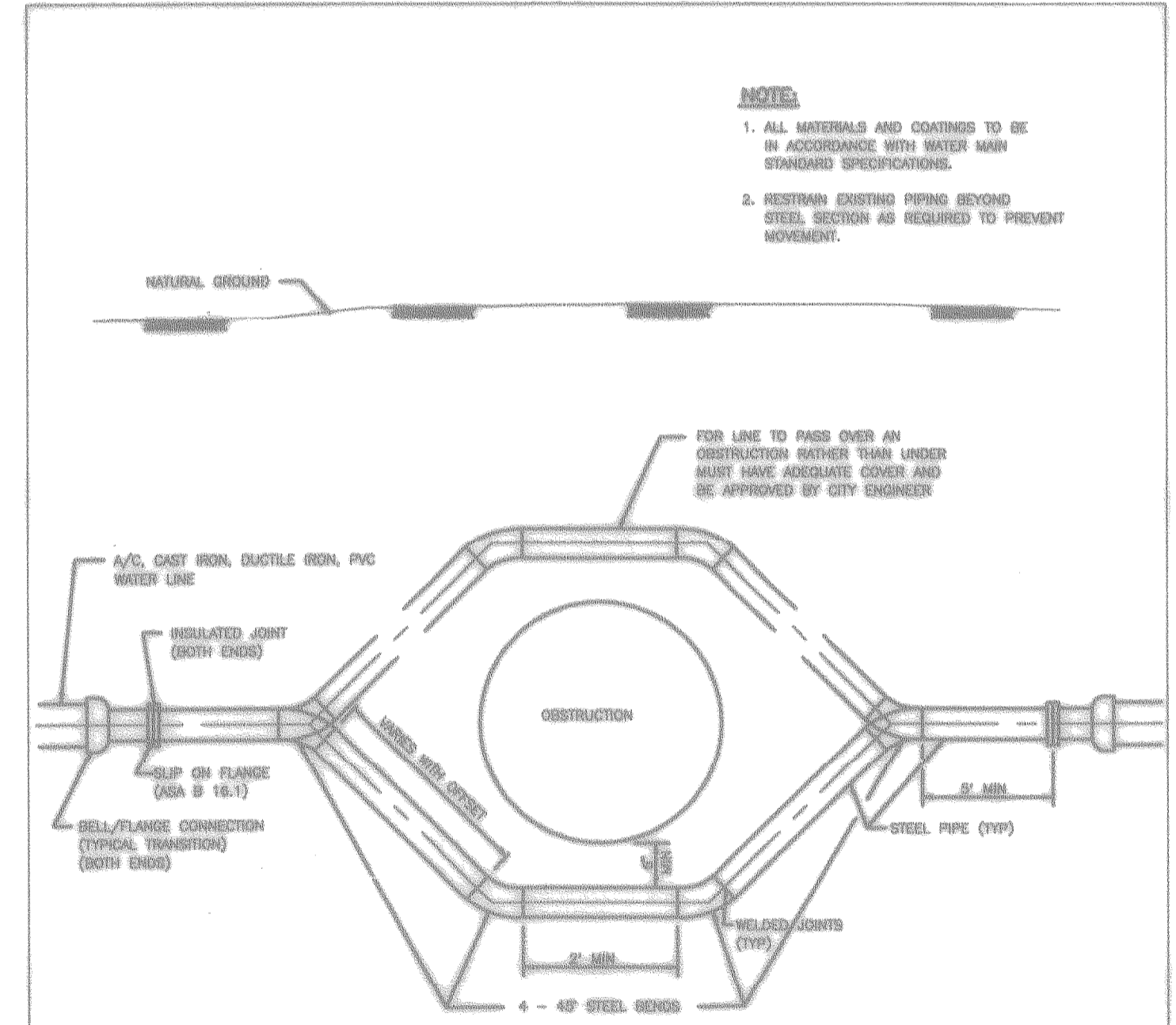
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP	
STANDARD TAP TO STEEL MAIN (NOT TO SCALE)	
APPROVED BY:	APPROVED BY:
CITY ENGINEER	DIRECTOR OF PUBLIC WORKS AND ENGINEERING
BY DATE: OCT-20-95	BY DATE: OCT-20-95
DWG NO: D2665-04B	



CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP	
BEDDING AND BACKFILL AUGER FIT AND AUGER HOLE FOR WATER MAIN (NOT TO SCALE)	
APPROVED BY:	APPROVED BY:
CITY ENGINEER	DIRECTOR OF PUBLIC WORKS AND ENGINEERING
BY DATE: OCT-20-95	BY DATE: OCT-20-95
DWG NO: 02316-01C	

