

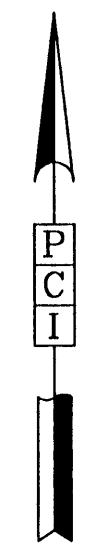
ACREAGE

NOTE:
THIS TRACT IS IN ZONE "X" AS PER FEMA FLOOD INSURANCE
RATE MAP PANEL NO. 48201C0245 J, HARRIS COUNTY, TX
REVISED NOV. 6, 1996. ZONE "X" IS DESCRIBED AS BEING
OUTSIDE THE 500 YEAR FLOODPLAIN.

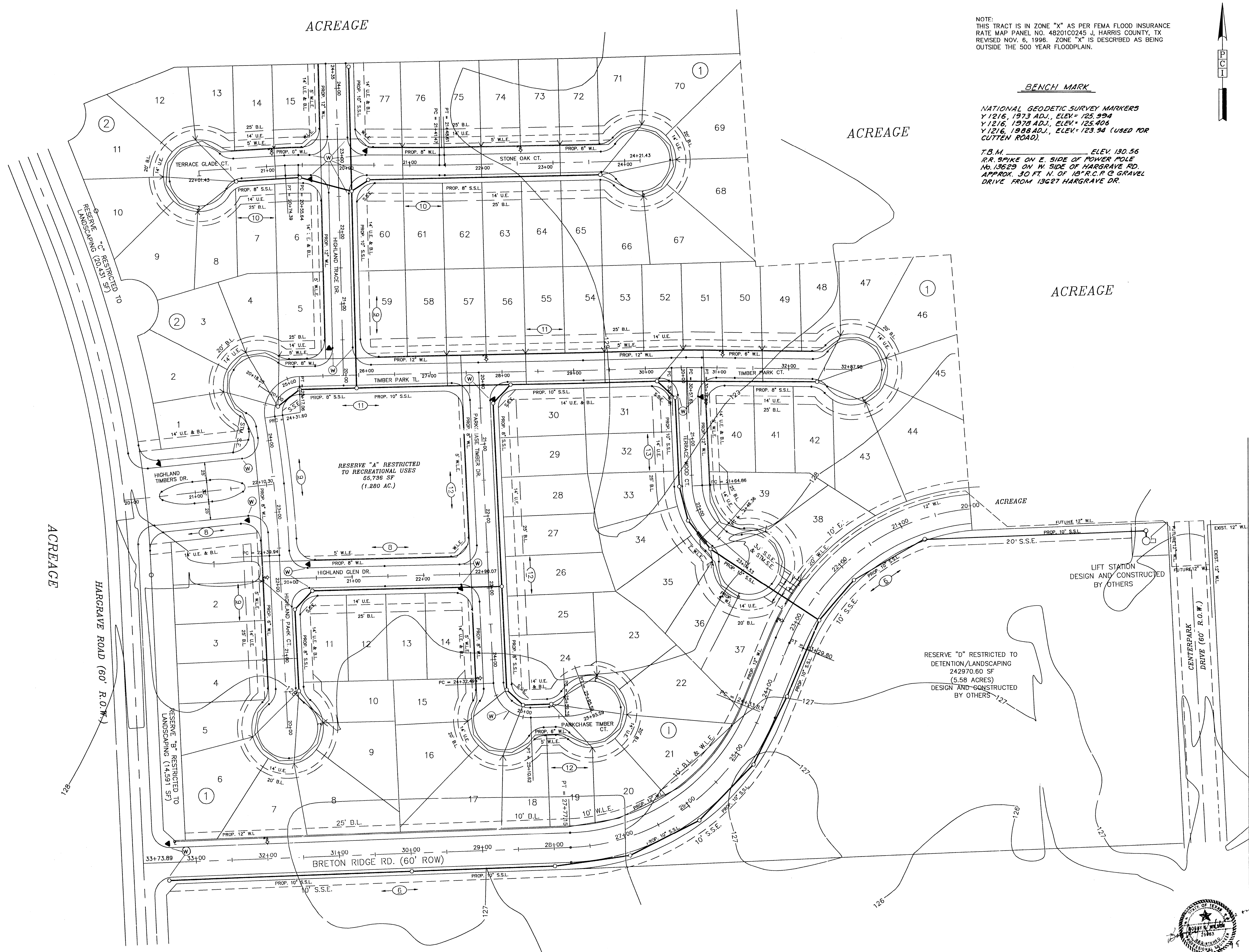
BENCH MARK

NATIONAL GEODETIC SURVEY MARKERS
Y 1216, 1973 ADJ., ELEV. = 125.994
Y 1216, 1978 ADJ., ELEV. = 125.406
Y 1216, 1988 ADJ., ELEV. = 123.94 (USED FOR
CUTTEN ROAD).

T.B.M. _____ ELEV. 130.56
R.R. SPIKE ON E. SIDE OF POWER POLE
NO. 13629 ON W. SIDE OF HARGRAVE RD.
APPROX. 30 FT. N. OF 18" R.C.P. C GRAVEL
DRIVE FROM 13627 HARGRAVE DR.



- LEGEND
- UNDERGROUND DISTRIBUTION CABLE
 - TERMINAL POLE
 - STREET LIGHT ON STEEL STANDARD
 - UNDERGROUND STREET LIGHT CABLE
 - Exist. Contours
 - 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
 - PROP. WATER LINE
 - PROP. GATE VALVE & BOX
 - PROP. FLUSHING VALVE
 - PROP. PLUG & BLOWOFF
 - PROP. SANITARY SEWER LINE & MANHOLE
 - PROP. "R1-10", "R1-11" STOP SIGN.
 - WHEELCHAIR RAMP (SEE SHEET 3 FOR LOCATIONS)



Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN
ENTER, INC. 6-24-99
SOUTHWESTERN BELL TELEPHONE CO. 6-24-99
HOUSTON LIGHTING & POWER CO. 6-24-99
Approval Only for Crossing Underground
Ductlines Unless Noted. Valid at Time of Review Only.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

REVIEWED BY

PRIVATELY FUNDED PUBLIC WORKS	CITY FUNDED PUBLIC WORKS
WATER	PROJECT MANAGER
WASTEWATER	CONSTRUCTION
STORM WATER	CHIEF ENGINEER
STREET & BRIDGE	

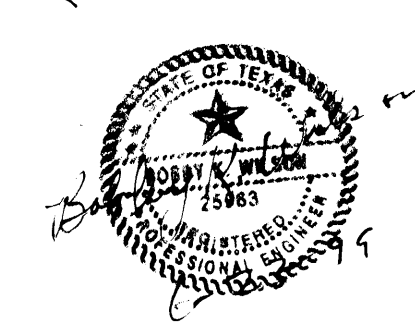
OTHER APPROVAL

TRAFFIC AND TRANSPORTATION	SPONSOR DEPARTMENT
City Engineer	DATE
Director of Public Works and Engineering	DATE

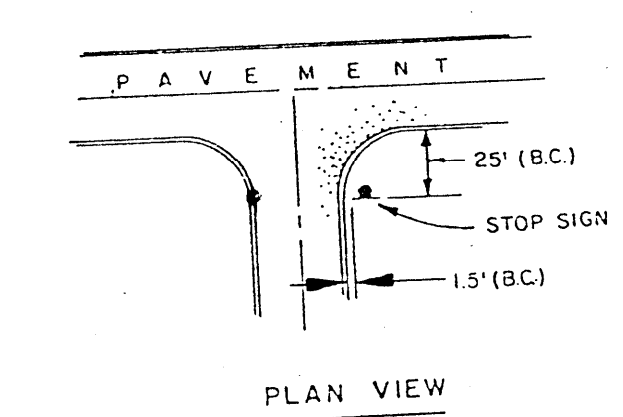
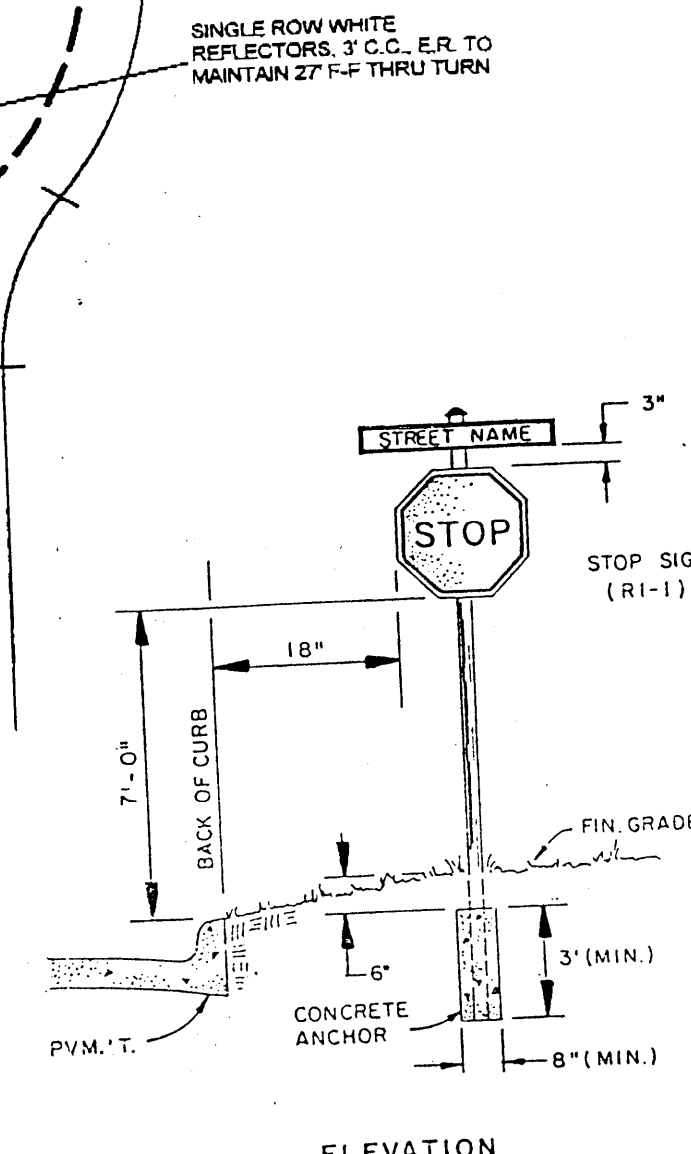
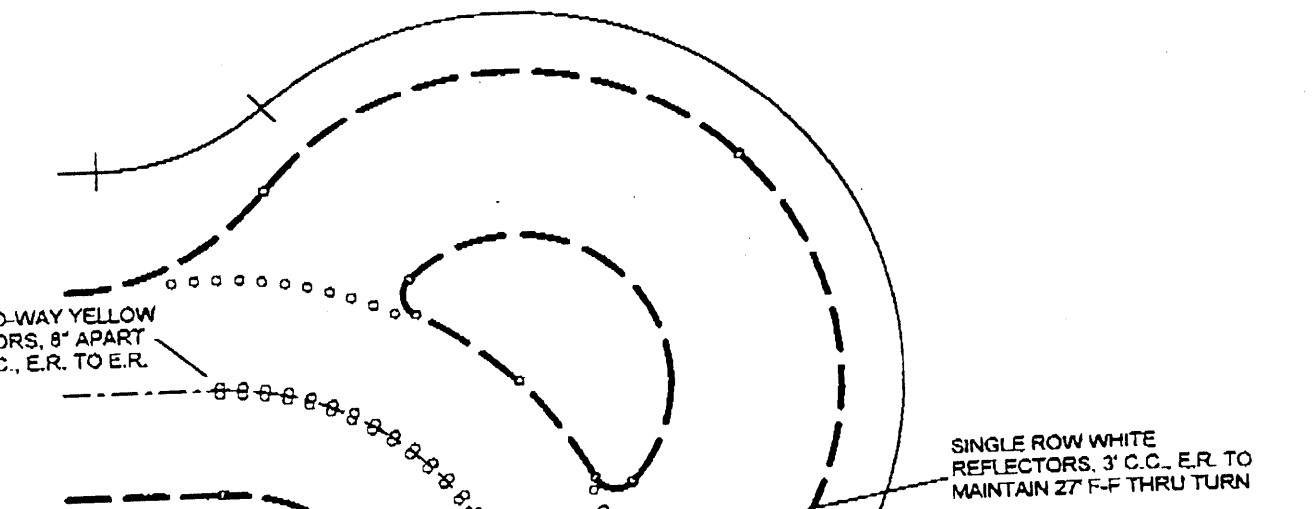
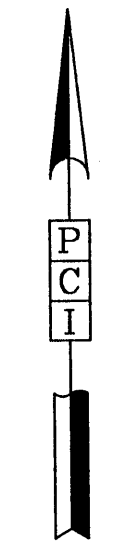
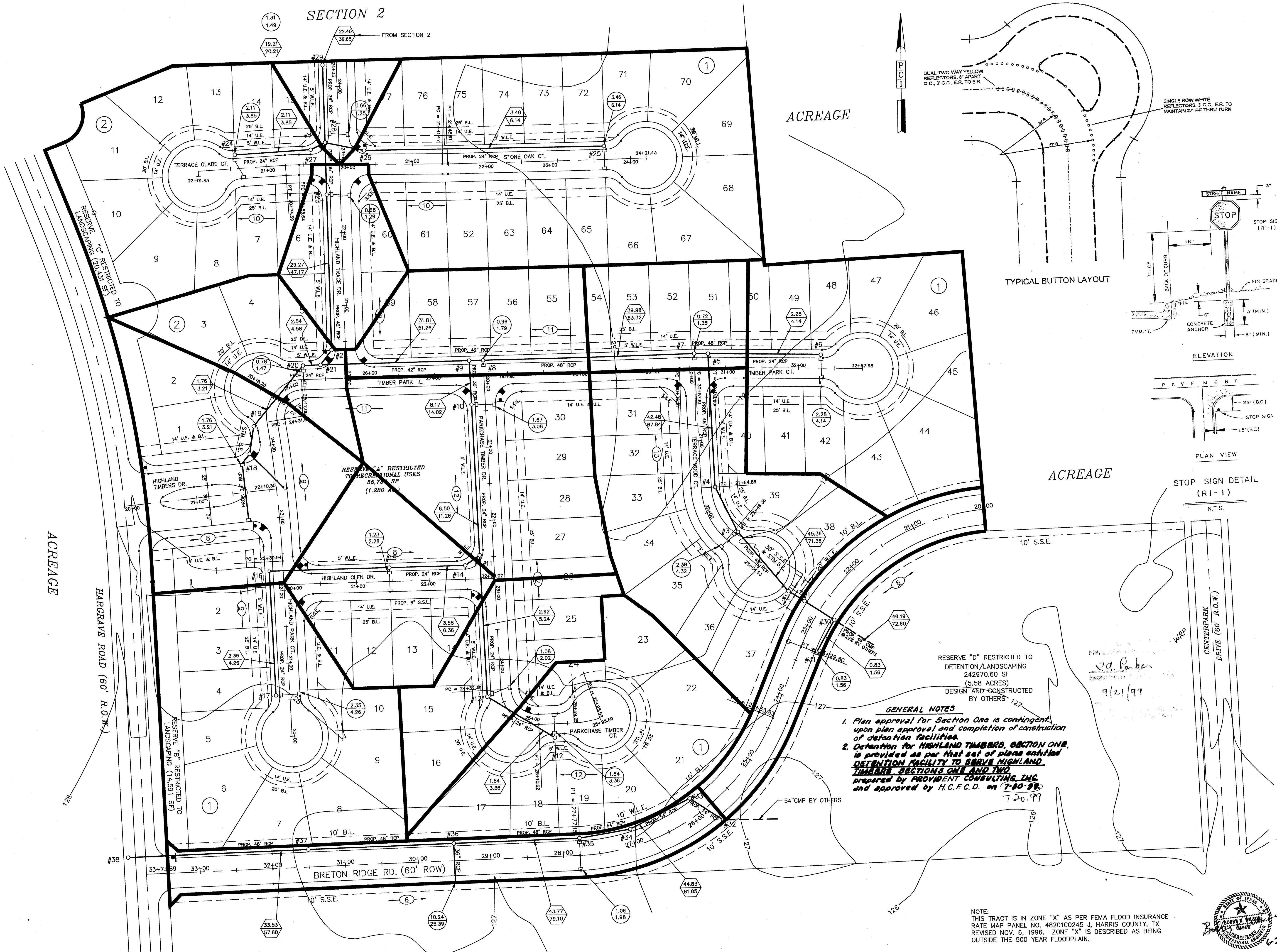
SUBMITTED: _____ DESIGNED BY: _____
SCALE: 1" = 60' DRAWN BY: _____
DATE: MAY 1999 SHEET NO. 2 OF 21 SHEETS
SUBMITTED BY: _____ CITY DWG. NO: _____

HARRIS COUNTY MUD 191
HIGHLAND TIMBERS
SECTION 1
OVERALL LAYOUT
WATER AND SANITARY

PROVIDENT CONSULTING, INC.
1200 WEST 11TH ST.
HOUSTON, TEXAS 77008
(713)802-1019



SECTION 2



BENCH MARK
 BENCH MARK: (SEE SHEET 20F21)
 T.M. _____ ELEV. 130.56
 I.R. SPIKE ON E. SIDE OF POWER POLE
 NO. 1029 ON W. SIDE OF MARGRAVE
 DR. APPROX. 30' N. OF M.P.C.P. &
 GRAVEL DRIVE FROM 13627 MARGRAVE
 ROAD.

- LEGEND**
- UNDERGROUND DISTRIBUTION CABLE
 - TERMINAL POLE
 - STREET LIGHT ON STEEL STANDARD
 - UNDERGROUND STREET LIGHT CABLE
 - - - - - Exist. Contours
 - - - - - 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
 - 1.31 AREA AT INLET IN ACRES
 - 1.49 AREA CONTRIBUTION TO LINE IN ACRES
 - 19.21 RUNOFF AT INLET IN C.F.S.
 - 20.21 RUNOFF CONTRIBUTING TO LINE IN C.F.S.
 - PROP. WHEELCHAIR RAMP

Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN
 ENTEX, INC. 6-24-99
 Nitec Bolin 6/24/99
 SOUTHWESTERN BELL TELEPHONE CO.
 Valid for One Year Only
 6-24-99
 HOUSTON LIGHTING & POWER, INC.
 Approval Only for Crossing Underground
 Utilities Unless Noted. Valid at Time of Review Only.

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

REVIEWED BY	PRIVATELY FUNDED PUBLIC WORKS	CITY FUNDED PUBLIC WORKS
Walter Selman 6-24-99		
Walter Selman 6/24/99		
Walter Selman 6/24/99		

OTHER APPROVAL

TRAFFIC AND TRANSPORTATION	SPONSOR DEPARTMENT
Walter Selman 6-24-99	
Walter Selman 6-24-99	

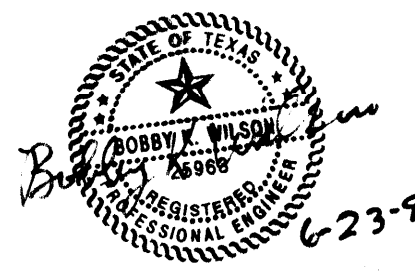
SUBMITTED:	DESIGNED BY:
SCALE: 1" = 80'	DRAWN BY:
DATE: MAY 1999	SHEET NO. 3 OF 21 SHEETS
SURVEY BY:	CITY DWG. NO.:
F B NO.:	

GENERAL NOTES

- Plan approval for Section One is contingent upon plan approval and completion of construction of detention facilities.
- Detention for HIGHLAND TIMBERS, SECTION ONE, is provided as per that set of plans entitled DETENTION FACILITY TO SERVE HIGHLAND TIMBERS, SECTIONS ONE AND TWO prepared by PROVIDENT CONSULTING, INC. and approved by H.C.F.C.D. on 7-30-99.

RESERVE "D" RESTRICTED TO
 DETENTION/LANDSCAPING
 242970.60 SF
 (5.58 ACRES)
 DESIGN AND CONSTRUCTED
 BY OTHERS

NOTE:
 THIS TRACT IS IN ZONE "X" AS PER FEMA FLOOD INSURANCE
 RATE MAP PANEL NO. 48201C0245 J, HARRIS COUNTY, TX
 REVISED NOV. 6, 1996. ZONE "X" IS DESCRIBED AS BEING
 OUTSIDE THE 500 YEAR FLOODPLAIN.



LOG NO. 99-0408

HARRIS COUNTY MUD 191
 HIGHLAND TIMBERS
 SECTION 1
 OVERALL LAYOUT
 STORM SEWER SYSTEM

PROVIDENT CONSULTING, INC.
 1200 WEST 11TH ST.
 HOUSTON, TEXAS 77008
 (713)802-1019

CITY OF HOUSTON STORM SEWER CALCULATION FORM

Project: Highland Timbers, Sections One and Two
 Job No.: 461U/464U
 By: Bobby Wilson
 Date: 06/22/99

MH From	MH To	Area (acres)	Runoff Coefficient C	Sum of C/A	Intensity I (in/hr)	Sum of Flows (cfs)	Time of Conc (minutes)	Reach Length (feet)	Diameter or Rise (inches)	Span (inches)	Slope %	Manning's "n"	Design Capacity (cfs)	Design Velocity (ft/s)	Fall (feet)	Manhole Drop (feet)	Flowline Elevation Upstream (feet)	Flowline Elevation Downstream (feet)	Actual Velocity (ft/s)	Hydraulic Gradient (ft/s)	Change in Head (feet)	Elevation of Hyd. Grad. Upstream (feet)	Elevation of Hyd. Grad. Downstream (feet)	Natural Ground Upstream (feet)	Natural Ground Downstream (feet)
SECTION 2																									
IE	3E	2.95	0.55	1.62	3.250	5.27	27.00	175	24	24	0.16	0.013	9.6	3.10	0.28	0	124.06	123.78	2.32	0.063	0.11	125.42	125.31	130.2	130.0
3E	5E	4.72	0.55	2.59	3.190	8.28	27.25	237	24	24	0.16	0.013	9.6	3.10	0.38		123.78	123.40	3.27	0.160	0.38	125.28	124.90	130.0	129.8
12E	5E	4.21	0.55	2.32	3.220	7.45	27.75	333	24	24	0.15	0.013	9.5	3.00	0.50	0.50	122.90	122.40	2.37	0.108	0.36	125.10	124.74	129.7	129.8
5E	8E	8.93	0.55	4.91	3.120	15.32	29.11	241	30	30	0.17	0.013	18.0	3.70	0.41		121.90	121.49	3.12	0.141	0.34	124.74	124.40	129.8	129.7
8E	10E	10.73	0.55	5.90	3.090	18.23	30.18	317	30	30	0.17	0.013	18.0	3.70	0.54		121.49	120.95	3.71	0.199	0.63	124.37	123.74	129.7	129.8
10E	11E	13.00	0.55	7.15	3.060	21.88	30.71	25	30	30	0.24	0.013	23.0	4.40	0.06		120.95	120.89	4.46	0.280	0.07	123.69	123.62	129.8	129.4
11E	END	22.40	0.55	12.32	2.970	36.59	32.31	111	36	36	0.26	0.013	36.5	5.00	0.29	0.50	120.39	120.10	5.18	0.297	0.33	123.56	123.23	129.4	129.4
1W	4W	2.53	0.55	1.39	3.275	4.56	26.78	290	24	24	0.21	0.013	11.5	3.60	0.61		124.00	123.39	1.61	0.038	0.11	125.69	125.58	130.5	128.0
4W	7W	6.61	0.55	3.63	3.150	11.45	28.82	523	24	24	0.21	0.013	11.5	3.60	1.10	0.08	123.31	122.21	3.65	0.256	1.34	125.55	124.21	128.0	128.7
7W	11E	9.40	0.55	5.17	3.110	16.07	29.81	214	30	30	0.14	0.013	17.0	3.35	0.30	0.50	121.71	121.40	3.57	0.140	0.30	123.86	123.56	128.7	129.4
SECTION 1 22.4 Ac Enters Section 1																									
11E	28	22.40	0.55	12.32	2.975	36.65	32.31	220	36	36	0.20	0.013	32.0	6.50	0.43		120.39	119.96	1.39	0.018	0.04	123.21	123.17	129.4	129.8
25	28	3.46	0.55	1.90	3.240	6.15	27.30	386	24	24	0.17	0.013	10.0	3.20	0.58		122.41	121.83	2.98	0.127	0.49	123.66	123.17	128.1	129.4
24	28	2.11	0.55	1.16	3.300	3.83	26.50	127	24	24	0.17	0.013	10.0	3.20	0.20		123.00	122.80	2.72	0.150	0.19	123.92	123.73	129.2	129.4
28	23	28.59	0.55	15.72	2.940	46.22	33.00	72	42	42	0.21	0.013	48.0	5.10	0.15	0.50	119.46	119.31	4.80	0.208	0.15	123.17	123.02	129.4	128.3
23	21	29.27	0.55	16.10	2.930	47.17	33.05	275	42	42	0.21	0.013	48.0	5.10	0.45		119.31	118.86	4.90	0.218	0.60	122.96	122.36	128.3	128.7
18	20	1.76	0.55	0.97	3.340	3.23	26.25	142	24	24	0.17	0.013	10.0	3.20	0.18		122.75	122.57	2.36	0.106	0.15	123.65	123.50	129.0	128.8
20	21	2.54	0.55	1.40	3.290	4.60	26.70	29	24	24	0.17	0.013	10.0	3.20	0.07		122.57	122.50	3.34	0.241	0.07	123.47	123.40	128.8	128.8
17	15	2.35	0.55	1.29	3.300	4.26	26.51	336	24	24	0.17	0.013	10.0	3.20	0.26		118.86	118.35	5.76	0.233	0.49	121.91	121.42	128.8	128.6
15	11	3.58	0.55	0.97	3.230	6.36	27.45	126	24	24	0.17	0.013	10.0	3.20	0.23		122.41	122.18	2.02	0.063	0.08	124.41	124.33	128.2	128.4
12	13	1.84	0.55	1.01	3.320	3.36	26.35	108	24	24	0.17	0.013	10.0	3.20	0.18		122.70	122.52	1.13	0.019	0.02	124.49	124.47	127.8	128.0
13	11	2.92	0.55	1.61	3.260	5.24	27.00	194	24	24	0.17	0.013	10.0	3.20	0.34		122.52	122.18	1.68	0.052	0.10	124.46	124.36	128.0	128.4
11	10	6.50	0.55	3.57	3.150	11.26	28.77	207	24	24	0.17	0.013	10.0	3.20	0.36		122.18	121.82	3.58	0.246	0.51	124.33	123.82	128.4	128.6
10	9	8.17	0.55	4.49	3.120	14.02	29.45	61	30	30	0.17	0.013	18.0	3.70	0.10	0.50	121.32	121.22	3.78	0.164	0.10	123.09	122.99	128.6	128.6
9	5	39.98	0.55	21.99	2.880	63.32	34.21	328	48	48	0.18	0.013	64.0	5.40	0.59		117.85	117.26	5.42	0.177	0.58	121.36	120.78	128.6	130.5
6	5	2.28	0.55	1.25	3.300	4.14	26.50	152	24	24	0.17	0.013	10.0	3.20	0.23		122.70	122.47	2.75	0.145	0.22	123.67	123.45	130.5	128.1
5	3	42.48	0.55	23.64	2.870	67.84	34.40	253	48	48	0.21	0.013	70.0	5.50	0.53		117.26	116.73	5.90	0.206	0.52	120.70	120.18	130.5	128.2
3	D P	45.36	0.55	24.95	2.860	71.36	34.50	255	48	48	0.24	0.013	75.0	6.00	0.61	0.62	116.11	115.50	5.68	0.239	0.61	120.11	119.50	128.2	127.4
BRETON RIDGE STREET Sedona Woods Subdivision Enters - 28.97 Ac + 4.566 of Apts at MH 1B, 10.24 Ac of Apts at MH 2B																									
38	36	33.53	0.59	19.78	2.910	57.60	33.56	450	54	54	0.10	0.013	65.0	4.00	0.45		116.17	115.72	3.68	0.076	0.34	120.48	120.14	127.3	127.9
36	35	43.77	0.63	27.57	2.860	79.10	34.45	173	54	54	0.15	0.013	80.0	5.00	0.26		115.72	115.46	5.02	0.145	0.25	120.08	119.83	127.9	127.7
35	32	44.83	0.63	28.24	2.850	81.05	34.50	217	54	54	0.15	0.013	80.0	5.00	0.32		115.46	115.13	5.17	0.147	0.32	119.77	119.45	127.7	128.0

W West
 E East
 D P Detention Pond

CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

REVIEWED BY
 PRIVATELY FUNDED PUBLIC WORKS CITY FUNDED PUBLIC WORKS

WATER
Victor Saldivar 6-24-99
Melle Jr. 6/21/99

WASTEWATER PROJECT MANAGER
D. J. Saldivar 6/24/99

STORM WATER CONSTRUCTION

STREET & BRIDGE CHIEF ENGINEER

OTHER APPROVAL

TRAFFIC AND TRANSPORTATION SPONSOR DEPARTMENT

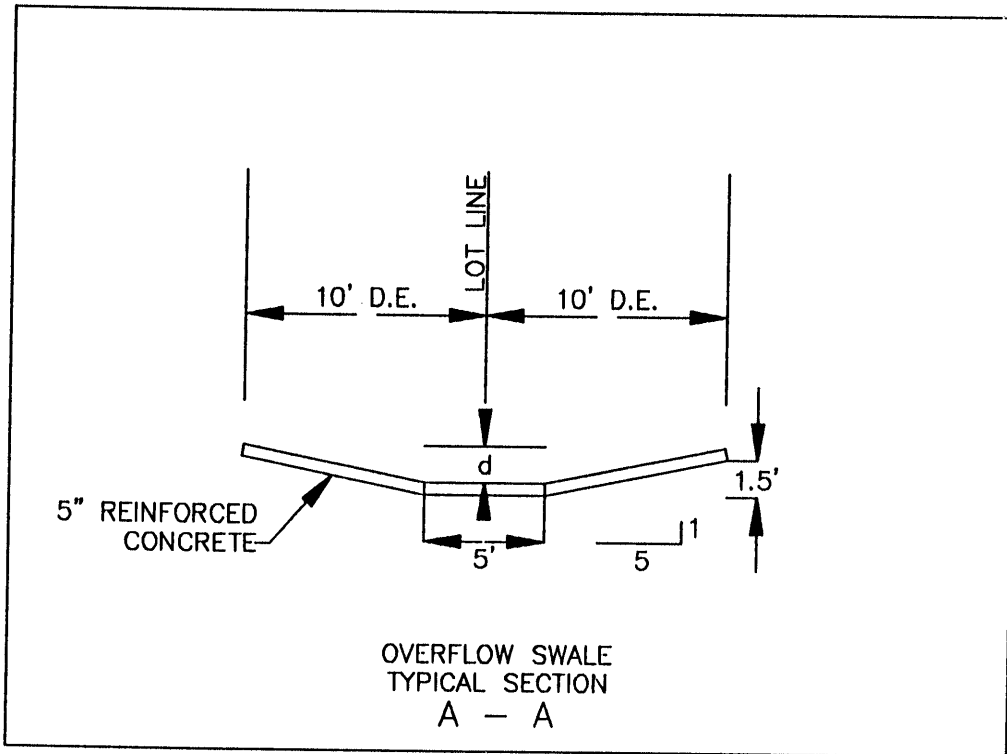
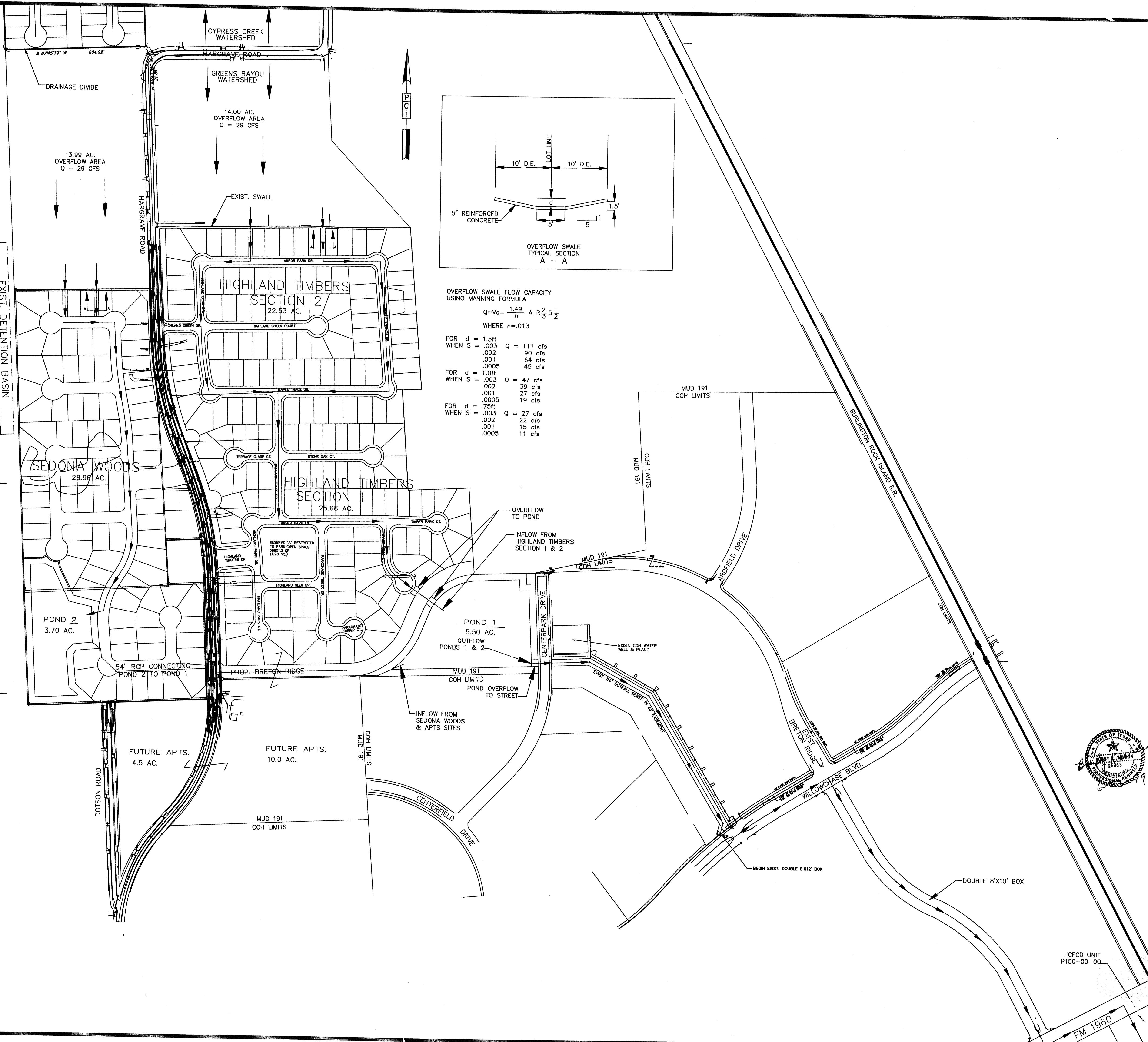
CITY ENGINEER DATE 7-6-99
 DIRECTOR OF PUBLIC WORKS AND ENGINEERING DATE 7-6-99

SUBMITTED: DESIGNED BY:
 SCALE: N/A DRAWN BY:
 DATE: JUNE 1999 SHEET NO. 3A OF 21 SHEETS
 SURVEY BY: CITY DWG. NO:
 F B NO:

HARRIS COUNTY MUD 191
 HIGHLAND TIMBERS
 SECTION 1 & 2
 STORM SEWER
 CALCULATIONS

PCI PROVIDENT CONSULTANT, INC.
 1200 WEST 11TH ST.
 HOUSTON, TEXAS 77008





OVERFLOW SWALE FLOW CAPACITY
USING MANNING FORMULA

$$Q = Vq = \frac{1.49}{n} A R^{2/3} S^{1/2}$$

WHERE $n = .013$

FOR $d = 1.5ft$
WHEN $S = .003$ $Q = 111$ cfs
 $.002$ 90 cfs
 $.001$ 64 cfs
 $.0005$ 45 cfs

FOR $d = 1.0ft$
WHEN $S = .003$ $Q = 47$ cfs
 $.002$ 39 cfs
 $.001$ 27 cfs
 $.0005$ 19 cfs

FOR $d = .75ft$
WHEN $S = .003$ $Q = 27$ cfs
 $.002$ 22 cfs
 $.001$ 15 cfs
 $.0005$ 11 cfs

BENCH MARK
BENCH MARK (SEE SHEET 2 OF 21)
T.B.M. _____ ELEV. = 130.56
R.R. SPIKE ON E. SIDE OF POWER POLE
NO. 13629 ON W. SIDE OF HARGRAVE RD.
APPROX. 30' N. OF 18" R.C.P. G GRAVEL
DRIVE FROM 13627 HARGRAVE RD.

Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN

James B. Wilson 6-24-99
RELIANT ENERGIES, INC. / TEXAS
Mike Bolin 6/24/99
SOUTHWESTERN BELL TELEPHONE CO.
Valid for One Year Only
James B. Wilson 6-24-99
RELIANT ENERGIES, INC. / TEXAS
Approval Only for crossing underground
Ductlines Unless Noted. Valid at Time of Review Only.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

REVIEWED BY	DATE	PROJECT MANAGER	CONSTRUCTION	CHIEF ENGINEER
<i>Victor Saldivar</i>	6-24-99			
<i>Mike Bolin</i>	6/24/99			

OTHER APPROVAL

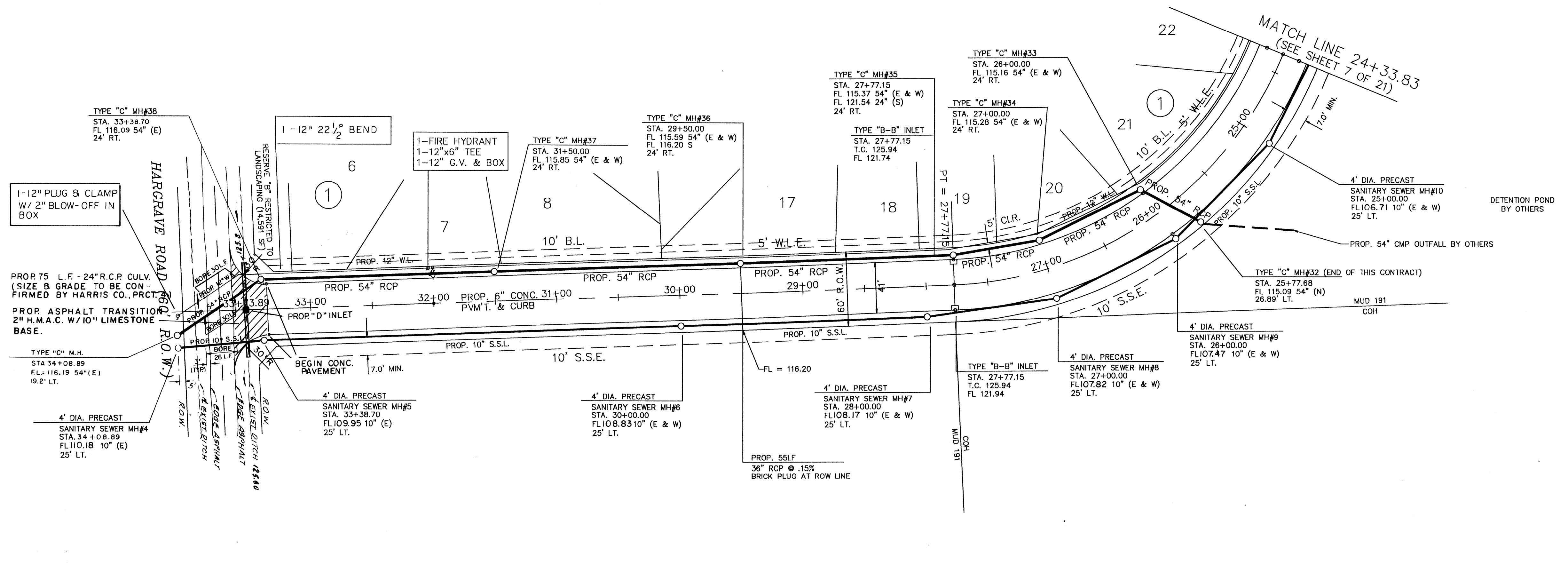
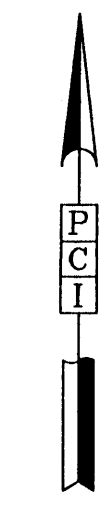
TRAFFIC AND TRANSPORTATION	SPONSOR DEPARTMENT
<i>M. L. L.</i>	7-6-99
CITY ENGINEER	DATE
<i>M. L. L.</i>	7-6-99
DIRECTOR OF PUBLIC WORKS AND ENGINEERING	DATE

SUBMITTED: _____ DESIGNED BY: BOBBY WILSON
SCALE: 1" = 200' DRAWN BY: BILL DORRIS
DATE: JUNE 1999 SHEET NO. 4 OF 21 SHEETS
SURVEY BY: _____ CITY DWG. NO. ARDLAOT.DWG
F B NO: _____

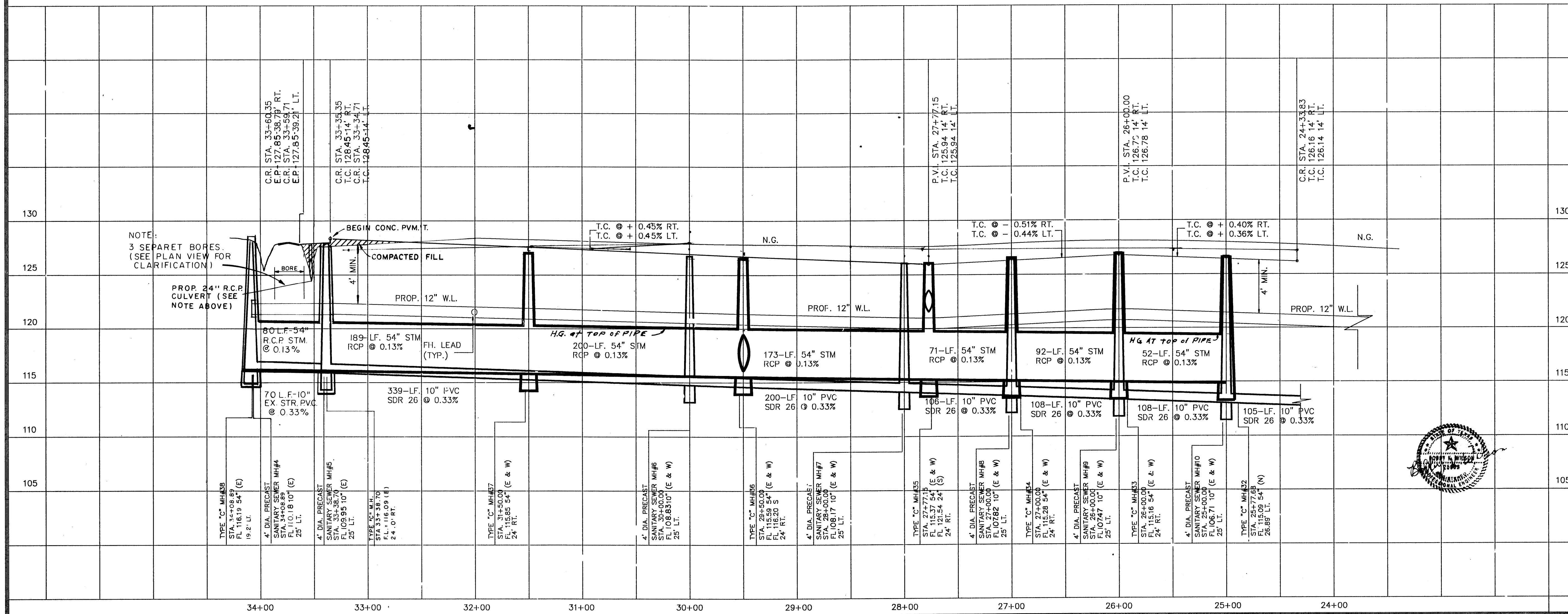
HARRIS COUNTY MUD 191
DETENTION FACILITIES
to serve
HIGHLAND TIMBERS
SECTION 1 & 2
OVERALL AREA DRAINAGE

BENCH MARK

BENCH MARK (SEE SHEET 2 OF 21)
T.B.M. ELEV = 130.56
R.R. SPIKE ON E. SIDE OF POWER POLE
NO. 13629 ON W. SIDE OF HARGRAVE RD.
APPROX. 30 FT. N. OF 18" R.C.P. & GRAVEL
DRIVE FROM 13627 HARGRAVE ROAD.



BRETON RIDGE RD.



Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN

ENTEX, INC.	6-24-99
SOUTHWESTERN BELL TELEPHONE CO.	6-24-99
HOUSTON LIGHTING & POWER CO.	6-24-99

Approval Only for Crossing Underground
Ductlines Unless Noted. Valid at Time of Review Only.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

REVIEWED BY	
PRIVATELY FUNDED PUBLIC WORKS	CITY FUNDED PUBLIC WORKS
WATER 6/24/99	
PROJECT MANAGER	
WASTEWATER 6/24/99	
CONSTRUCTION	
STORM WATER	
CHIEF ENGINEER	
STREET & BRIDGE	

OTHER APPROVAL

TRAFFIC AND TRANSPORTATION	SPONSOR DEPARTMENT
6/24/99	6/24/99
DATE	DATE
6/24/99	6/24/99
DATE	DATE

SUBMITTED: _____ DESIGNED BY: _____
SCALE: 1" = 50' DRAWN BY: _____
DATE: MAY 1999 SHEET NO. 6 OF 21 SHEETS
SURVEY BY: _____ CITY DWG. NO: _____
F B NO: _____

PLAN & PROFILE
BRETON RIDGE AT
HARGRAVE ROAD

PCI PROVIDENT CONSULTANT, INC.
1200 WEST 11TH ST.
HOUSTON, TEXAS 77008

BENCH MARK

BENCH MARK (SEE SHEET 2 OF 21)
7.5 M.
ELEV. = 130.56
R.R. SPIKE ON E. SIDE OF POWER POLE
NO. 13629 ON W. SIDE OF HARGRAVE RD.
APPROX. 30' N. OF 18" R.C.P. @ GRAVEL
DRIVE FROM 13627 HARGRAVE RD.

APPROVED: *[Signature]*
for Assistant County Engineer
Date: 6/24/99

Approval implied for paving and drainage facilities within Harris County R.O.W. and/or jurisdiction. All other improvements in H.C.R.O.W. and/or jurisdiction are approved as to location only. The above authorization is valid for one (1) year only.

Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN

[Signature] 6-24-99
ENTEX, INC.
Mike Balin 6/24/99
SOUTHWESTERN BELL TELEPHONE CO.
Valid for One Year Only

[Signature] 6-24-99
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 AND ENGINEERING

REVIEWED BY	
PRIVATELY FUNDED PUBLIC WORKS	CITY FUNDED PUBLIC WORKS
<i>[Signature]</i> 6-24-99 WATER	<i>[Signature]</i> 6/24/99 PROJECT MANAGER
WASTEWATER	CONSTRUCTION
<i>[Signature]</i> 6/24/99 STORM WATER	CHIEF ENGINEER
STREET & BRIDGE	

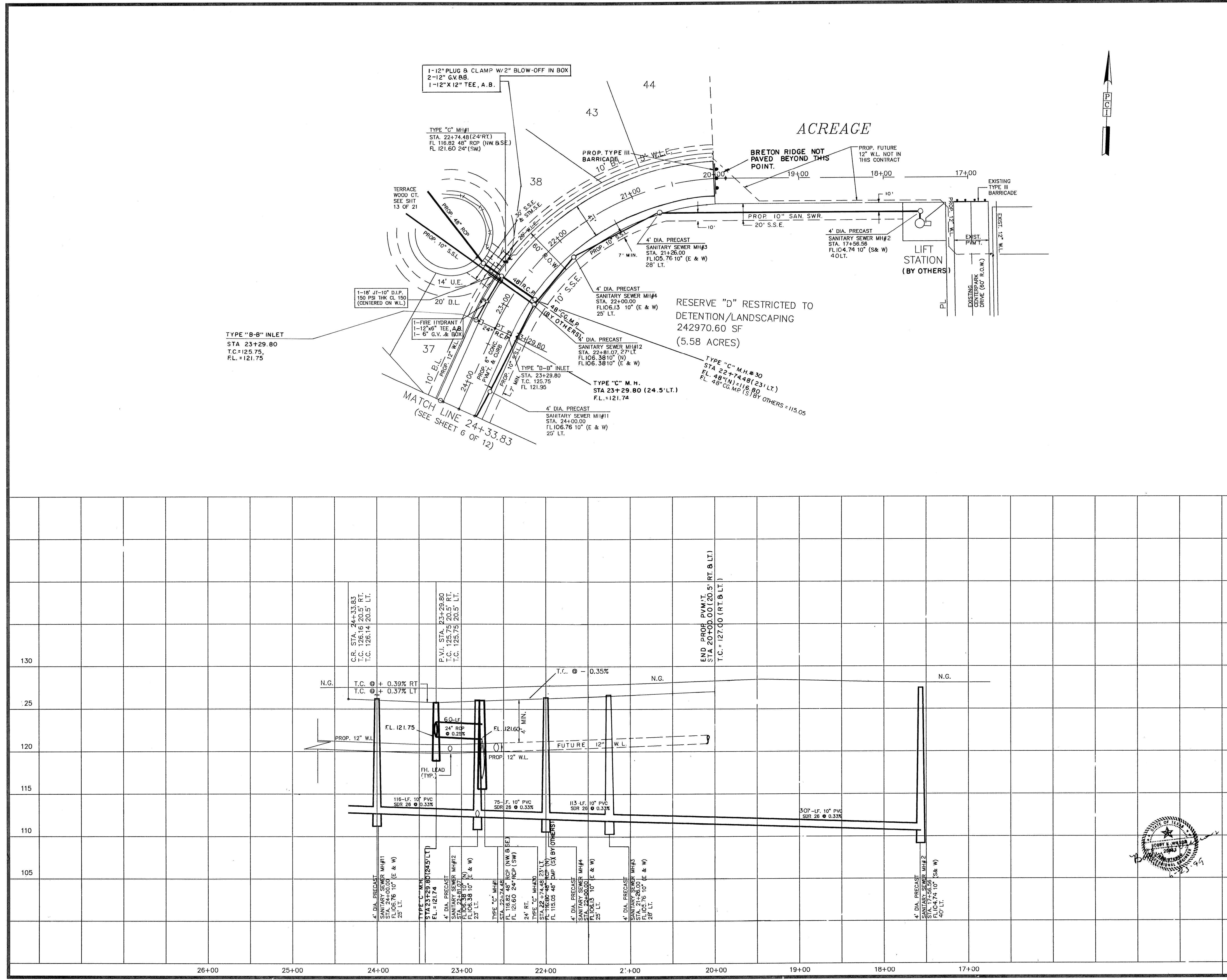
OTHER APPROVAL	
TRAFFIC AND TRANSPORTATION	SPONSOR DEPARTMENT
<i>[Signature]</i> 7-6-99 CITY ENGINEER	DATE
<i>[Signature]</i> 7-6-99 DIRECTOR OF PUBLIC WORKS AND ENGINEERING	DATE