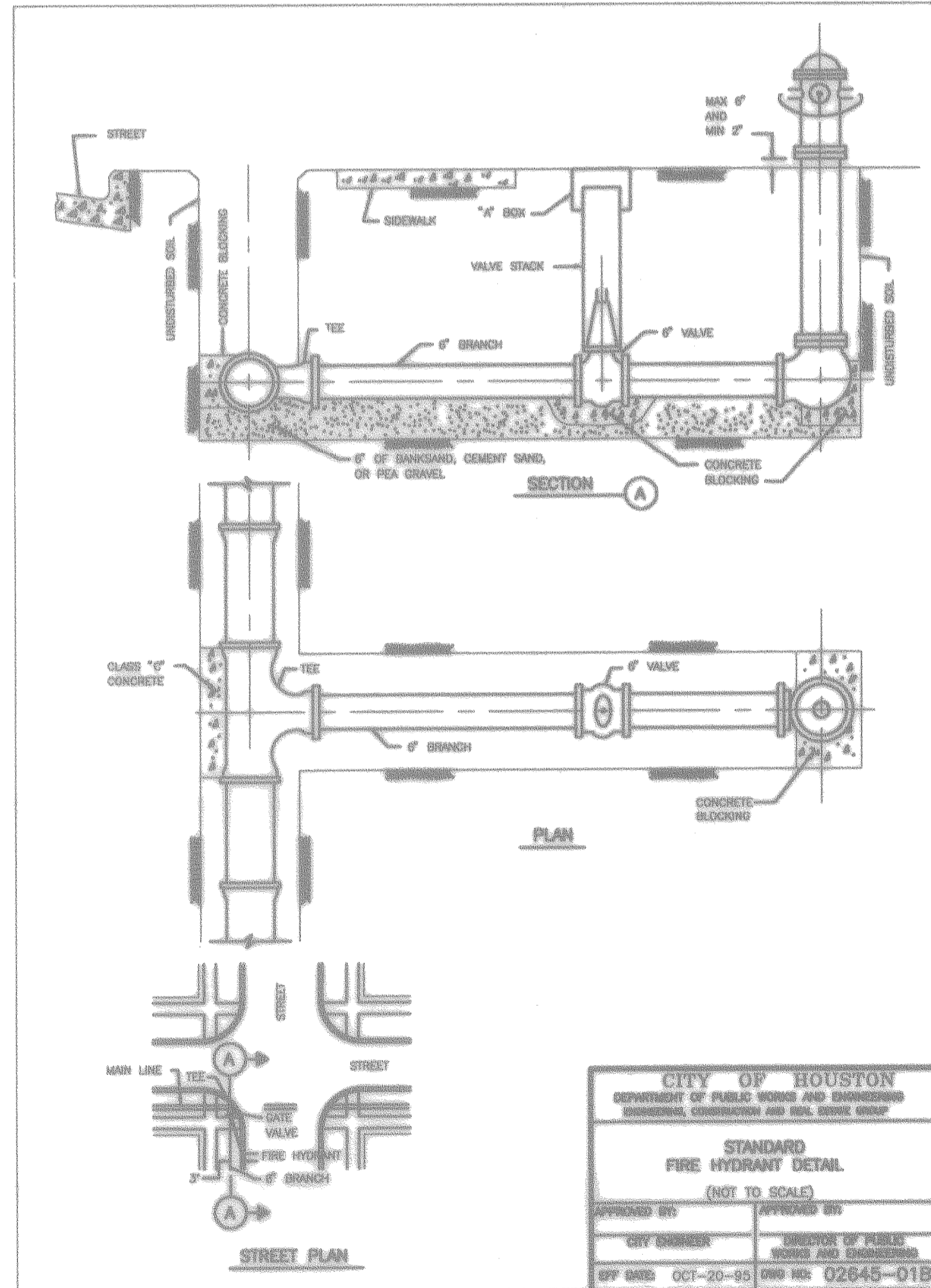


CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP	
WATER DISTRIBUTION MAIN BEDDING AND BACKFILL FOR OPEN CUT TRENCHES (NOT TO SCALE)	
APPROVED BY:	APPROVED BY:
CITY ENGINEER	DIRECTOR OF PUBLIC WORKS AND ENGINEERING
BY DATE: OCT-20-95	BY DATE: OCT-20-95
DWG NO: 02664-01C	



- TYPICAL STEEL SECTION FITTINGS**
- 4 - 4" X 4" STEEL BRACES
  - 2 - 4" BELL-FLANGE HOUSING
  - 2 - 4" SLIP-ON FLANGES 150 #
  - 2 - 4" INSULATED JOINT FITS

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP	
TYPICAL STEEL PIPE OFFSET SECTION FOR WATER MAINS (NOT TO SCALE)	
APPROVED BY:	APPROVED BY:
CITY ENGINEER	DIRECTOR OF PUBLIC WORKS AND ENGINEERING
BY DATE: OCT-20-95	BY DATE: OCT-20-95
DWG NO: 02611-02A	