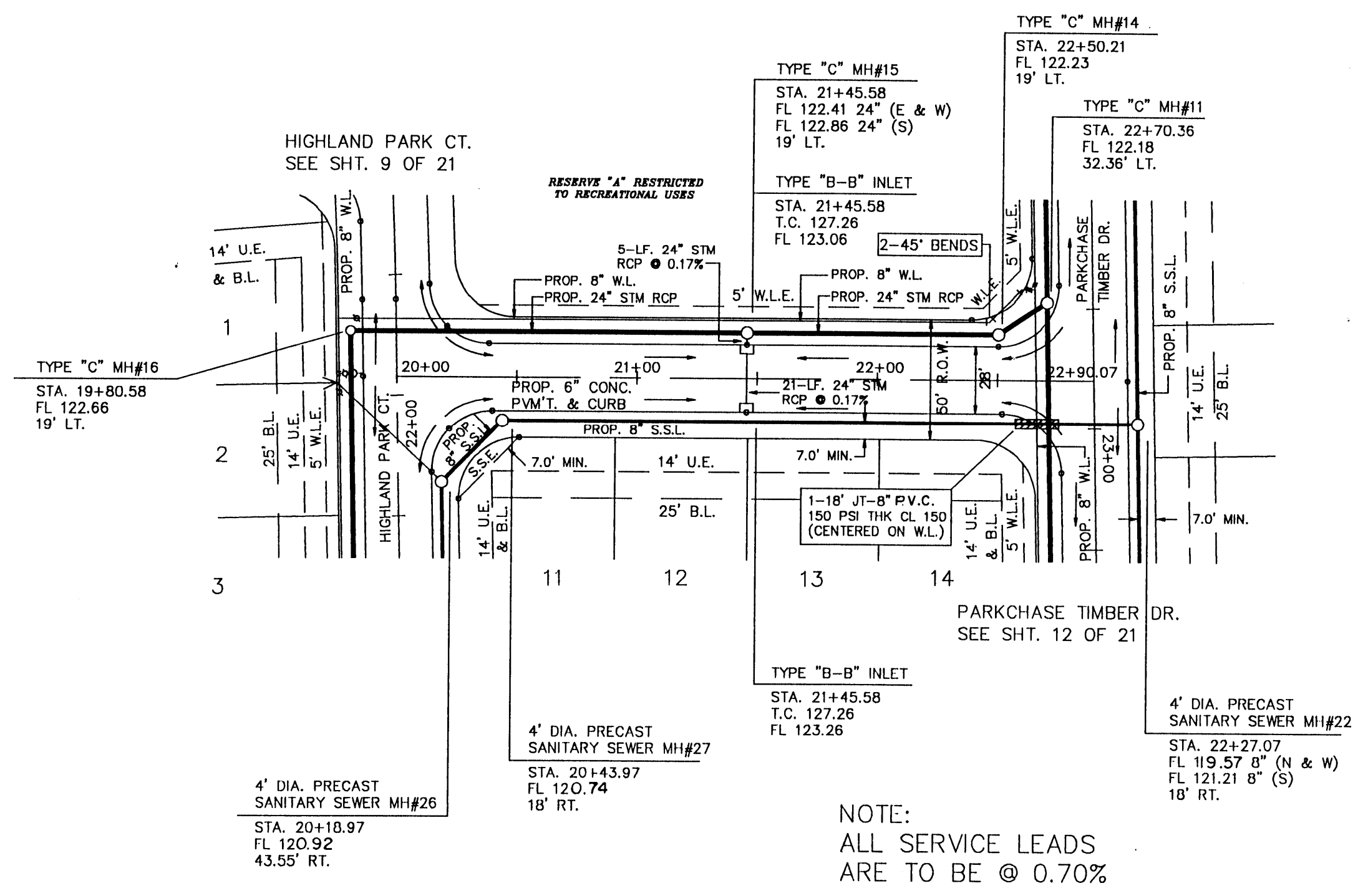
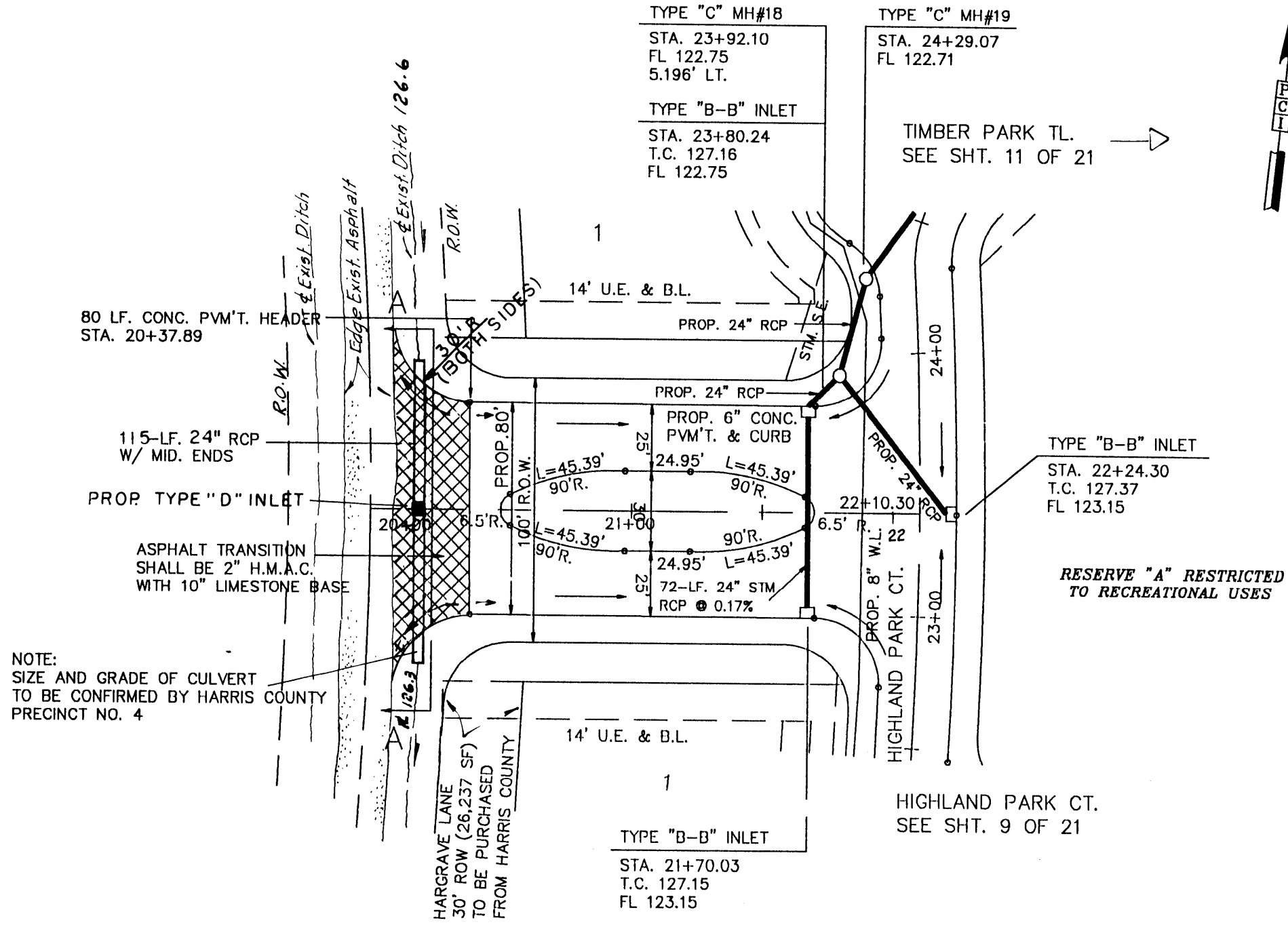
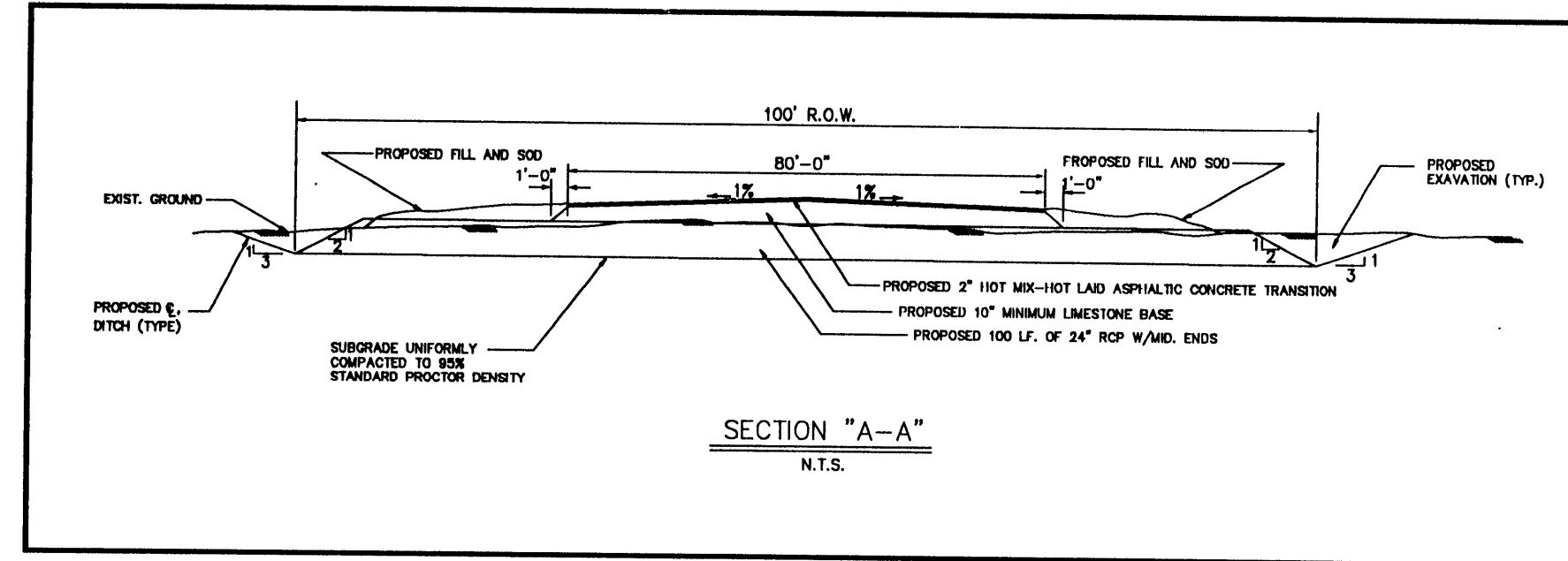
SUBMITTED: _____	DESIGNED BY: _____
SCALE: 1" = 50'	DRAWN BY: _____
DATE: MAY 1999	SHEET NO. 7 OF 21 SHEETS
SURVEY BY: _____	CITY DWG. NO: _____
F B NO: _____	

PLAN & PROFILE

BRETON RIDGE TO LIFT STATION

PCI PROVIDENT CONSULTANTS
1200 WEST 1,
HOUSTON, TEXAS





BENCH MARK
 BENCH MARK (SEE SHEET 2 OF 21)
 T.B.M. ELEV=130.58
 R.R. SPIKE ON E. SIDE OF POWER POLE
 NO. 13629 ON W. SIDE OF HARGRAVE
 ROAD APPROX. 30' N. OF 18" R.C.P.
 GRAVEL DR. FROM 13627 HARGRAVE RD.

APPROVED: *[Signature]*
 for Assistant County Engineer
 Date: 6/24/99

Approval is granted for paving and drainage facilities within Harris County R.O.W. and/or Jurisdiction. All other improvements in H.C.R.O.W. and/or Jurisdiction are approved as to location only. The above authorization is valid for one (1) year only.

Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN
[Signature] 6-24-99
 EXTEX, INC.
 Mike Balim 6/24/99
 SOUTHWESTERN BELL TELEPHONE CO.
 Valid for One Year Only
[Signature] 6-24-99
 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 AND ENGINEERING

REVIEWED BY	
PRIVATELY FUNDED PUBLIC WORKS	CITY FUNDED PUBLIC WORKS
WATER <i>[Signature]</i> 6-24-99	CITY ENGINEER
WASTEWATER <i>[Signature]</i> 6/24/99	PROJECT MANAGER
STORM WATER	CONSTRUCTION
STREET & BRIDGE	CHIEF ENGINEER

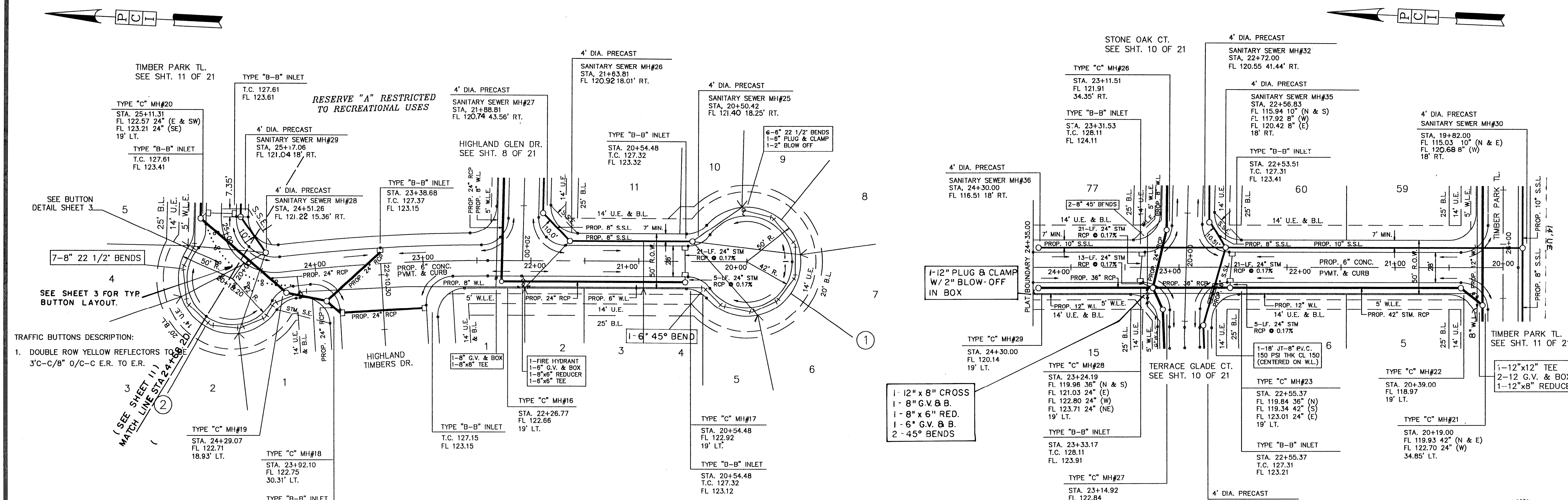
OTHER APPROVAL
 TRAFFIC AND TRANSPORTATION SPONSOR DEPARTMENT
[Signature] 7-6-99
 CITY ENGINEER DATE
[Signature] 7-6-99
 DIRECTOR OF PUBLIC WORKS AND ENGINEERING DATE
 SUBMITTED: _____ DESIGNED BY:
 SCALE: 1" = 50' DRAWN BY:
 DATE: MAY 1999 SHEET NO. 8 OF 21 SHEETS
 SURVEY BY: _____ CITY DWG. NO.: _____
 F B NO: _____

PLAN & PROFILE
 HIGHLAND TIMBERS DR.
 AND
 HIGHLAND GLEN DR.

Station	Profile Description	Profile Data	Profile Notes
130	EXIST. ASPHALT PVM'T.	CR. STA. 20+13.12 EP+127.85 63.13' RT. CR. STA. 20+38.13 T.C. 128.45 39.54' RT.	CR. STA. 20+12.72 EP+127.85 64.31' LT. CR. STA. 20+37.65 T.C. 128.45 40.36' LT.
125	FL. EXIST. DITCH	COMPACTED FILL T.C. +0.95% RT. T.C. -0.95% LT.	FL. EXIST. DITCH = 125.5
120	PROP. R.C.P. CULVERT (SEE NOTE ABOVE)	17-LF. 24" RCP SIM @ 0.17%	PROP. 8" W.L.
115	TYPE "B-B" INLET	STA. 23+80.24 T.C. 127.16 FL. 122.75	TYPE "C" MH#18 STA. 23+80.24 T.C. 127.16 FL. 122.75
110	TYPE "B-B" INLET	STA. 23+80.24 T.C. 127.16 FL. 122.75	TYPE "B-B" INLET STA. 23+80.24 T.C. 127.16 FL. 122.75
105	TYPE "C" MH#16	STA. 19+80.58 FL. 122.66 19' LT.	4" DIA. PRECAST SANITARY SEWER MH#26 STA. 20+18.87 FL. 120.92
	TYPE "C" MH#15	STA. 21+45.58 FL. 122.41 24" (E & W) FL. 122.86 24" (S) 19' LT.	4" DIA. PRECAST SANITARY SEWER MH#27 STA. 20+43.97 FL. 120.74
	TYPE "C" MH#11	STA. 22+70.36 FL. 122.18 32.36' LT.	4" DIA. PRECAST SANITARY SEWER MH#22 STA. 22+27.07 FL. 119.57 8" (N & W) FL. 121.21 8" (S) 18' RT.

BENCH MARK

BENCH MARK (SEE SHEET 2 OF 21)
T.B.M. ELEV. 130.56
R.R. SPIKE ON E. SIDE OF POWER POLE
NO. 13629 ON W. SIDE OF HARGRAVE RD.
APPROX. 30' N. OF 18" R.C.P. @ GRAVEL DR.
FROM 13627 HARGRAVE RD.



NOTE:
ALL SERVICE LEADS
ARE TO BE @ 0.70%

APPROVED: [Signature]
for Assistant County Engineer
Date: 6-24-99

Approval implied for paving and drainage facilities
within Harris County R.O.W. and/or jurisdiction. All
other improvements in H.C.R.O.W. and/or jurisdiction are
approved as to location only.
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Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN

ENTEX, INC. 6-24-99
Mike Balim 6/24/99
SOUTHWESTERN BELL TELEPHONE CO.
Valid for One Year Only
HOUSTON LIGHTING & POWER CO.
Approval Only for Crossing Underground
Ductlines Unless Noted. Valid at Time of Review Only.

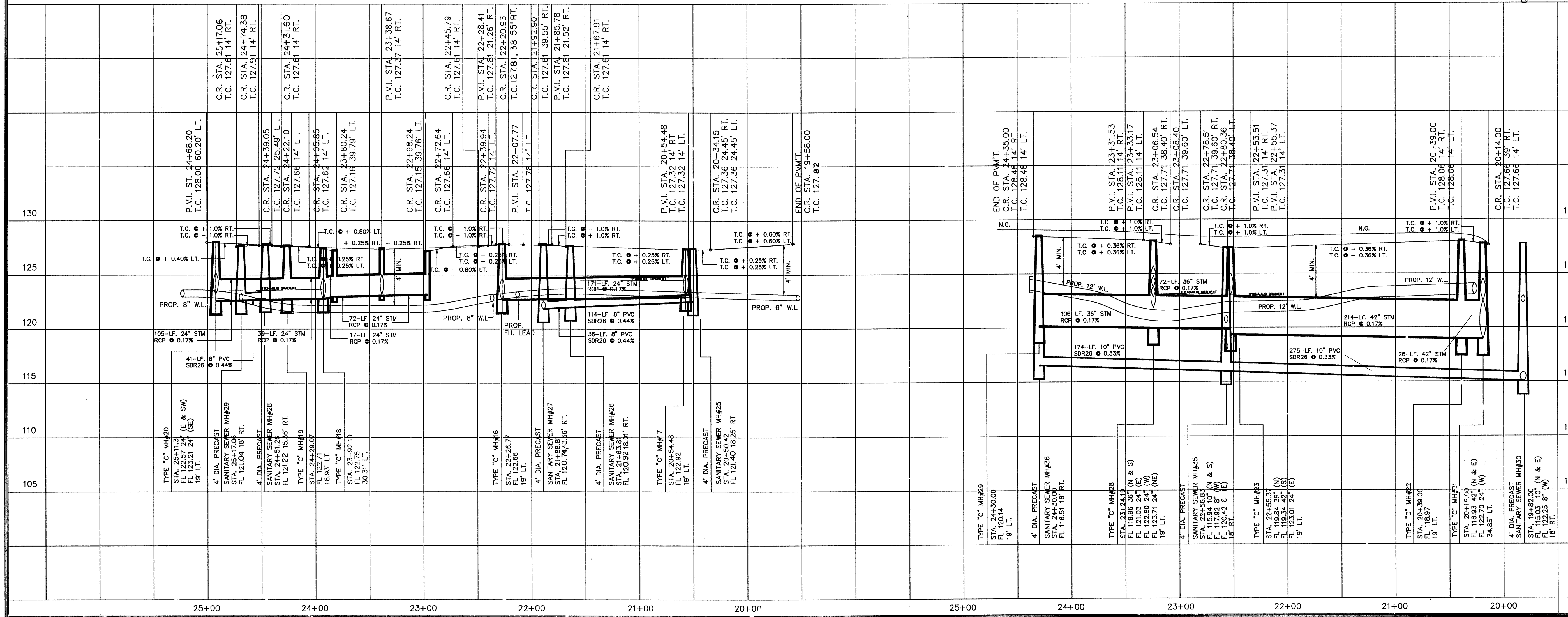
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

REVIEWED BY
PRIVATELY FUNDED PUBLIC WORKS CITY FUNDED PUBLIC WORKS
Victor Soldon 6-24-99
WATER PROJECT MANAGER
WASTEWATER PROJECT MANAGER
STORM WATER PROJECT MANAGER
STREET & BRIDGE CHIEF ENGINEER

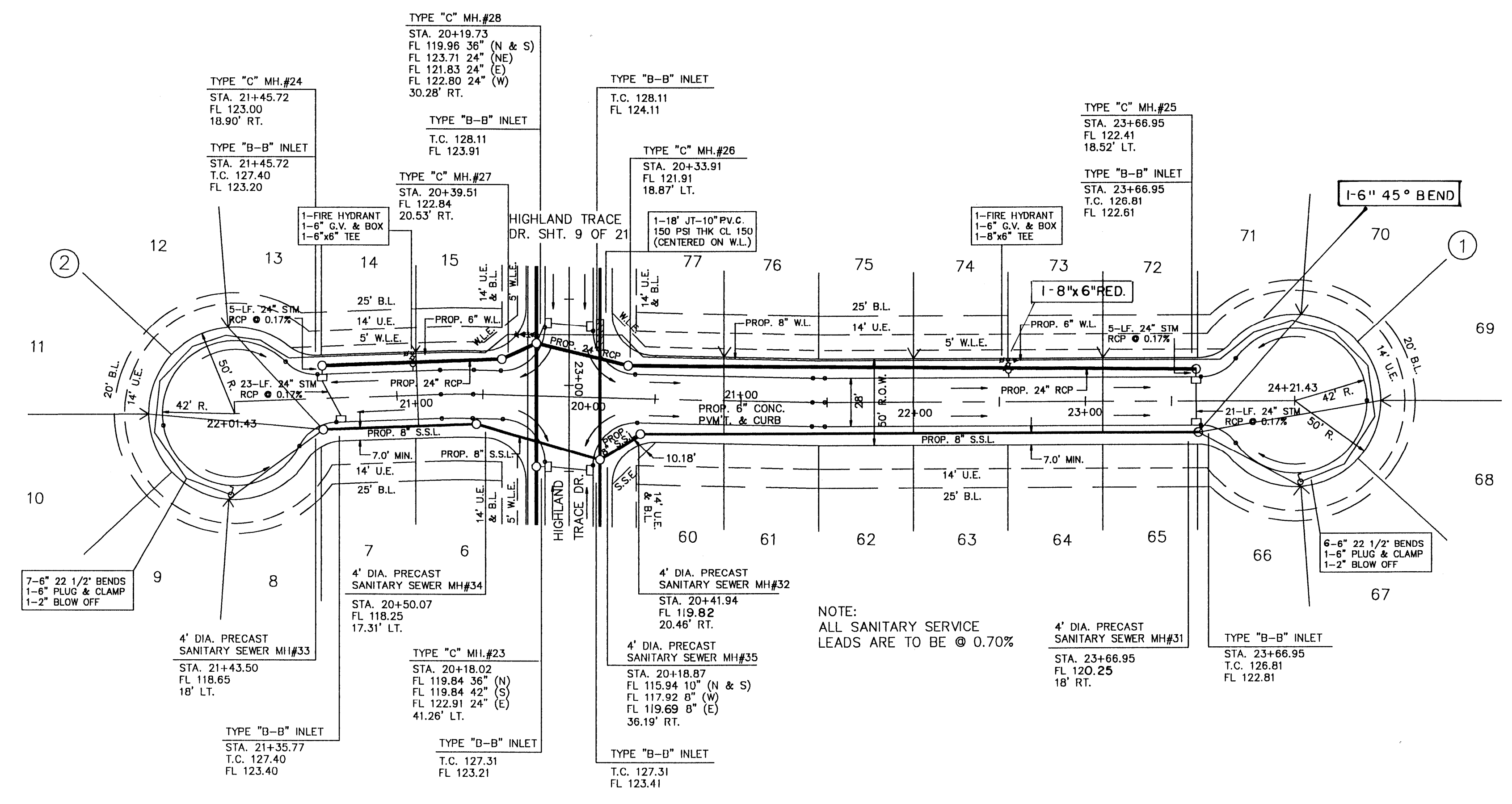
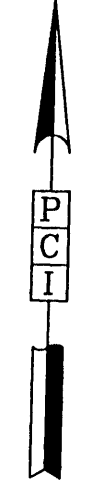
OTHER APPROVAL
TRAFFIC AND TRANSPORTATION SPONSOR DEPARTMENT
M. J. [Signature] on 7-6-99
CITY ENGINEER DATE
M. J. [Signature] on 7-6-99
DIRECTOR OF PUBLIC WORKS AND ENGINEERING DATE
SUBMITTED: 1" = 50'
SCALE: MAY 1999
DESIGNED BY:
DRAWN BY:
DATE: MAY 1999
SHEET NO. 9 OF 21 SHEETS
CITY DWG. NO.:

PLAN & PROFILE
HIGHLAND PARK CT.
AND
HIGHLAND TRACE DR.

PCI PROVIDENT CONSULTANT, INC.
1200 WEST 11TH ST.
HOUSTON, TEXAS 77008



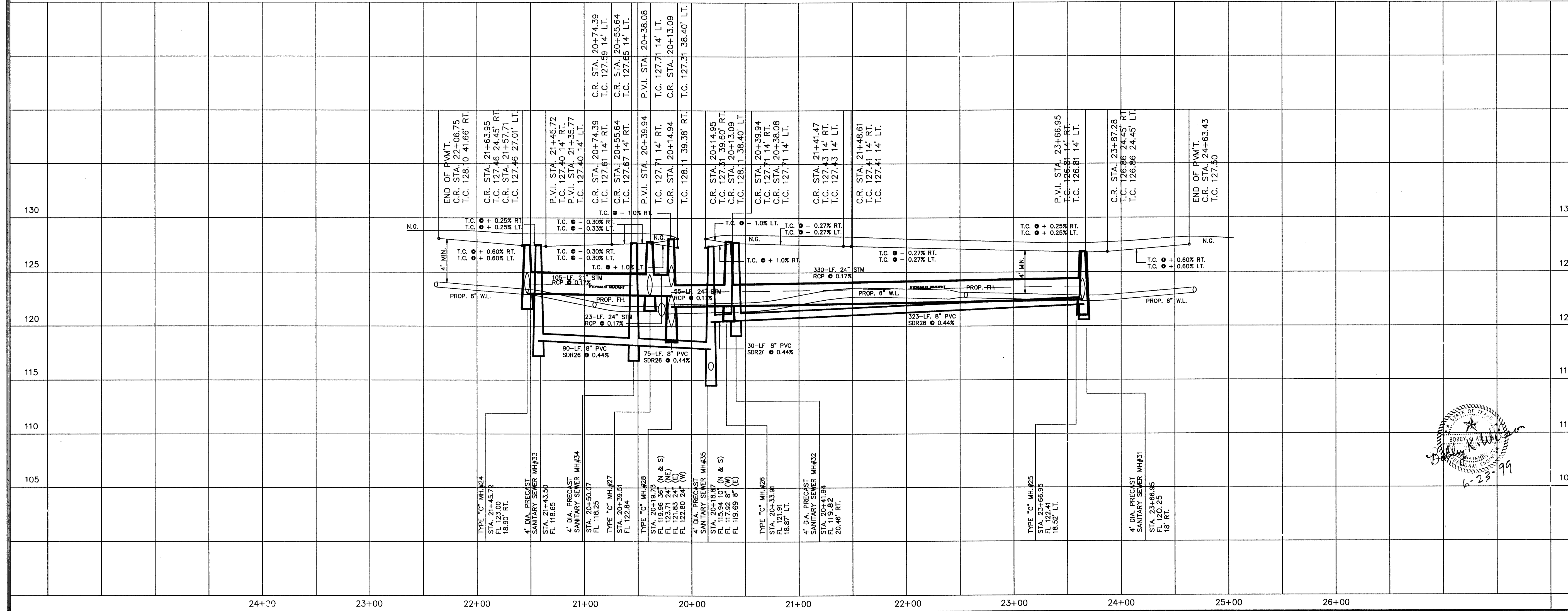
BENCH MARK
 BENCH MARK (SEE SHEET 2 OF 21)
 T.B.M. ELEV. = 130.56
 R.R. SPIKE ON E. SIDE OF POWER POLE
 NO. 13629 ON W. SIDE OF HARGRAVE RD.
 APPROX. 30' N. OF 18" R.C.P. & GRAVEL DR.
 FROM 13627 HARGRAVE RD.



NOTE:
 ALL SANITARY SERVICE
 LEADS ARE TO BE @ 0.70%

TERRACE GLADE CT.

STONE OAK CT.



APPROVED: *[Signature]*
 for Assistant County Engineer
 Date: 6-23-99

Approval implied for paving and drainage facilities within Harris County R.O.W. and/or jurisdiction. All other improvements in H.C.R.O.W. and/or jurisdiction are approved as to location only. The above authorization is valid for one (1) year only.

Rev.	Date	Description	App.
		PRIVATE UTILITY LINES SHOWN	
		<i>[Signature]</i> 6-24-99	
		ENTEX, INC.	
		<i>[Signature]</i> 6/24/99	
		SOUTHWESTERN BELL TELEPHONE CO.	
		Valid for One Year Only	
		<i>[Signature]</i> 6-24-99	
		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 AND ENGINEERING

REVIEWED BY	
PRIVATELY FUNDED PUBLIC WORKS	CITY FUNDED PUBLIC WORKS
<i>[Signature]</i> 6-24-99	
WATER	PROJECT MANAGER
WASTEWATER	CONSTRUCTION
STORM WATER	CONSTRUCTION
STREET & BRIDGE	CHIEF ENGINEER

OTHER APPROVAL	
TRAFFIC AND TRANSPORTATION	SPONSOR DEPARTMENT
<i>[Signature]</i> 7-6-99	DATE
CITY ENGINEER	DATE
<i>[Signature]</i> 7-6-99	DATE
DIRECTOR OF PUBLIC WORKS AND ENGINEERING	DATE
SUBMITTED:	DESIGNED BY:
SCALE: 1" = 50'	DRAWN BY:
DATE: MAY 1999	SHEET NO. 10 OF 21 SHEETS
SURVEY BY:	CITY DWG. NO.:
F B NO.:	

PLAN & PROFILE
 TERRACE GLADE CT.
 AND
 STONE OAK CT.

BENCH MARK

BENCH MARK (SEE SHEET 2 OF 21)
T.B.M. ELEV = 130.56
R.R. SPIKE ON E. SIDE OF POWER POLE
NO. 13629 ON W. SIDE OF HARGRAVE RD.
APPROX. 30' N. OF 18" R.C.P. & GRAVEL RD.
FROM 13627 HARGRAVE RD.

APPROVED: *[Signature]*
for Assistant County Engineer
27 Sept 99
Date

Approval implied for paving and drainage facilities
within Harris County R.O.W. and/or jurisdiction. All
other improvements in H.C.R.O.W. and/or jurisdiction are
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Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN

[Signature] 6-24-99
ENTEX, INC.
Mike Balin 6/24/99
SOUTHWESTERN BELL TELEPHONE CO.
Valid for One Year Only
[Signature] 6-24-99
HOUSTON LIGHTING & POWER CO.
Approval Only for Crossing Underground
Ductlines Unless Noted. Valid at Time of Review Only.

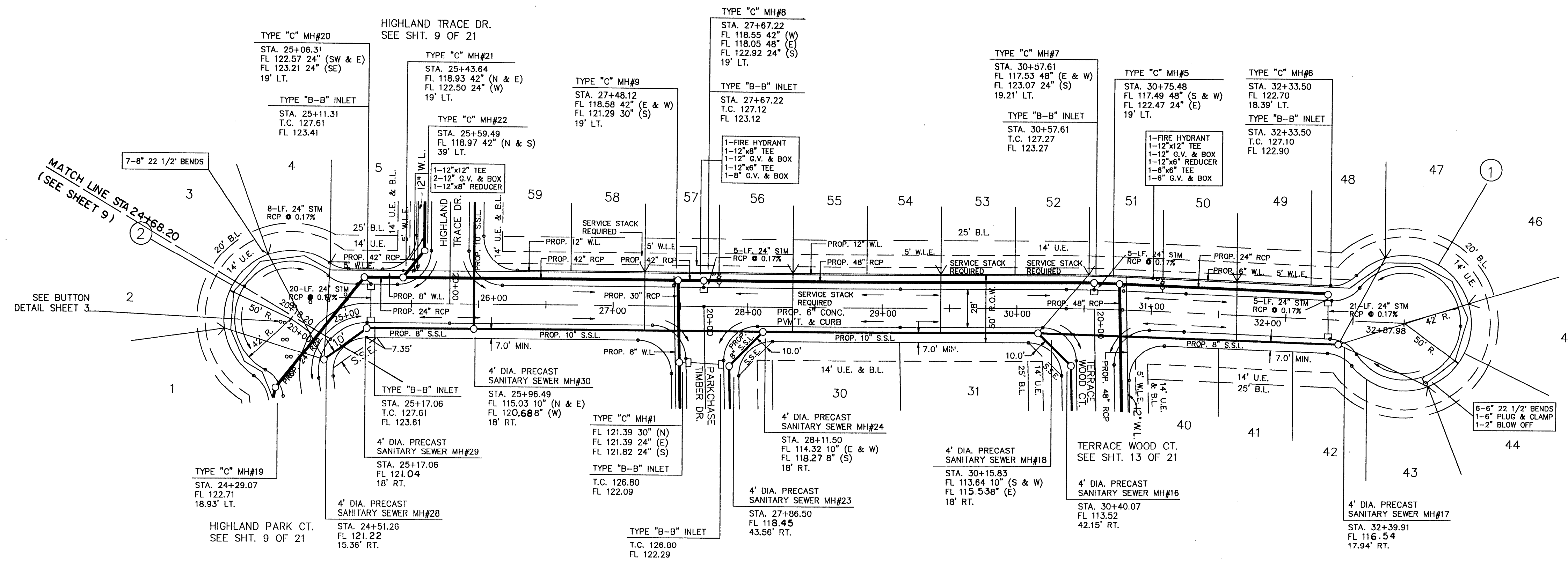
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

REVIEWED BY	
PRIVATELY FUNDED PUBLIC WORKS	CITY FUNDED PUBLIC WORKS
<i>Victor Saldin</i> 6-24-99 WATER	
WASTEWATER	PROJECT MANAGER
STORM WATER	CONSTRUCTION
STREET & BRIDGE	CHIEF ENGINEER

OTHER APPROVAL	
TRAFFIC AND TRANSPORTATION	SPONSOR DEPARTMENT
<i>[Signature]</i> 7-6-99 CITY ENGINEER	DATE
<i>[Signature]</i> 7-6-99 DIRECTOR OF PUBLIC WORKS AND ENGINEERING	DATE
SUBMITTED:	DESIGNED BY:
SCALE: 1" = 50'	DRAWN BY:
DATE: MAY 1999	SHEET NO. 11 OF 21 SHEETS
SURVEY BY:	CITY DWG. NO.:
F B NO.:	

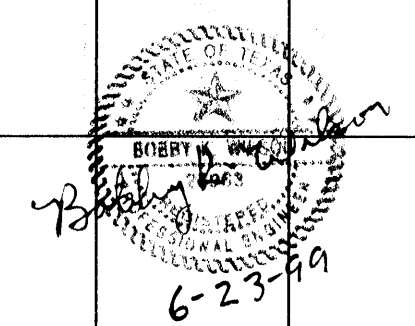
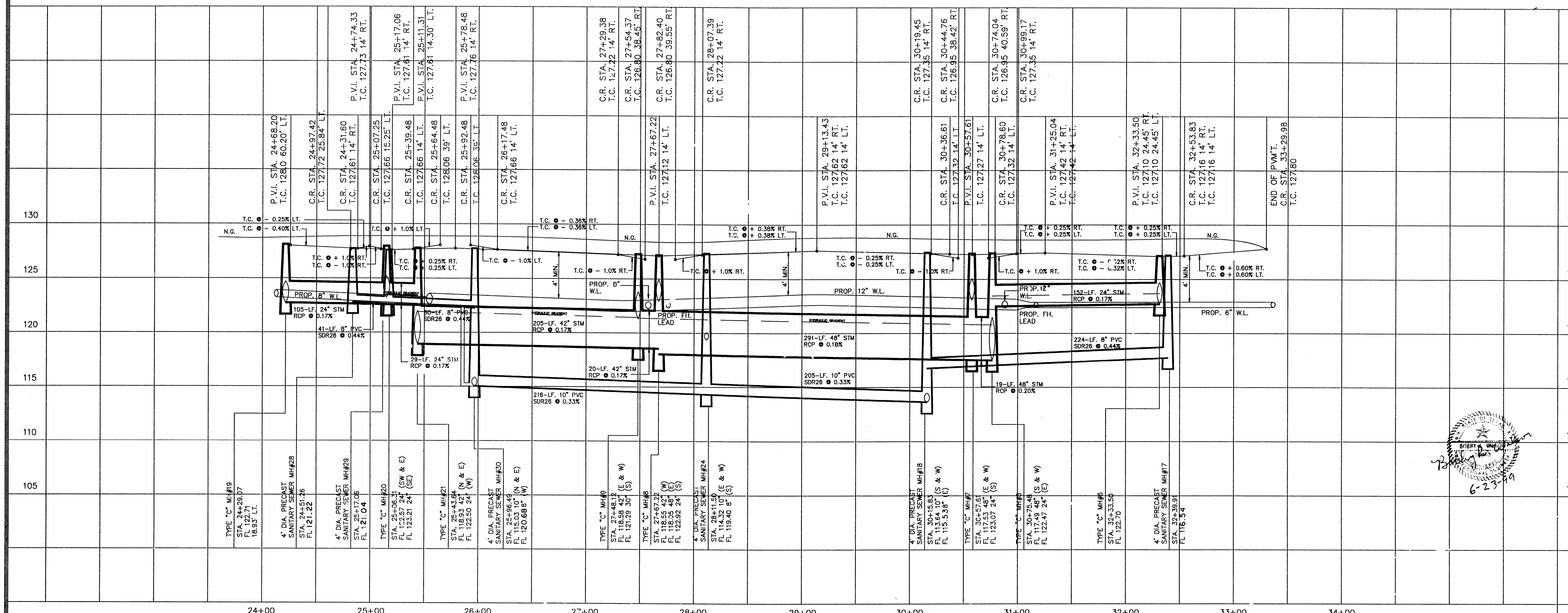
PLAN & PROFILE
TIMBER PARK TL.
AND
TIMBER PARK CT.