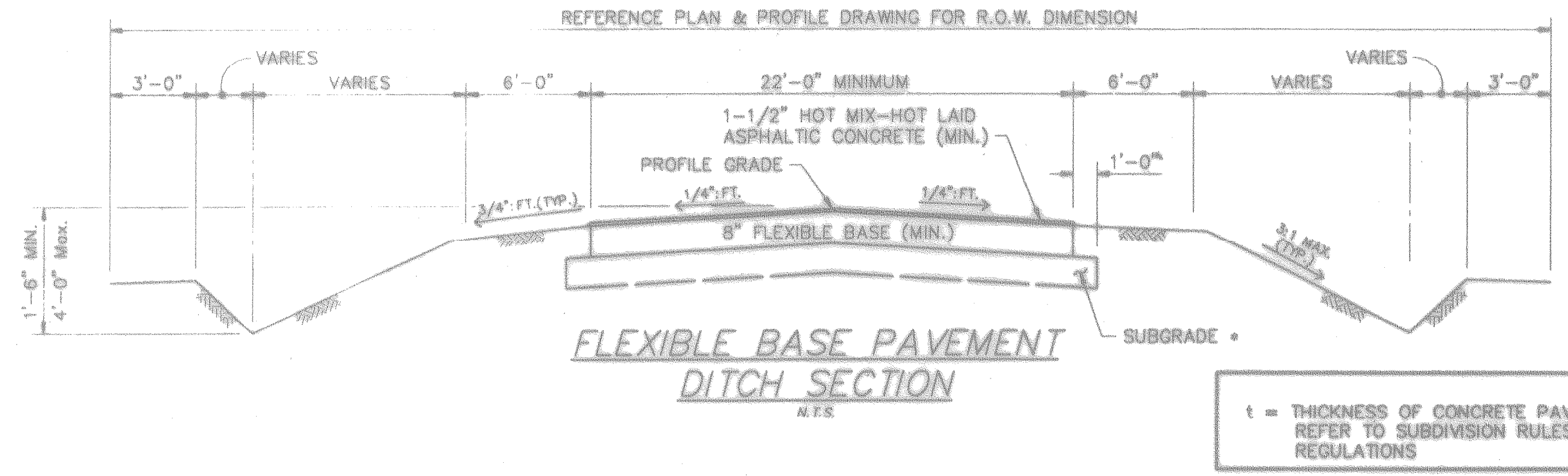
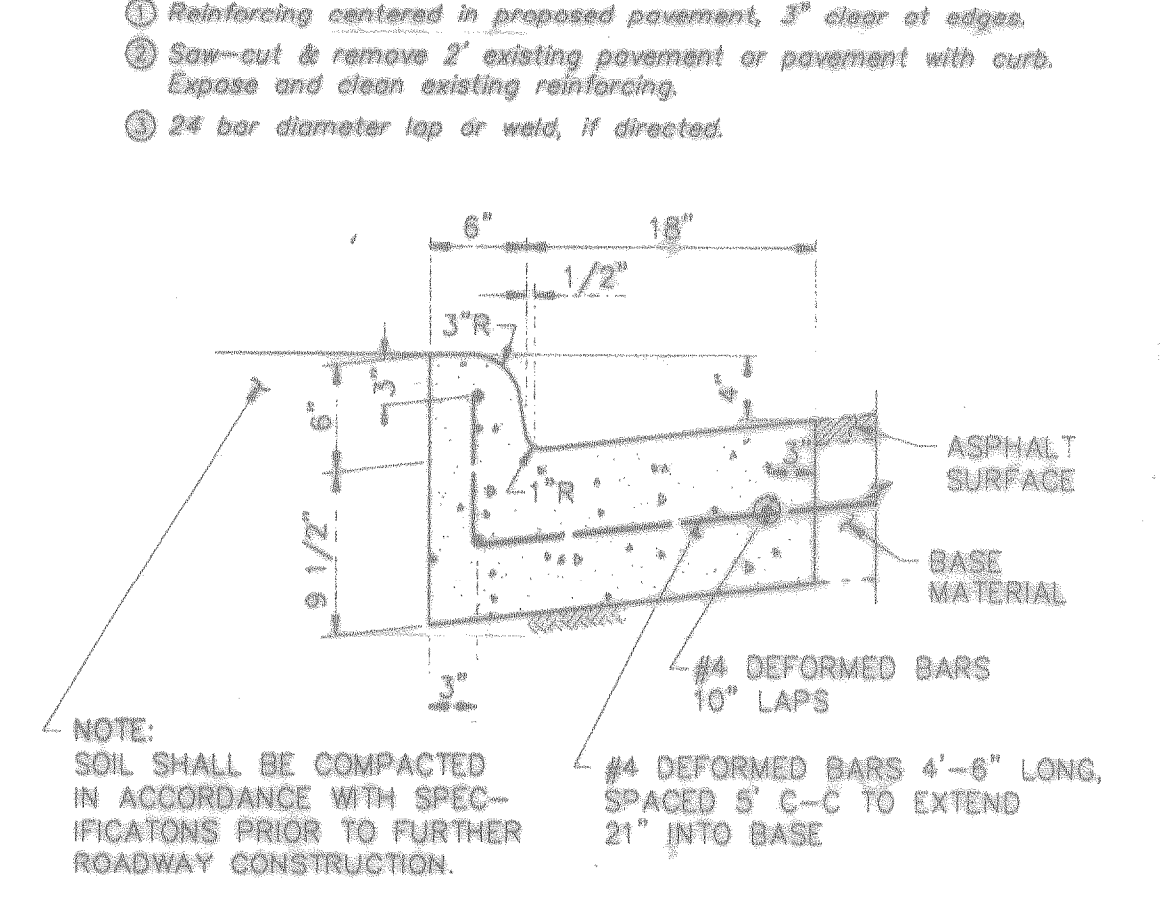
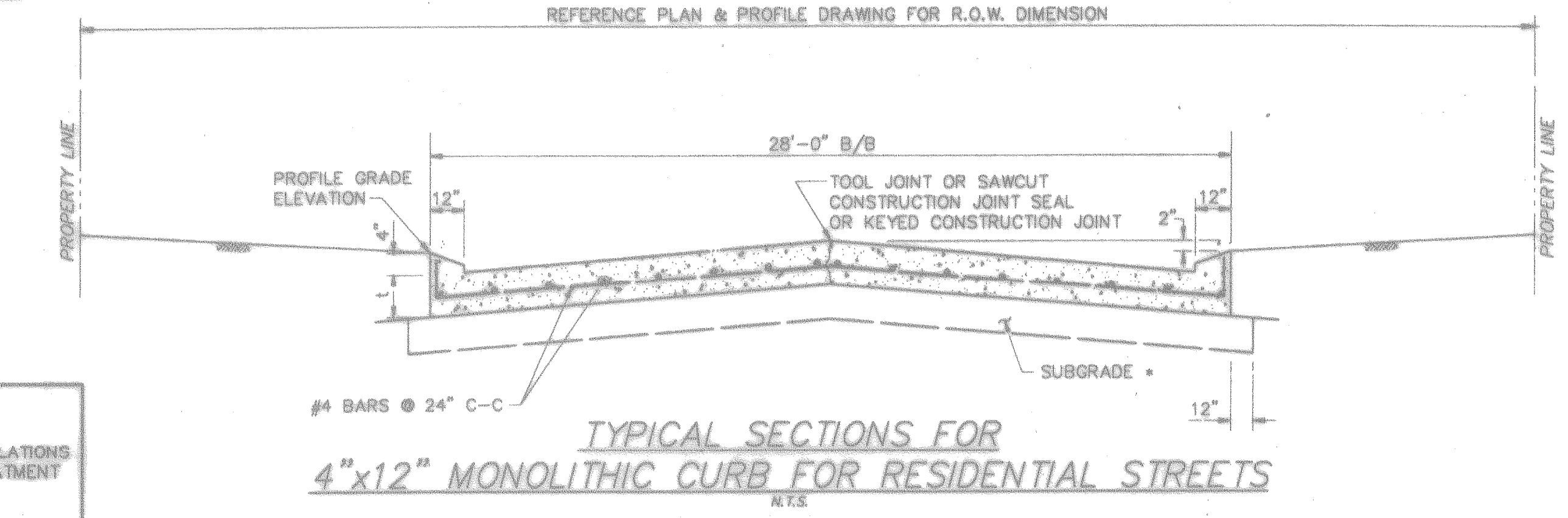
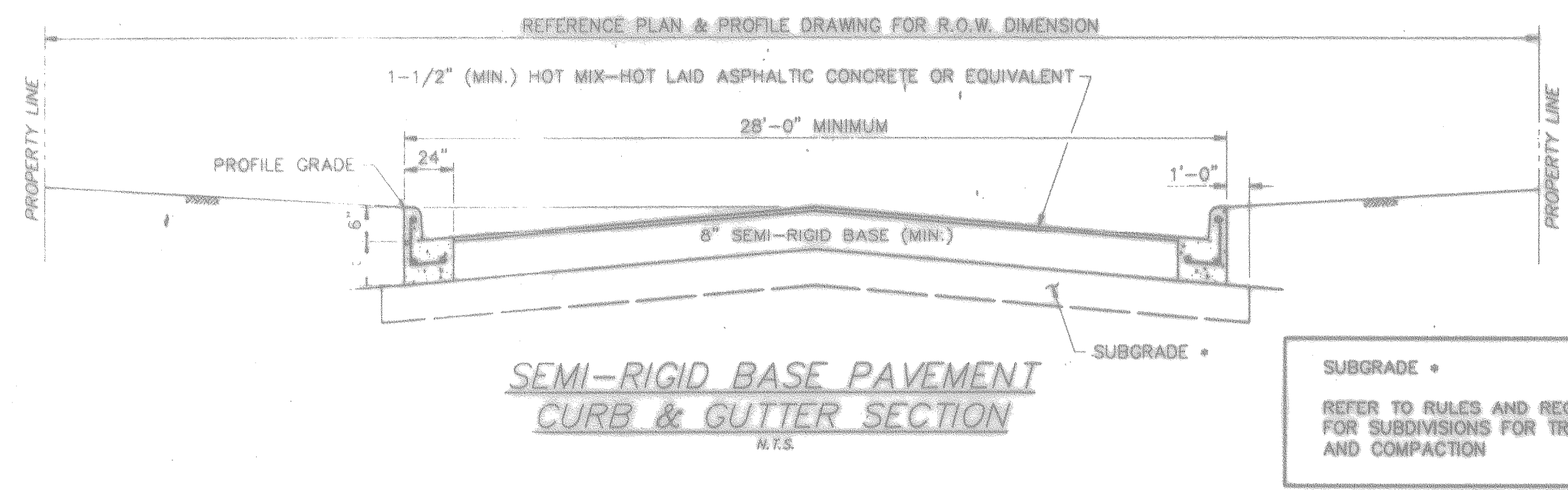
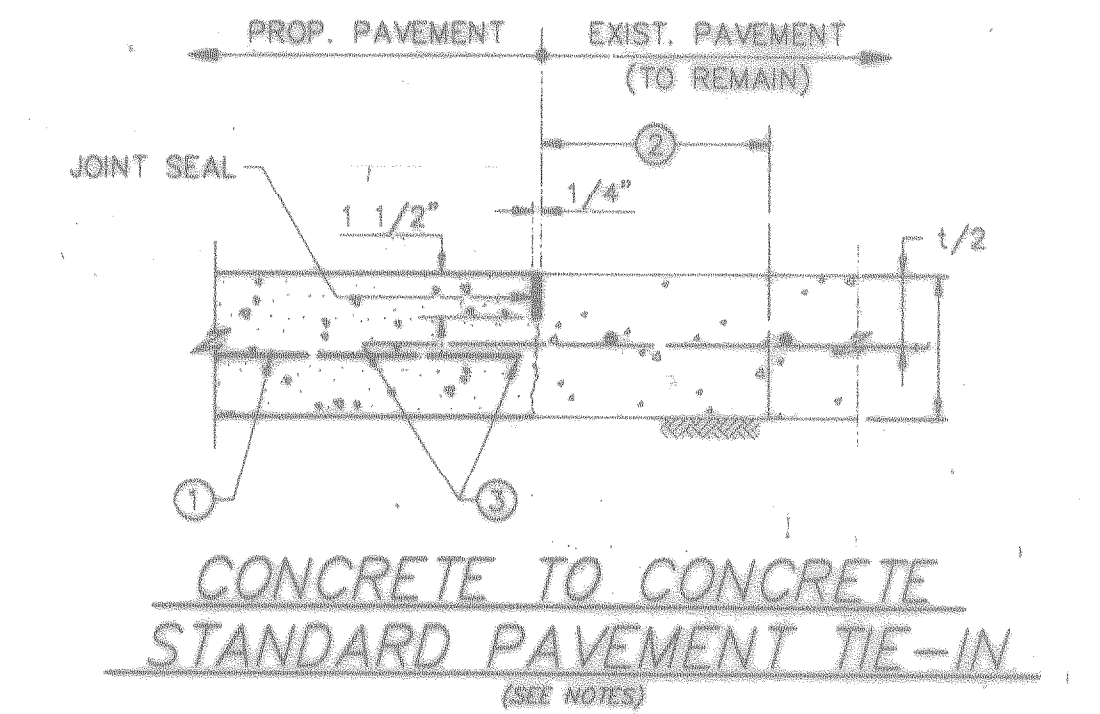
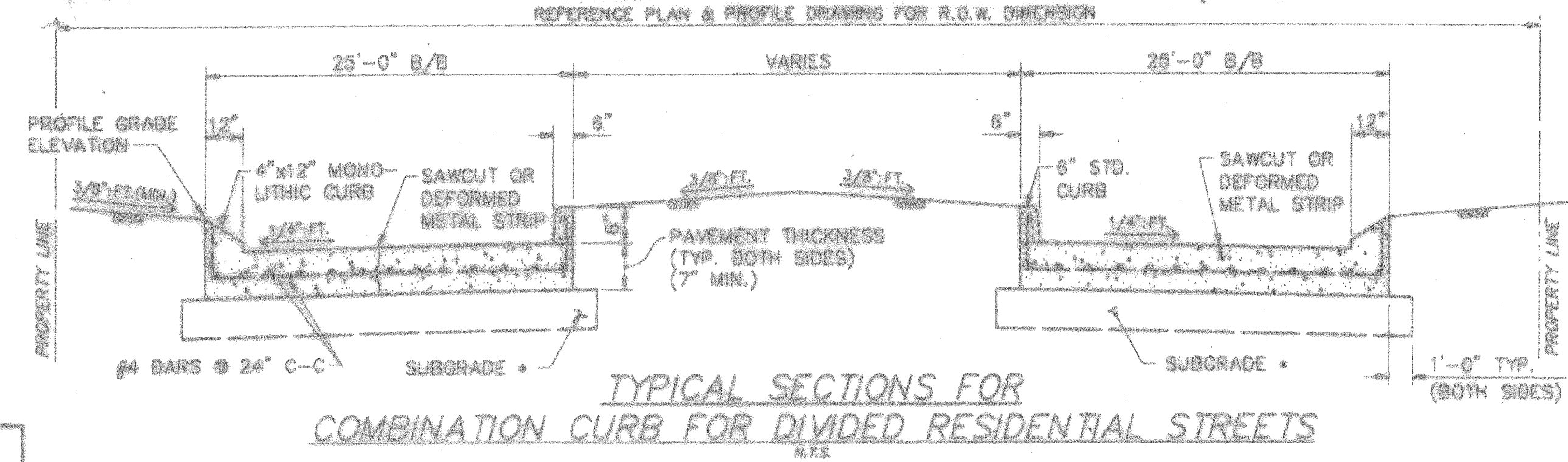