PC_I PROVIDENT CONSULTANT, INC.
1200 WEST 11TH ST.
HOUSTON, TEXAS 77008



TRAFFIC BUTTONS DESCRIPTION:
1. DOUBLE ROW YELLOW REFLECTORS TO BE
3'C-C/8" O/C-C E.R. TO E.R.

NOTE:
ALL SERVICE LEADS
ARE TO BE @ 0.70%



BENCH MARK (SEE SHEET 2 OF 21)
T.B.M. ELEV. = 130.56
R.R. SPIKE ON E. SIDE OF POWER POLE
NO. 13629 ON W. SIDE OF HARGRAVE RD.
APPROX. 30' N. OF 18" R.C.P. & GRAVEL DR.
FROM 13627 HARGRAVE RD.

APPROVED: *[Signature]*
for Assistant City Engineer
Date: 6-24-99

Approval implied for paving and drainage facilities
within Harris County R.O.W. and/or jurisdiction. All
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Rev.	Da.	Description	App.

PRIVATE UTILITY LINES SHOWN

[Signature] 6-24-99
ENTEX, INC.

[Signature] 6/24/99
SOUTHWESTERN BELL TELEPHONE CO.
Valid for One Year Only

[Signature] 6-24-99
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 AND ENGINEERING

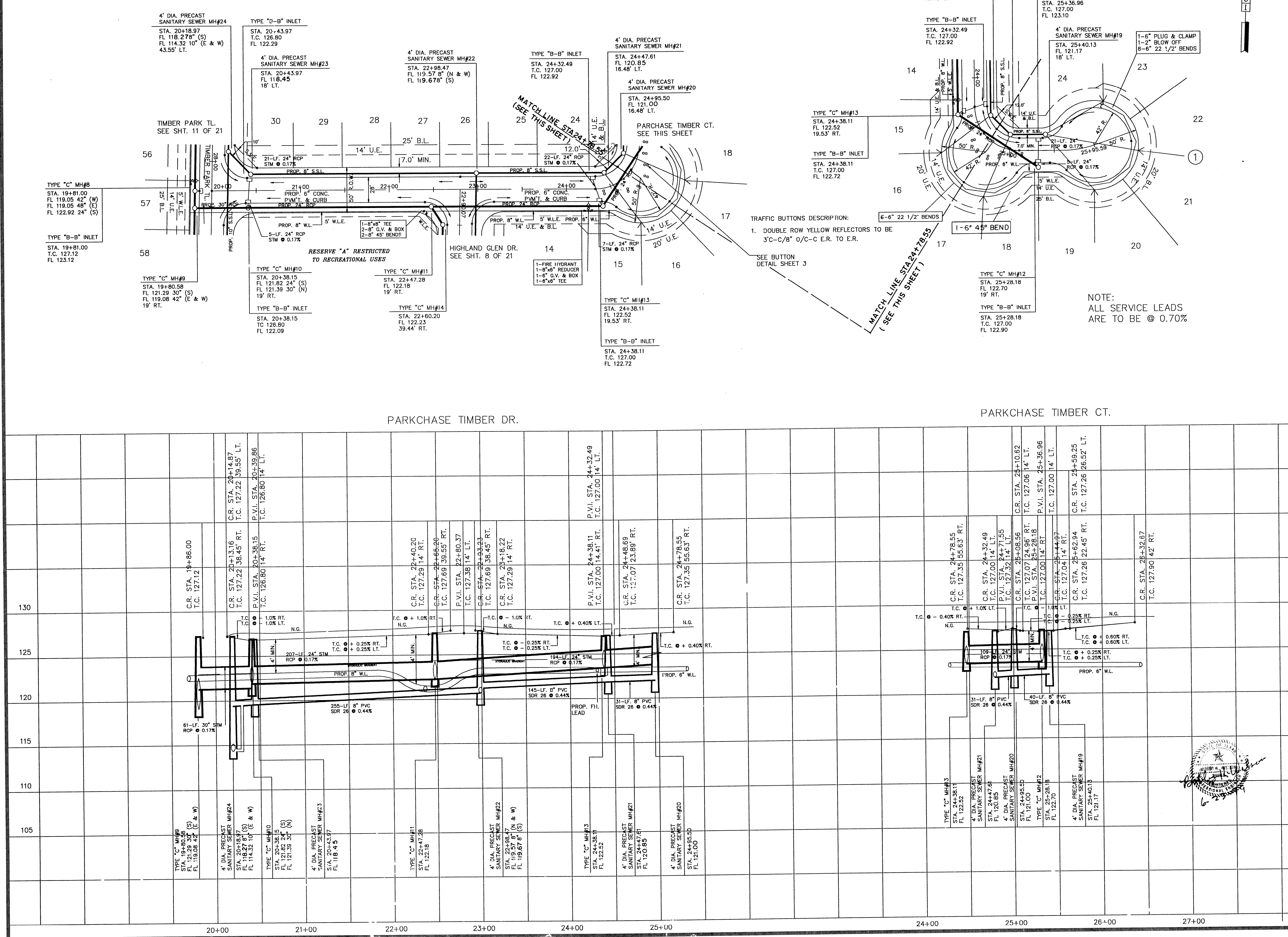
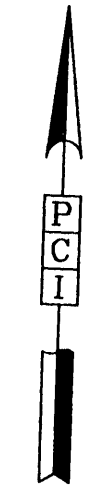
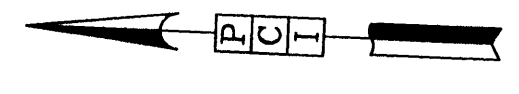
REVIEWED BY	
PRIVATELY FUNDED PUBLIC WORKS	CITY FUNDED PUBLIC WORKS
<i>[Signature]</i> 6-24-99 WATER	<i>[Signature]</i> 6/24/99 PROJECT MANAGER
<i>[Signature]</i> 6/24/99 WASTEWATER	CONSTRUCTION
<i>[Signature]</i> 6/24/99 STORM WATER	CHIEF ENGINEER
STREET & BRIDGE	

OTHER APPROVAL

TRAFFIC AND TRANSPORTATION	SPONSOR DEPARTMENT
<i>[Signature]</i> 7-6-99 CITY ENGINEER	DATE
<i>[Signature]</i> 7-6-99 DIRECTOR OF PUBLIC WORKS AND ENGINEERING	DATE

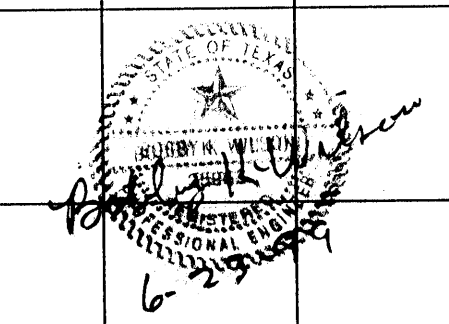
SUBMITTED:	DESIGNED BY:
SCALE: 1" = 50'	DRAWN BY:
DATE: MAY 1999	SHEET NO. 12 OF 21 SHEETS
SURVEY BY:	CITY DWG. NO:
F B NO:	

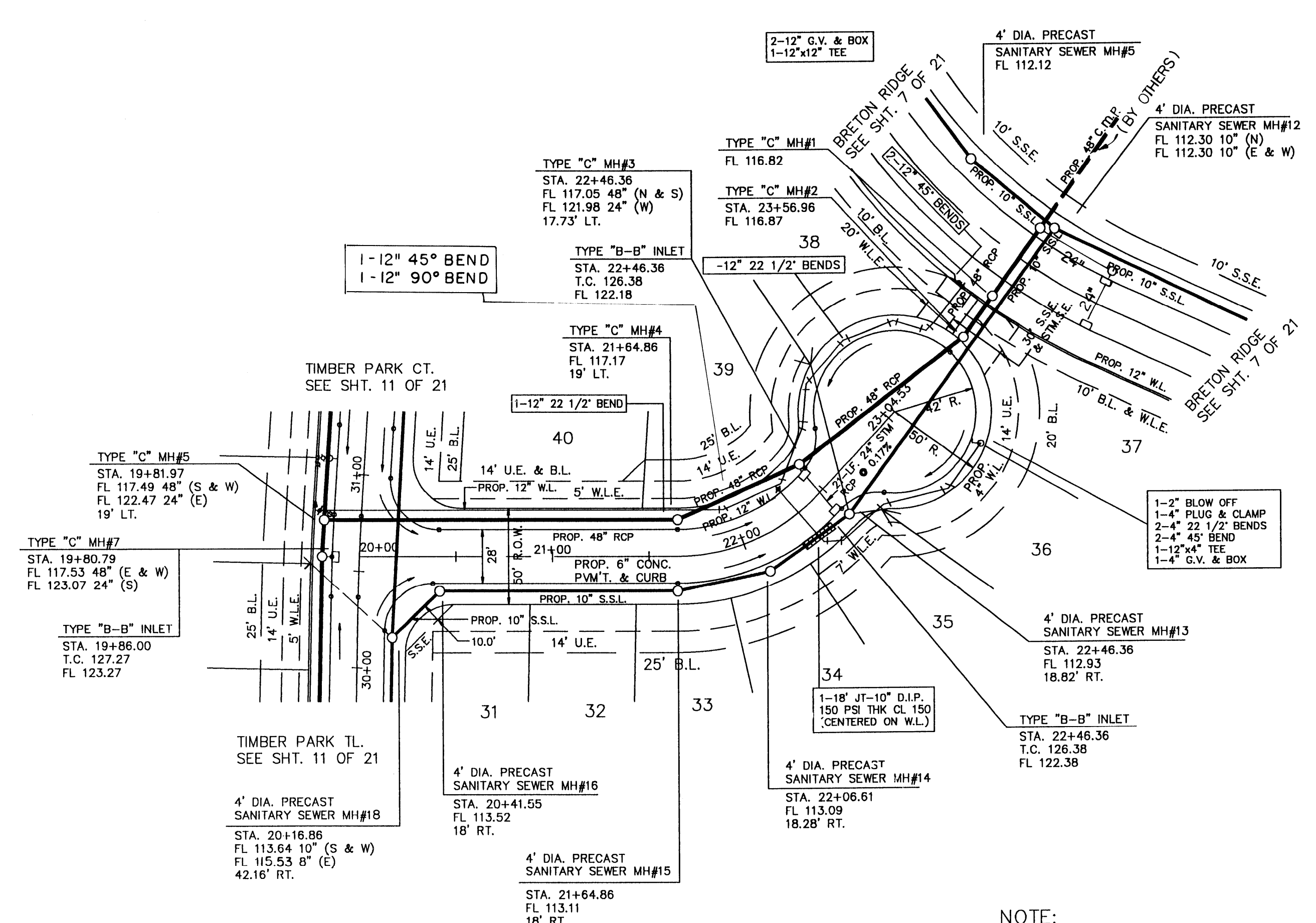
PLAN & PROFILE
PARKCHASE TIMBER DR.
AND
PARKCHASE TIMBER CT.



TRAFFIC BUTTONS DESCRIPTION:
1. DOUBLE ROW YELLOW REFLECTORS TO BE
3"C-C/B" O/C-C E.R. TO E.R.
SEE BUTTON
DETAIL SHEET 3

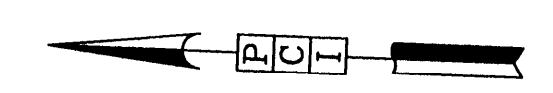
NOTE:
ALL SERVICE LEADS
ARE TO BE @ 0.70%





NOTE:
ALL SERVICE LEADS
ARE TO BE @ 0.70%

TERRACE WOOD CT.



BENCH MARK
BENCH MARK: (SEE SHEET 2 OF 21)
T.B.M. ELEV. 130.56
R.R. SPIKE ON E. SIDE OF POWER POLE
NO. 13629 ON W. SIDE OF HARGRAVE RD.
APPROX. 30' N. OF 18" R.C.P. @ GRAVEL DR.
FROM 13627 HARGRAVE RD.

APPROVED: *[Signature]*
for Assistant County Engineer
17 Sept 99
Date

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within Harris County R.O.W. and/or jurisdiction. All
other improvements in H.C.R.O.W. and/or jurisdiction are
approved as to location only.
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Rev.	Date	Description	App.

PRIVATE UTILITY LINES SHOWN
[Signature] 6-24-99
ENTEX, INC.
[Signature] 6/24/99
SOUTHWESTERN BELL TELEPHONE CO.
Valid for One Year Only
[Signature] 6-24-99
HOUSTON LIGHTING & POWER CO.
Approval Only for Crossing Underground
Ductlines Unless Noted. Valid at Time of Review Only.

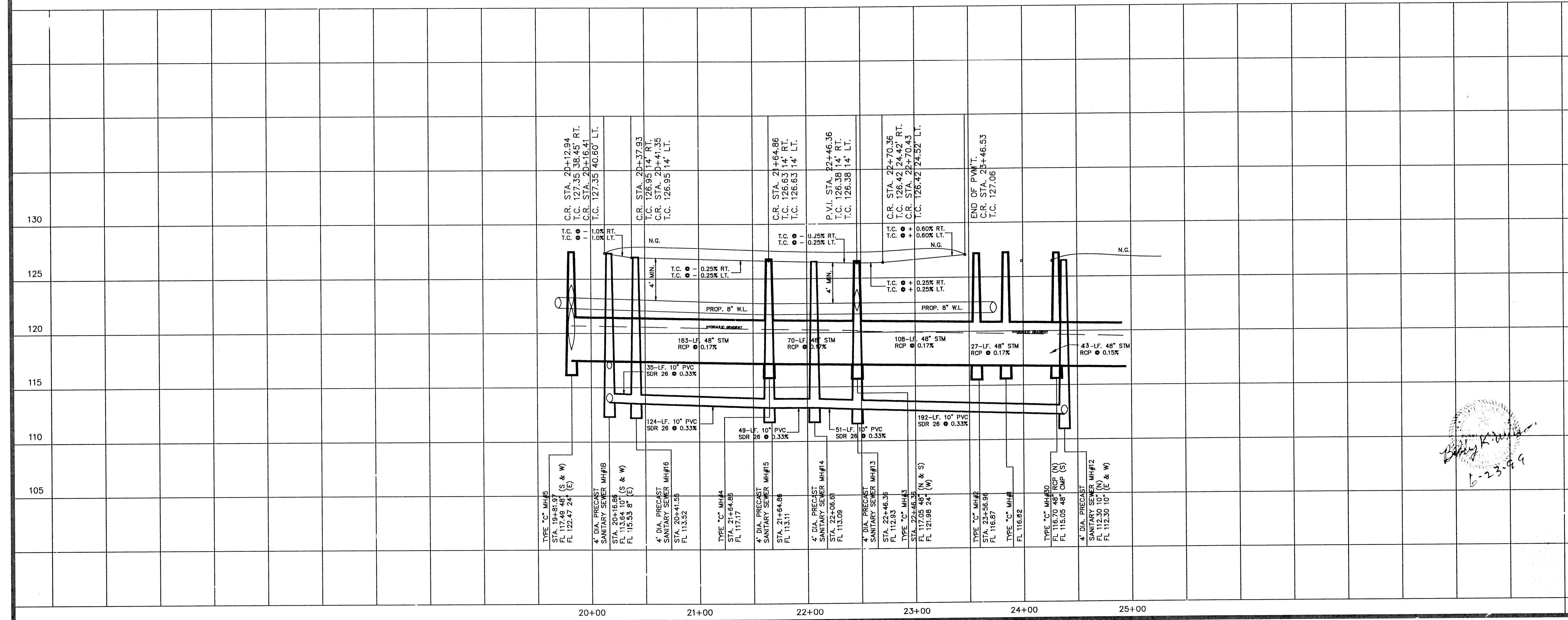
CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

REVIEWED BY	
PRIVATELY FUNDED PUBLIC WORKS	CITY FUNDED PUBLIC WORKS
<i>[Signature]</i> 6-24-99 WATER	PROJECT MANAGER
<i>[Signature]</i> 6/24/99 WASTEWATER	CONSTRUCTION
STORM WATER	CHIEF ENGINEER
STREET & BRIDGE	

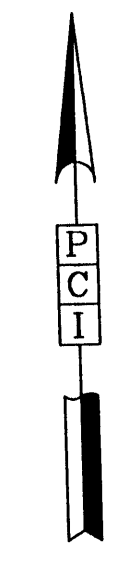
OTHER APPROVAL
TRAFFIC AND TRANSPORTATION SPONSOR DEPARTMENT
[Signature] 7-6-99
CITY ENGINEER DATE
[Signature] 7-6-99
DIRECTOR OF PUBLIC WORKS
AND ENGINEERING DATE
SUBMITTED: _____ DESIGNED BY: _____
SCALE: 1" = 50' DRAWN BY: _____
DATE: MAY 1999 SHEET NO. 13 OF 21 SHEETS
SURVEY BY: _____ CITY DWG. NO: _____
F B NO: _____

PLAN & PROFILE
TERRACE WOOD CT.

PCI PROVIDENT CONSULTANT, INC.
1200 WEST 11TH ST.
HOUSTON, TEXAS 77008

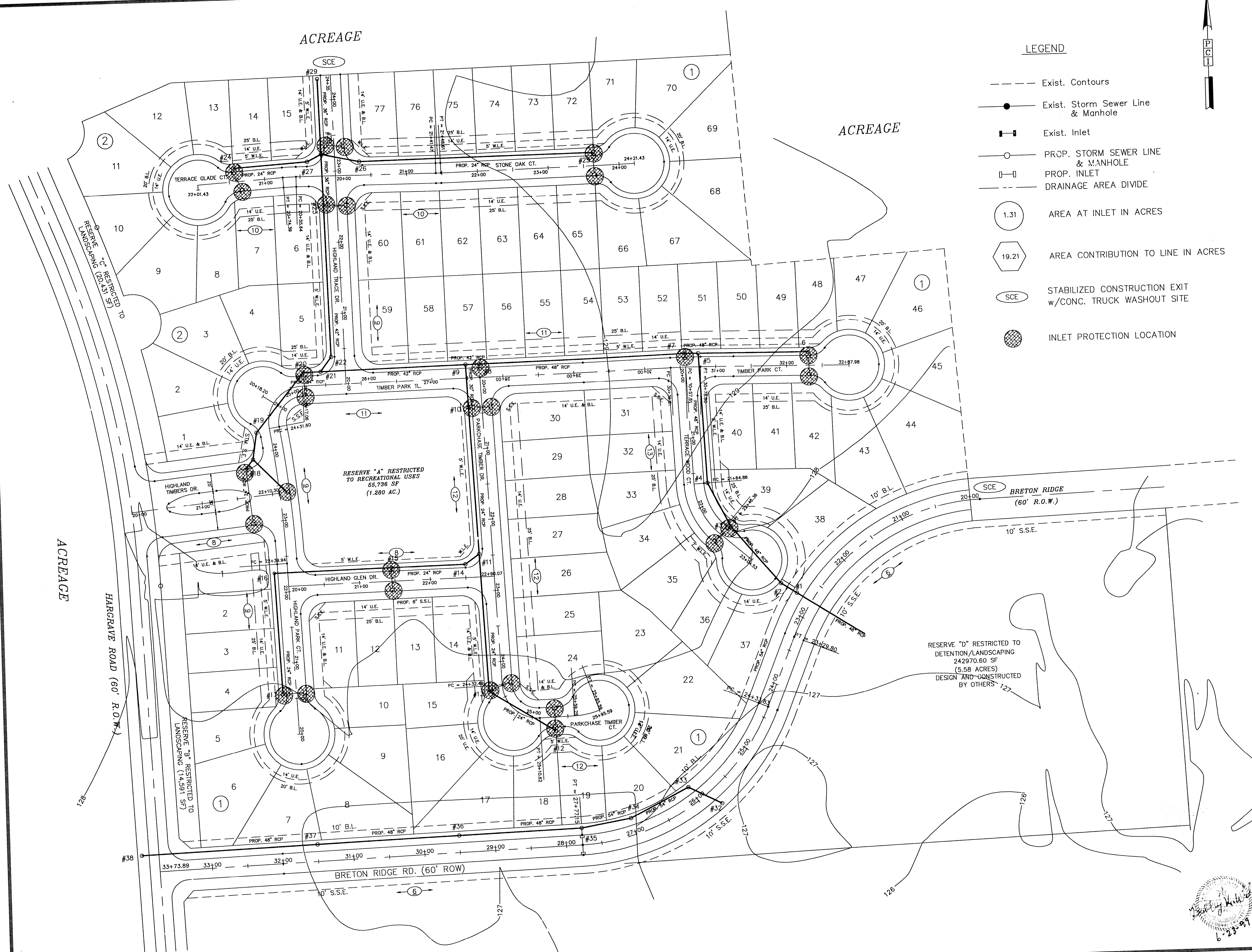


BENCH MARK
 BENCH MARK: (SEE SHEET 2 OF 21)
 T.B.M. ELEV. 130.56
 R.R. SPIKE ON E. SIDE OF POWER POLE
 NO. 13629 ON W. SIDE OF HARGRAVE RD.
 APPROX. 30' N. OF 18" R.C.P. & GRAVEL DR.
 FROM 13627 HARGRAVE RD.



LEGEND

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



Rev.	Date	Description	App.
		PRIVATE UTILITY LINES SHOWN	
		ENTER, INC. 6-24-99	
		Mike Balin 6/24/99	
		SOUTHWESTERN BELL TELEPHONE CO.	
		Valid for One Year Only	
		6-24-99	
		HOUSTON LIGHTING & POWER CO.	
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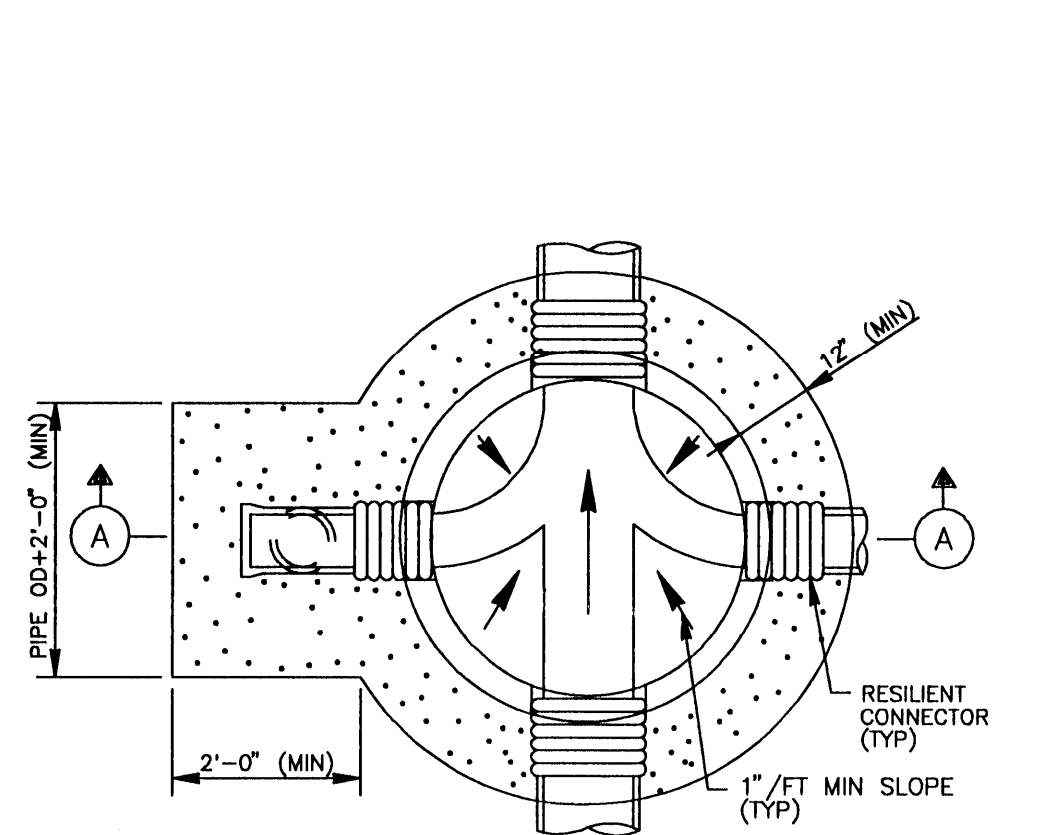
CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
REVIEWED BY	
PRIVATELY FUNDED PUBLIC WORKS	CITY FUNDED PUBLIC WORKS
WATER WATER WATER	PROJECT MANAGER
WASTEWATER STORM WATER	CONSTRUCTION
STREET & BRIDGE	CHIEF ENGINEER

OTHER APPROVAL	
TRAFFIC AND TRANSPORTATION	SPONSOR DEPARTMENT
DATE	DATE
7-6-99	7-6-99
DATE	DATE
7-6-99	7-6-99
DIRECTOR OF PUBLIC WORKS AND ENGINEERING	DIRECTOR OF PUBLIC WORKS AND ENGINEERING
DATE	DATE
7-6-99	7-6-99
SUBMITTED:	DESIGNED BY:
SCALE: 1" = 60'	DRAWN BY:
DATE: MAY 1999	SHEET NO. 14 OF 21 SHEETS
SURVEY BY:	CITY DWG. NO.:
F B NO.:	

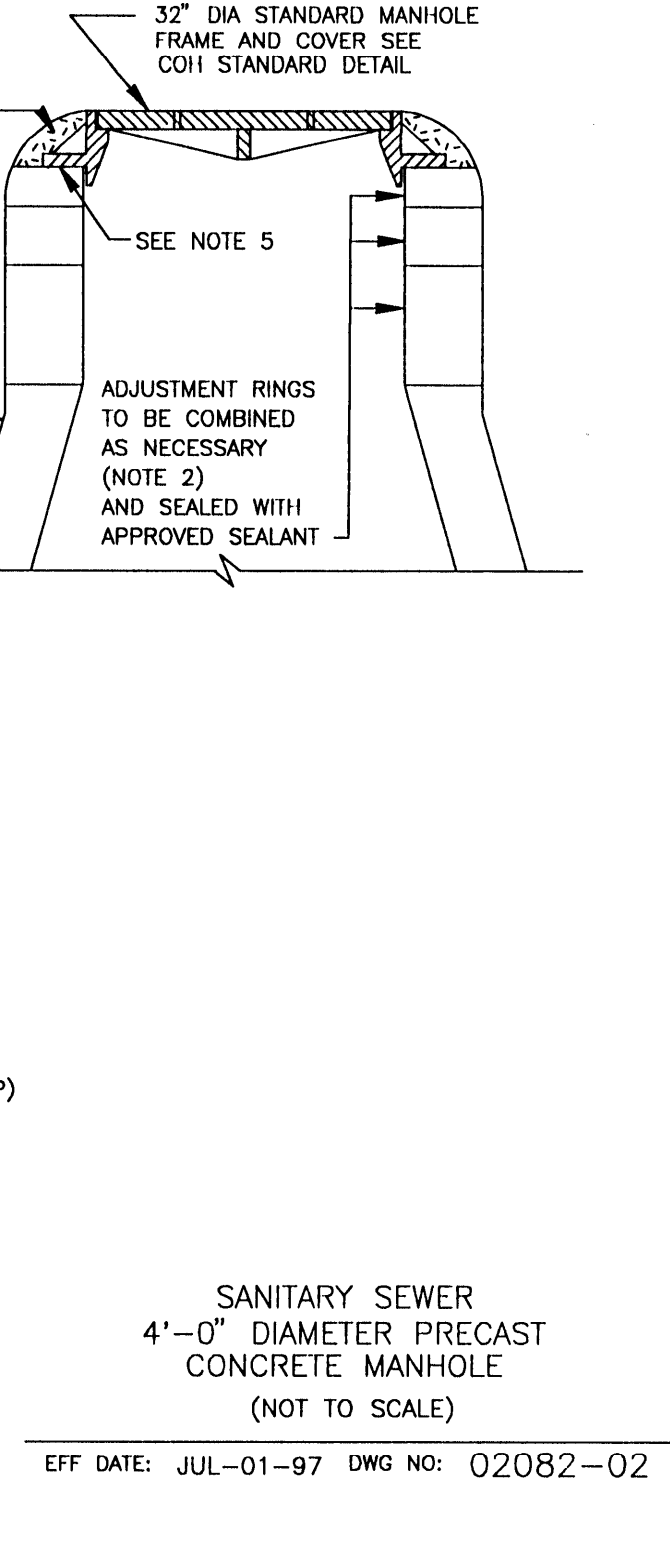
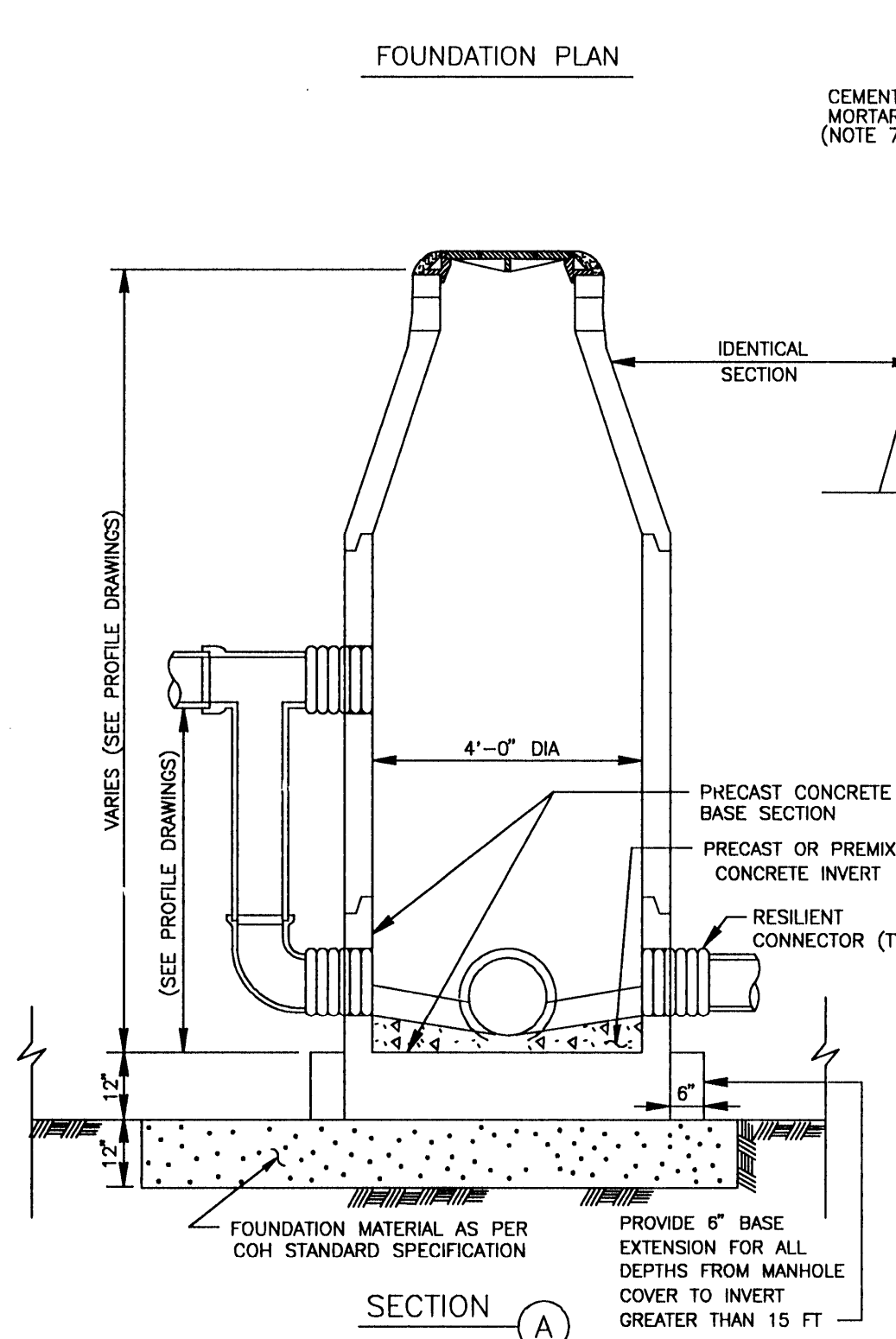
HARRIS COUNTY MUD 191
 HIGHLAND TIMBERS
 SECTION 1
 POLLUTION
 PREVENTION LOCATION