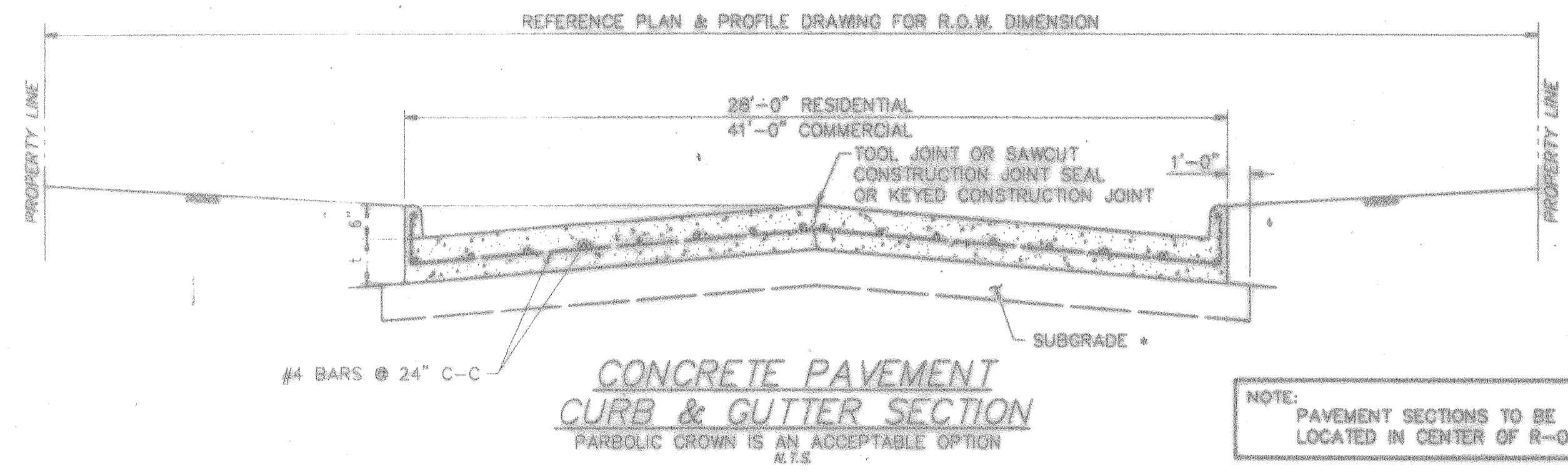
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP	
STANDARD FIRE HYDRANT DETAIL (NOT TO SCALE)	
APPROVED BY:	APPROVED BY:
CITY ENGINEER	DIRECTOR OF PUBLIC WORKS AND ENGINEERING
BY DATE: OCT-20-95	BY DATE: OCT-20-95
DWG NO: 02646-01B	

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS & ENGINEERING ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP	
SECTION APPROVALS	
<i>Max H. ...</i> WATER ENGINEERING	TRAFFIC AND SIGNAL ENGINEERING
<i>M. ...</i> STORM SEWER ENGINEERING	STREET, BRIDGE AND RIGHT-OF-WAY ENGINEERING
	CONSTRUCTION

OTHER DEPARTMENTS	
<i>...</i> PLANNING AND DEVELOPMENT	SPONSOR DEPARTMENT
<i>...</i> CITY ENGINEER	DATE: 5/2/96
<i>...</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING	DATE: 5/2/96
SUBMITTED: _____	DESIGNED BY: TM
SCALE: N/A	DRAWN BY: TM
DATE: MARCH 1996	SHEET NO. 13 OF 16 SHEETS
SURVEY BY: _____	CITY
JOB NO: 440-U	DWG. NO. WATER

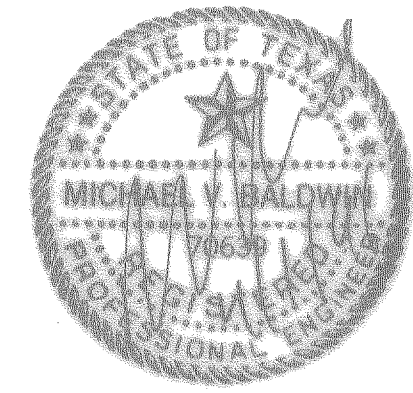
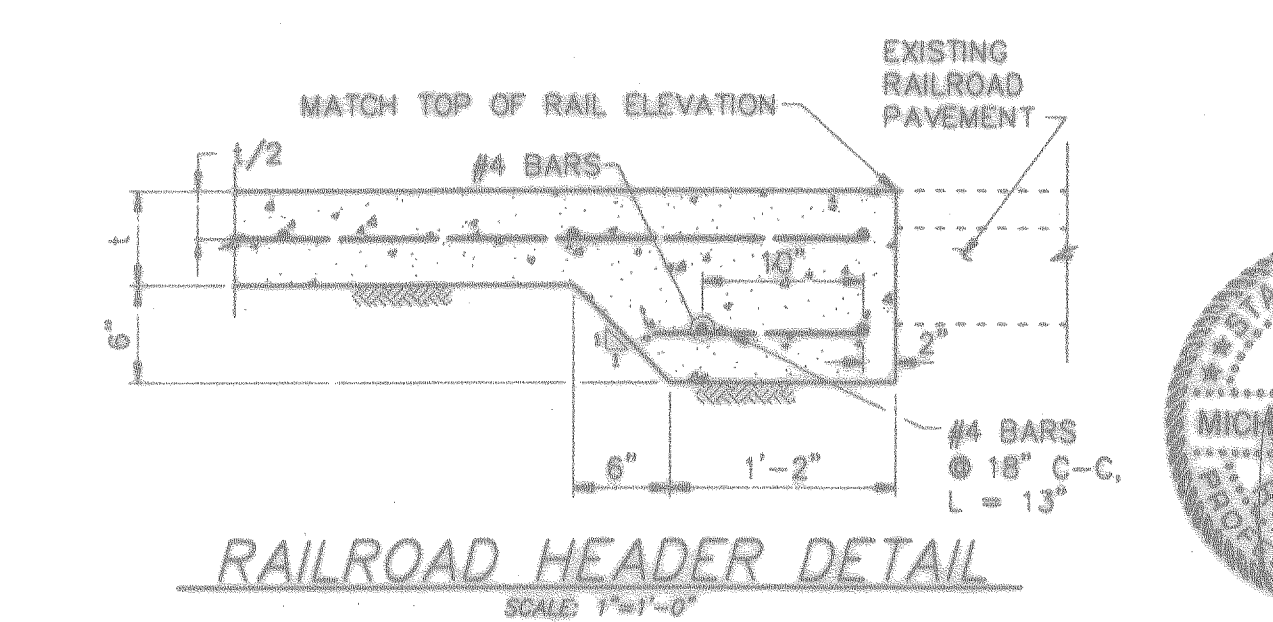
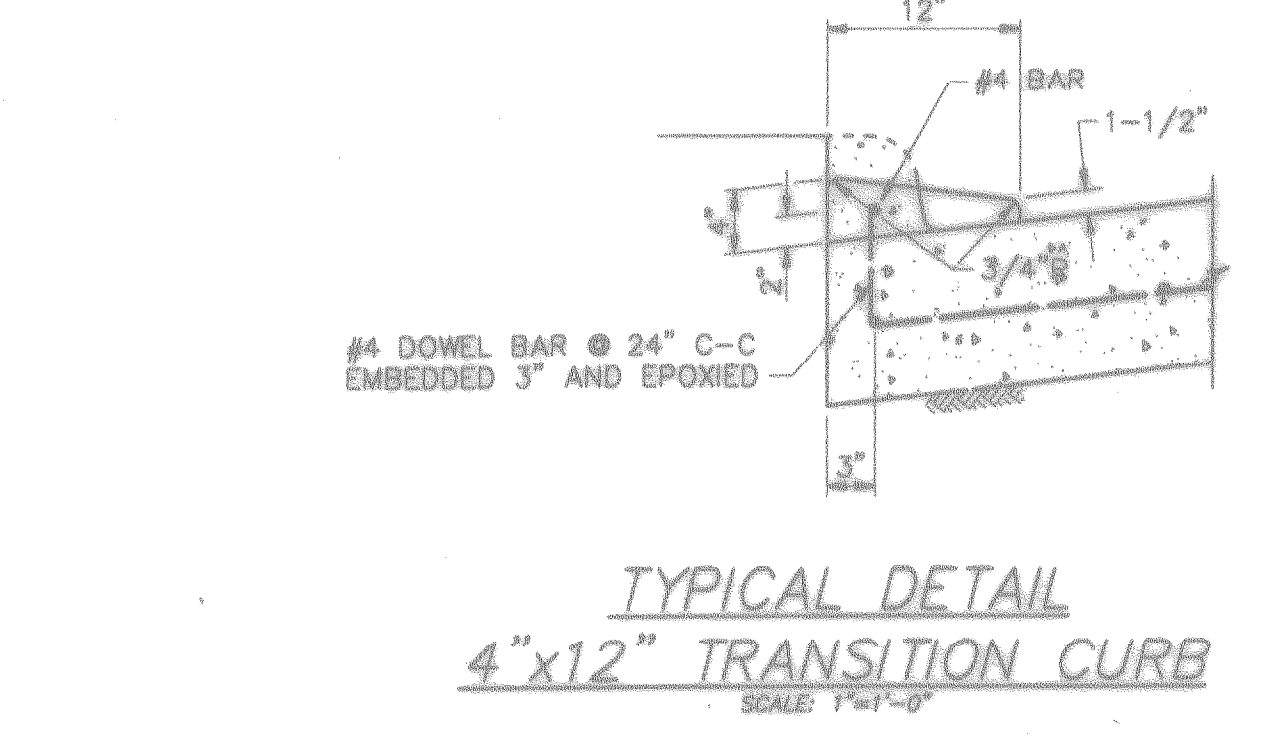
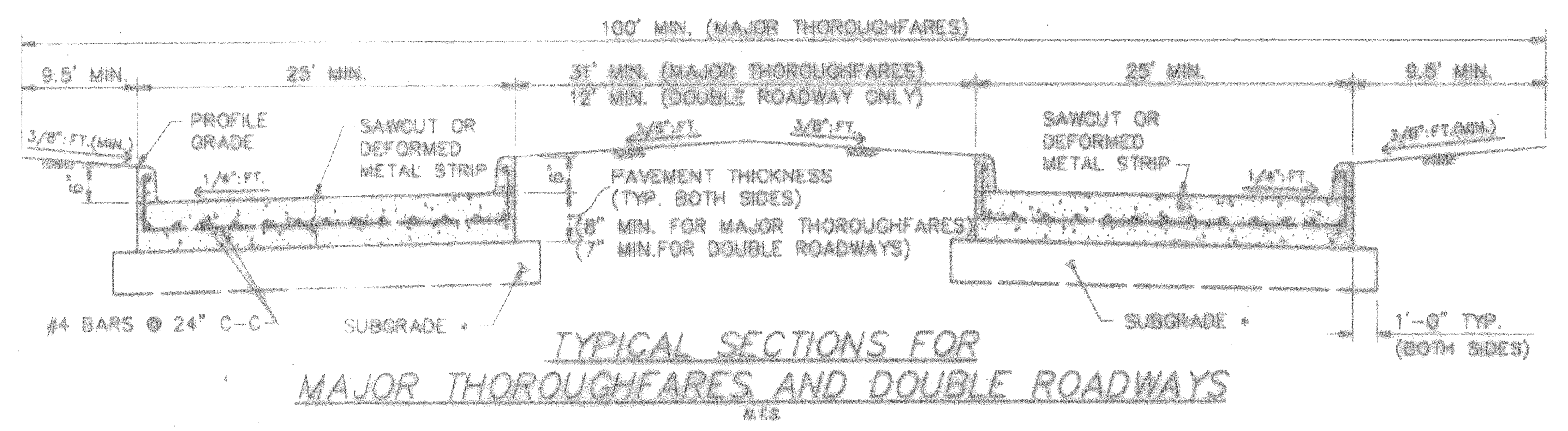
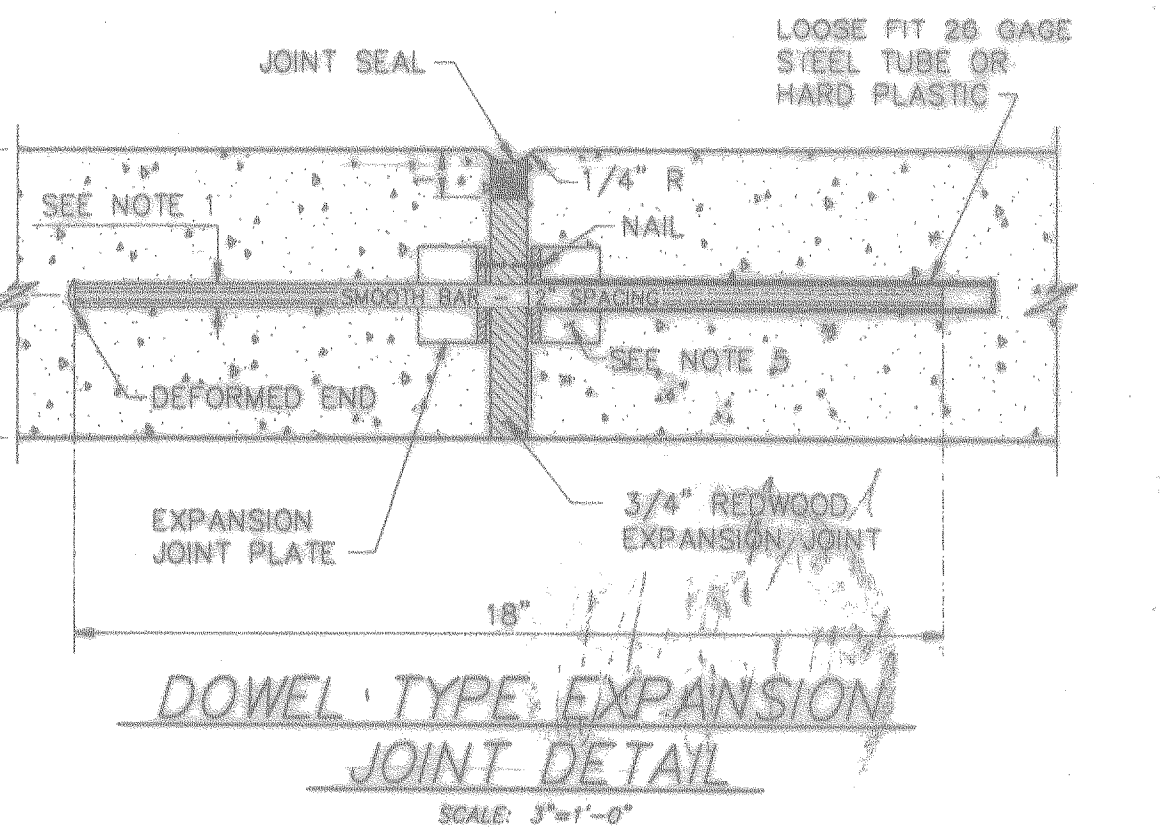
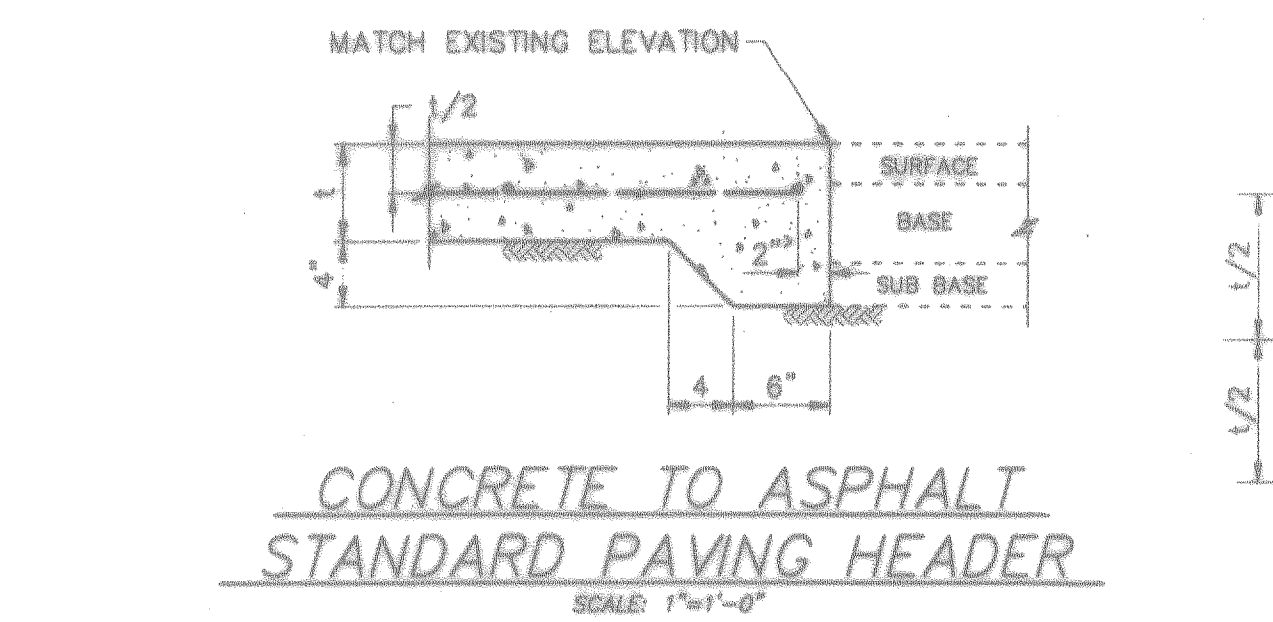
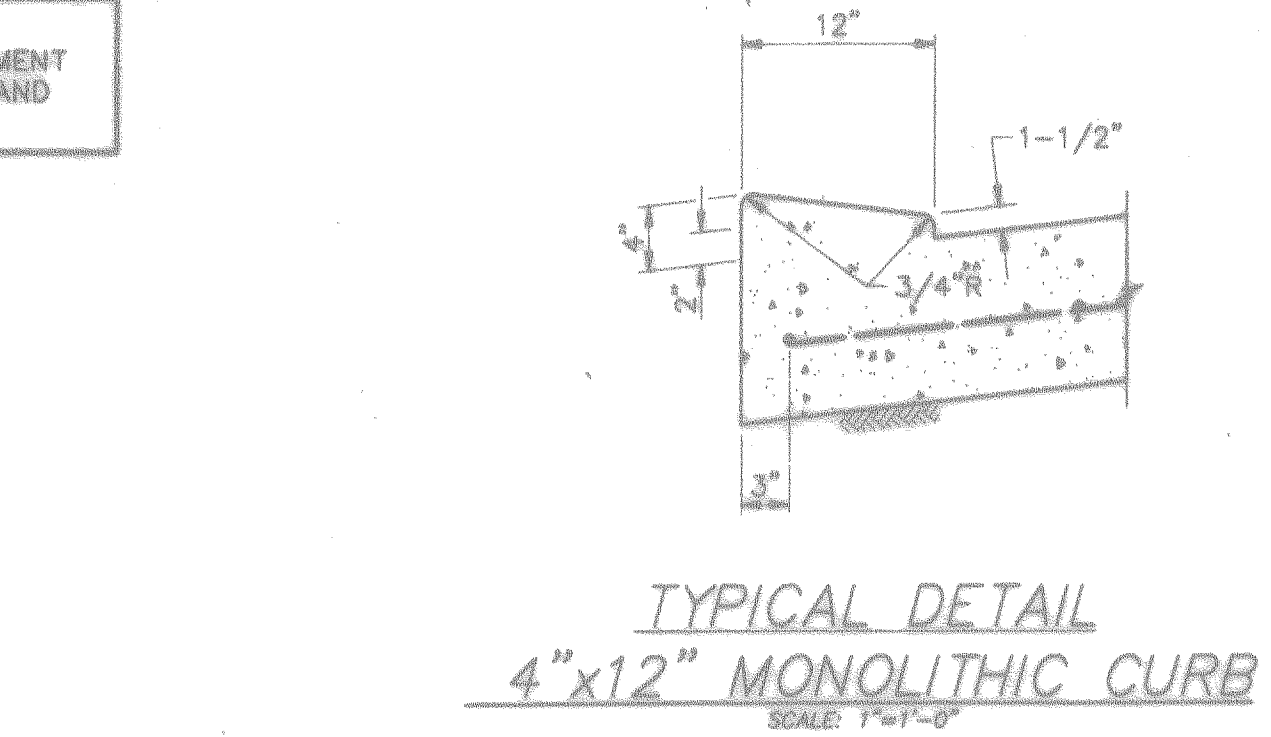
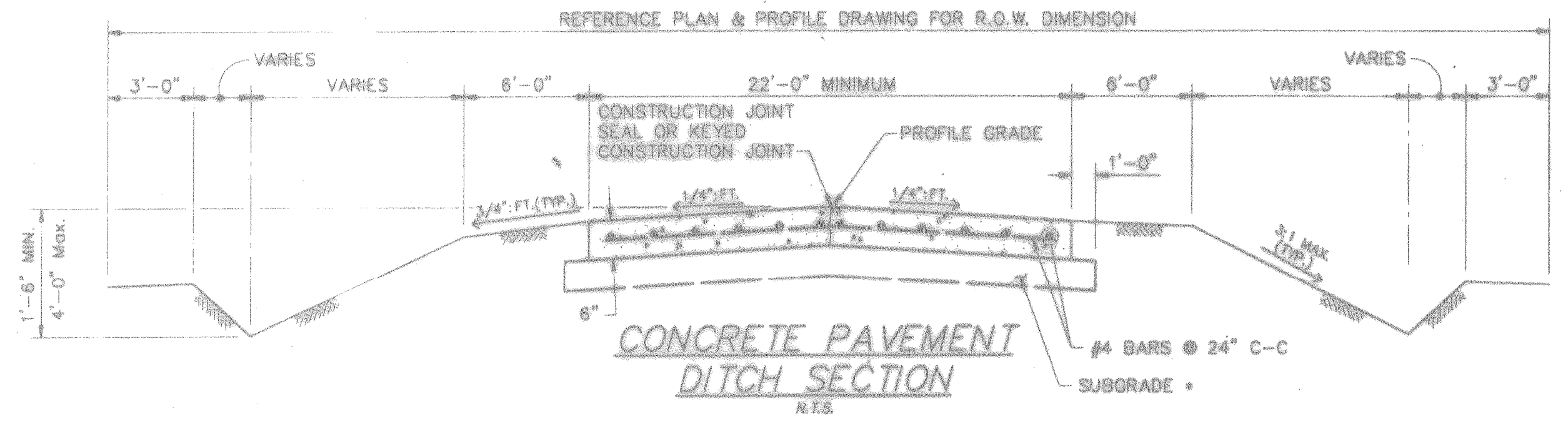
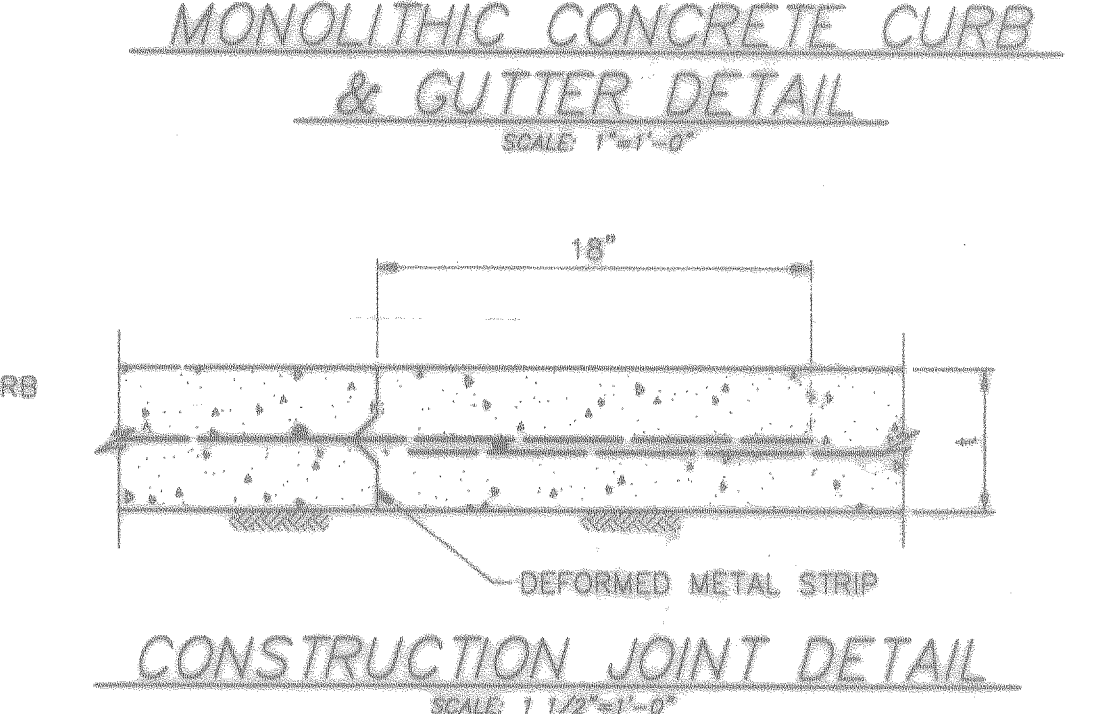
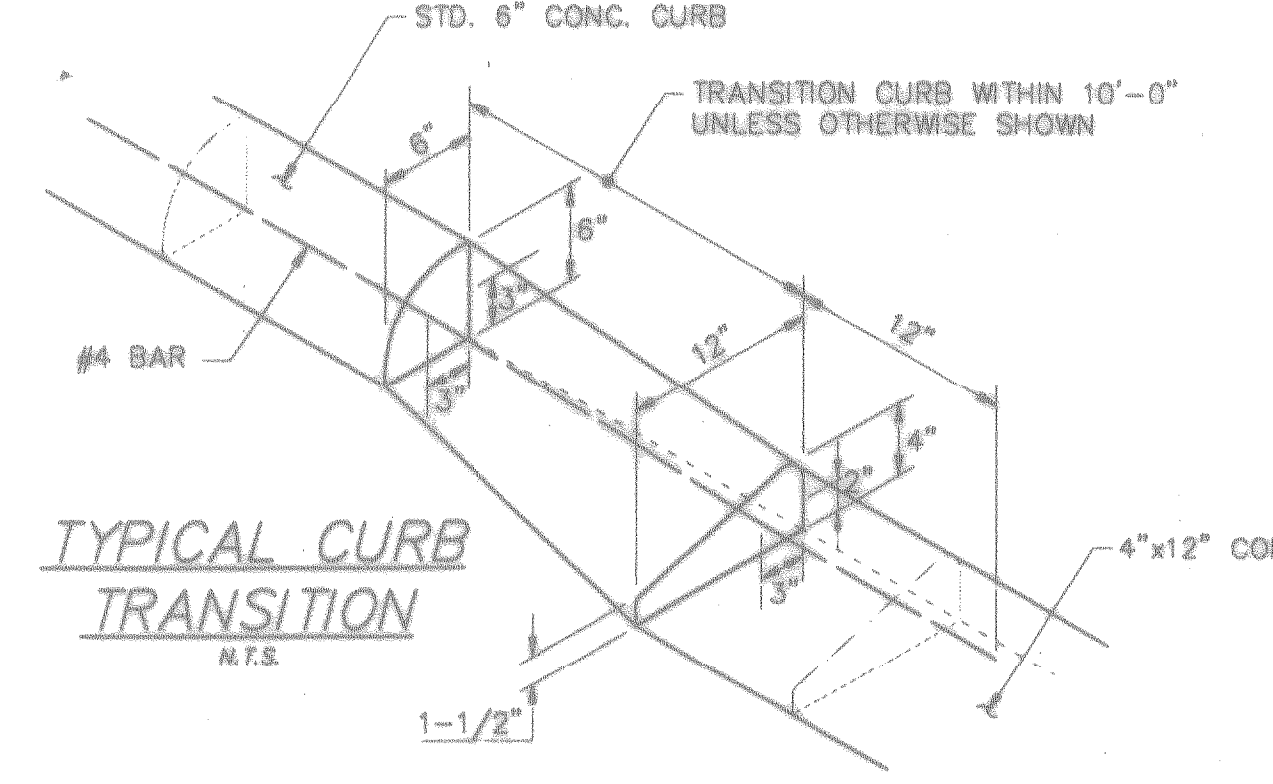
**WATER DETAILS**

**PEI** PROVIDENT ENGINEERS, INC.  
12200 N.W. FRWY, Suite 210  
Houston, Texas 77092



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.
- All 4-inch x 12-inch concrete curbs to be poured monolithically with proposed concrete pavement.
- 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.



NOTES:

- Dowels for pavement expansion joints shall be 3/4" x 6" to less than 7" pavement thickness, 1" x 6" to less than 9" pavement thickness and 1 1/4" x 6" for 9" or greater pavement thickness.
- Expansion joint shall be placed at the end of each curb return and at maximum 80' spacing (see plan).
- All joint seal material shall be asphalt rubber in accordance with ASTM designation D3465.
- If deformed metal strips are allowed, they shall be staked in place with #3 bars.
- Pre-manufactured joint plates.

NO.	REVISIONS	DATE	NAME

# HARRIS COUNTY ENGINEERING DEPARTMENT



DESIGNED BY	L.M.J.	CHECKED BY	S.	DATE	09/03/93
PROJECT TITLE	SUBDIVISION STANDARD PAVEMENT DETAILS				
SCALE	AS NOTED				
APPROVED BY	[Signature]				
SHEET NO.	11	TOTAL SHEETS	16	DATE	8/D-1