PROVIDENT CONSULTING, INC.
 1200 WEST 11TH ST.
 HOUSTON, TEXAS 77008
 (713)802-1019

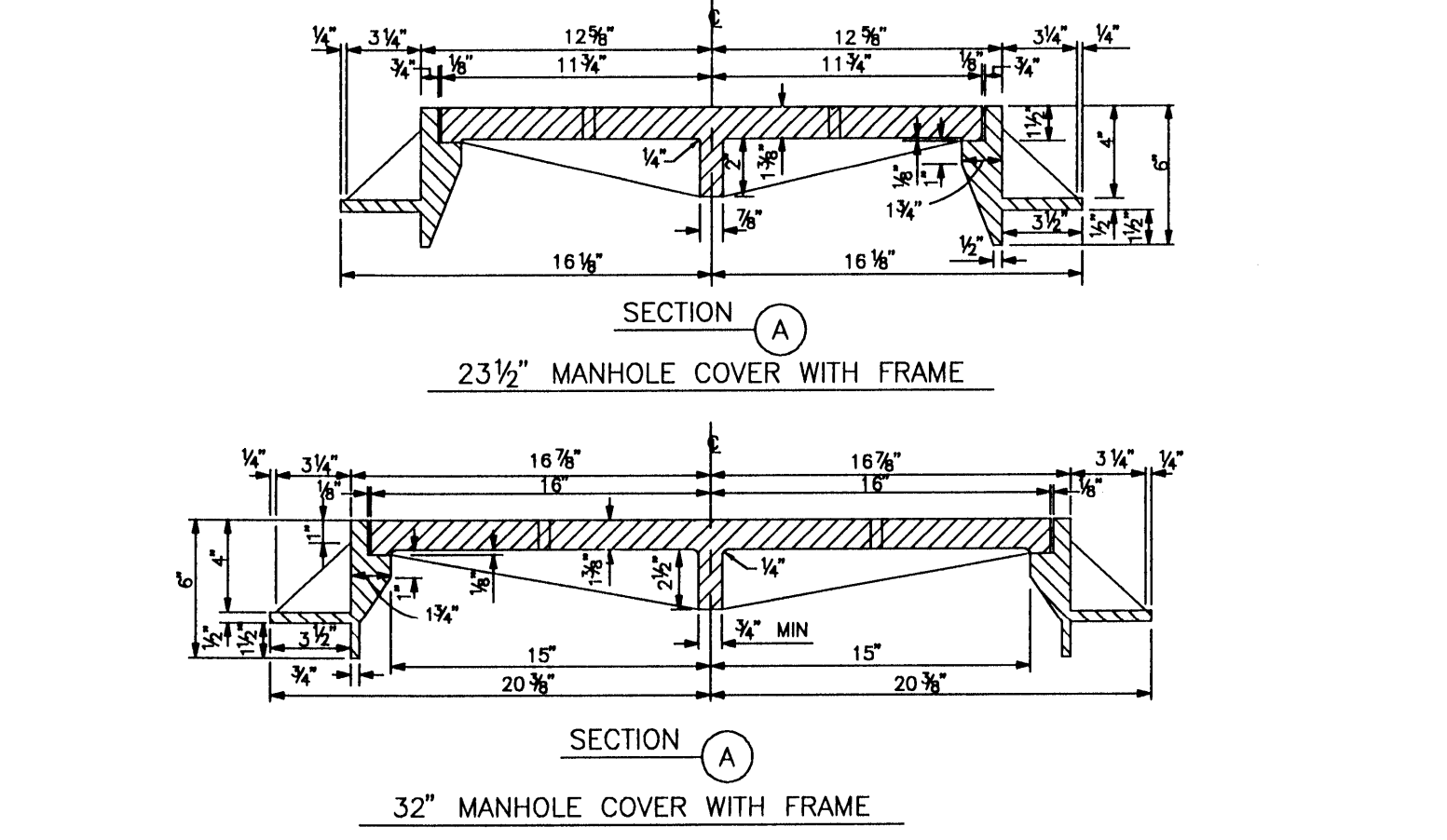
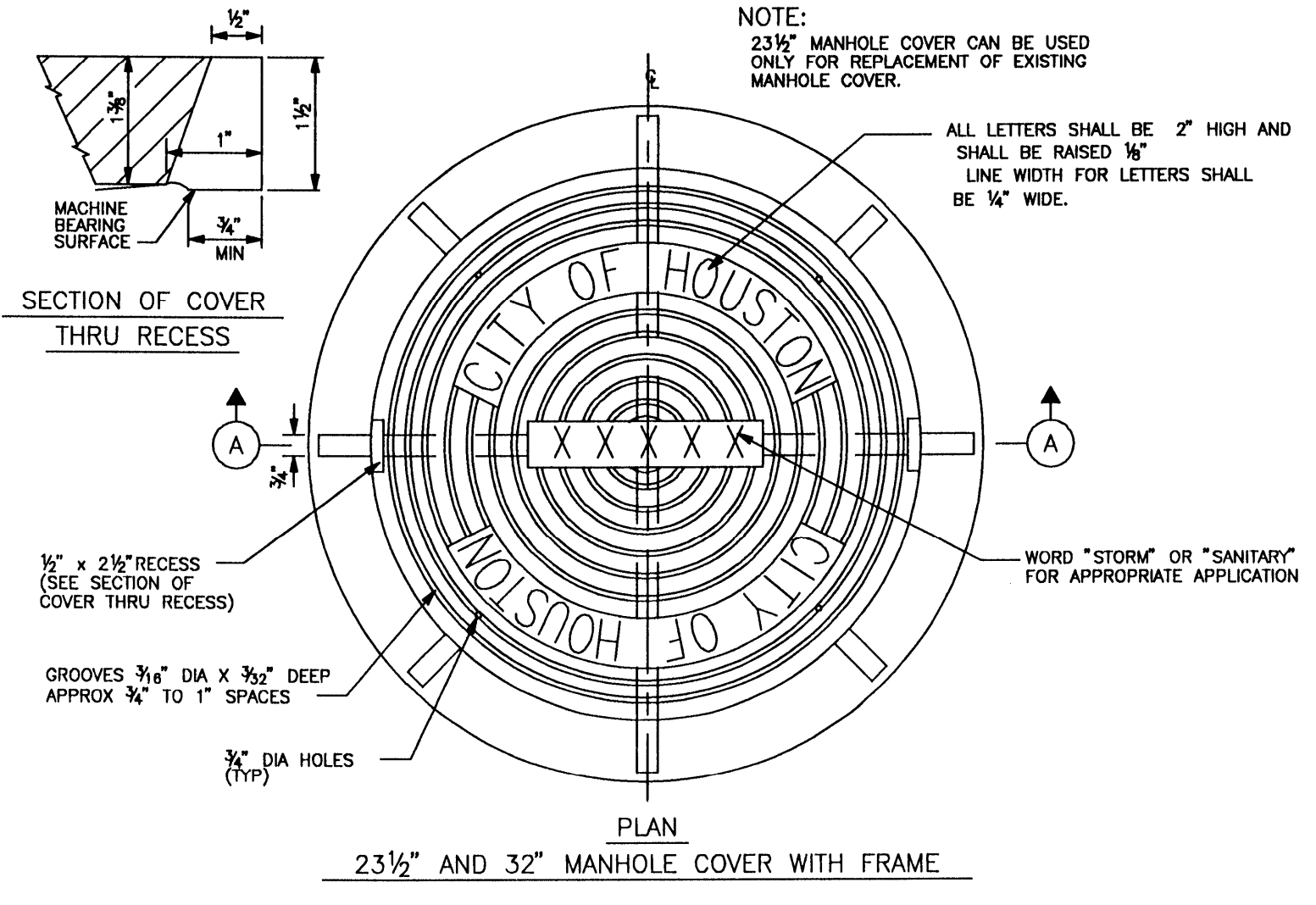




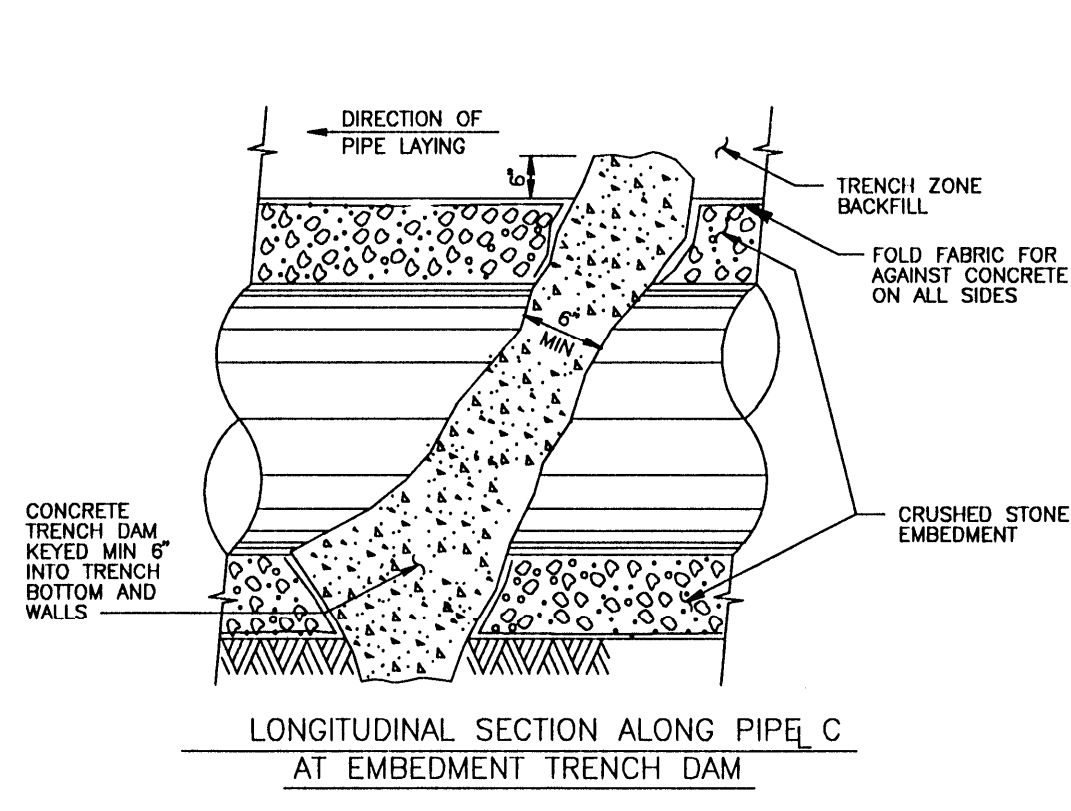
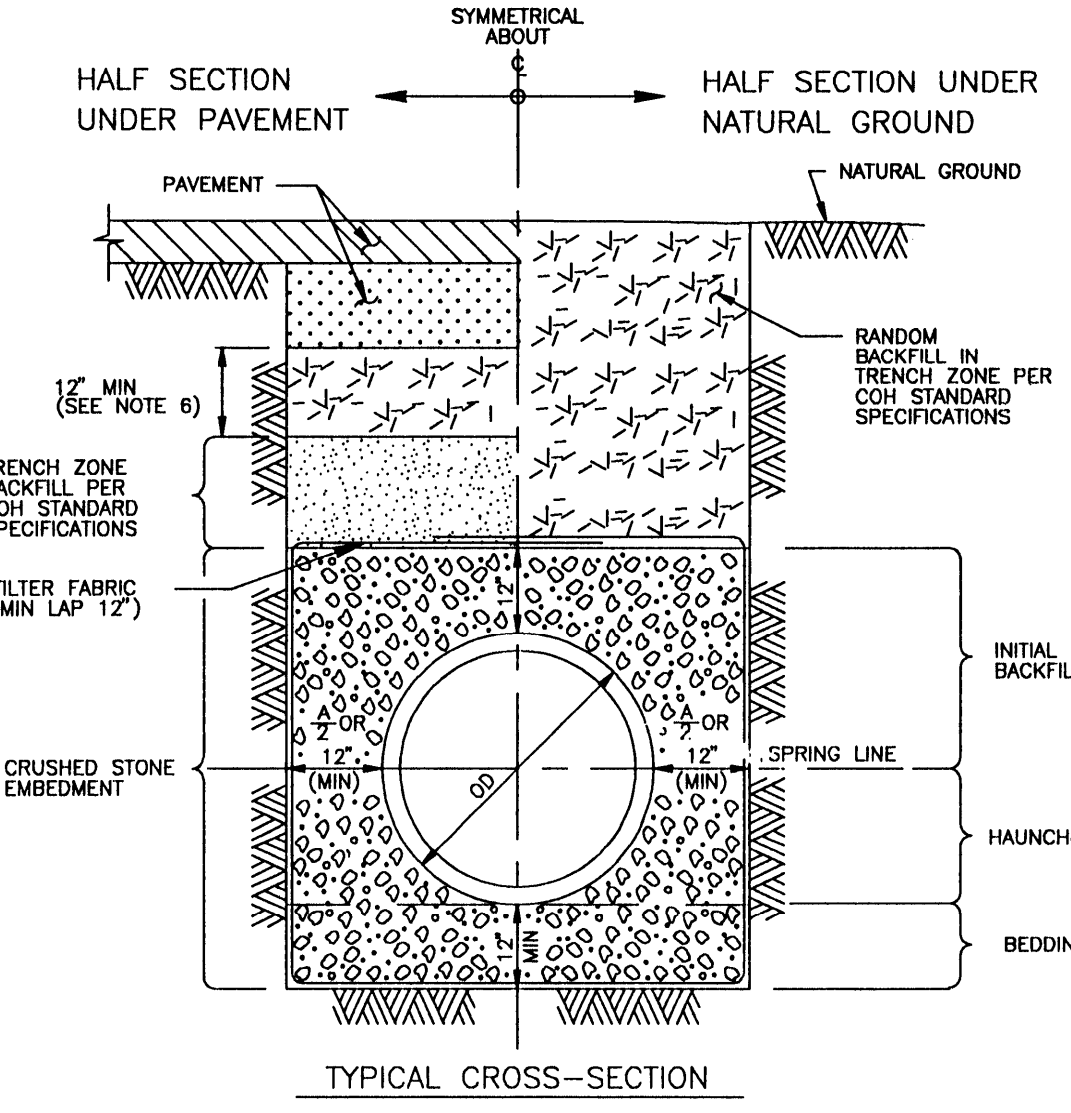
- NOTES:**
- DEPTH OF MANHOLE DETERMINES SECTIONS REQUIRED.
 - PRECAST CONCRETE RINGS SHALL BE PROVIDED FOR A COMBINED ADJUSTMENT HEIGHT OF AT LEAST 12". THE TOTAL HEIGHT OF THE ADJUSTMENT RINGS SHALL NOT EXCEED 1'-0".
 - MANHOLE WALL THICKNESS FOR DEPTH EXCEEDING 12'-0" SHALL BE DETERMINED TO MEET LOADING CONDITIONS. MIN THICKNESS 5".
 - MANHOLE DROP AND INTERSECTING PIPES SHALL BE INSTALLED ONLY WHEN CALLED FOR IN PLAN AND PROFILE DRAWING.
 - SEAT MANHOLE FRAME IN SEALANT PER COH STANDARD SPECIFICATION.
 - ECCENTRIC PRECAST CONCRETE MANHOLE MAY BE USED.
 - OMIT CEMENT MORTAR WHEN MANHOLE IS LOCATED IN PAVED AREAS.
 - MIN REINFORCING IN THE PRECAST CONCRETE BASE SHALL BE # 5 @ 8 EW.
 - PROVIDE BACKFILL TO MATCH ADJACENT PIPE TRENCH BACKFILL PER COH STANDARD SPECIFICATION.



**SANITARY SEWER
4'-0" DIAMETER PRECAST
CONCRETE MANHOLE
(NOT TO SCALE)**
EFF DATE: JUL-01-97 DWG NO: 02082-02

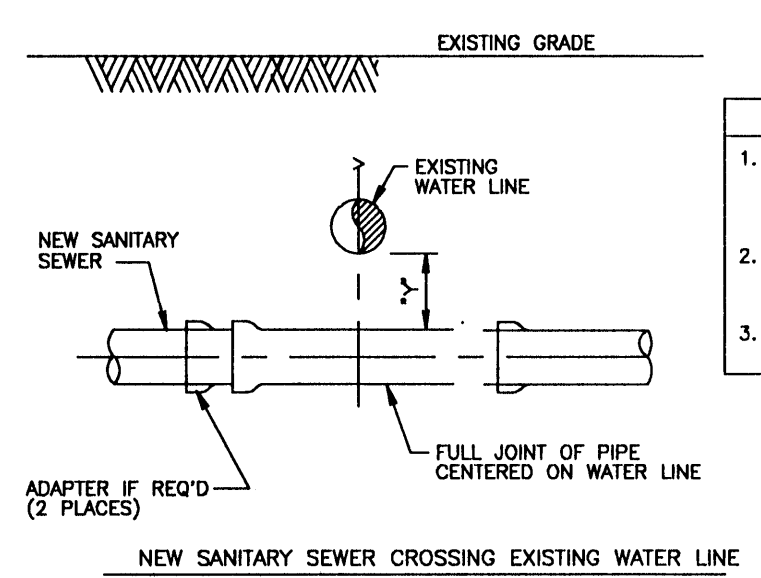


**MANHOLE
FRAME AND COVER
(NOT TO SCALE)**
EFF DATE: JUL-01-97 DWG NO: 02084-01

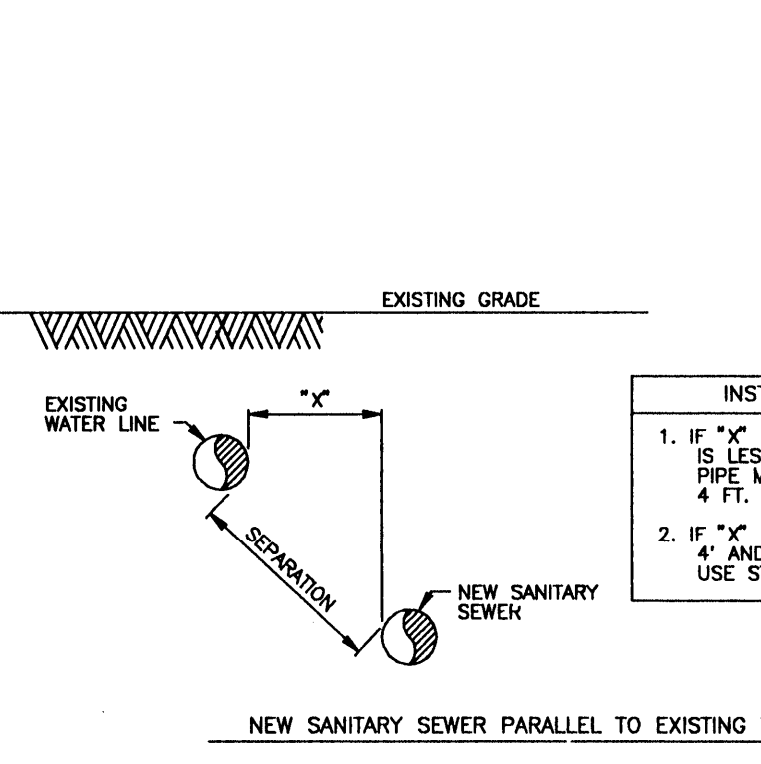


**SANITARY SEWER EMBEDMENT
AND TRENCH ZONE BACKFILL
FOR DRY OR WET STABLE TRENCH
(NOT TO SCALE)**
EFF DATE: JUL-01-97 DWG NO: 02317-01

- NOTES:**
- MIN TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "A" FOR THE NOMINAL PIPE SIZE:
NOMINAL PIPE SIZE "A"
18" TO 30" 24"
OVER 30" 36"
 - MAX TRENCH WIDTH SHALL BE NOT GREATER THAN MIN TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.
 - TRENCH DAM MAY BE FORMED OR UNFORMED ACTUAL SHAPE OF CONCRETE TRENCH DAM CROSS SECTION MAY BE DETERMINED BY CONTRACTOR IN FIELD, MEETING MINIMUM THICKNESS AND KEY DEPTH REQUIREMENTS.
 - TRENCH DAM SHALL BE PLACED AT LEAST 5 FT AWAY FROM ANY PIPELINE STRUCTURE SEE SPECIFICATIONS FOR OTHER REQUIREMENTS.
 - PLACE TRENCH DAMS IN CLASS I EMBEDMENTS AT THE MIDPOINT OF LINE SEGMENTS LONGER THAN 100 FEET BETWEEN MANHOLES.
 - SELECT BACKFILL FOR RIGID PAVEMENT; FLEXIBLE BASE MATERIAL FOR ASPHALT PAVEMENT.



- INSTALLATION REQUIREMENTS**
- IF "Y" IS GREATER THAN 6" AND "X" IS LESS THAN 2", USE PRESSURE-RATED PIPE PER COH STANDARD DRAWING.
 - IF "Y" IS GREATER THAN 2" AND "X" IS LESS THAN 6", USE GRAVITY SEWER PIPE IN CEMENT-STABILIZED SAND EMBEDMENT.
 - IF "Y" IS GREATER THAN 6", USE STANDARD EMBEDMENT AND NORMAL JOINT SPACING.



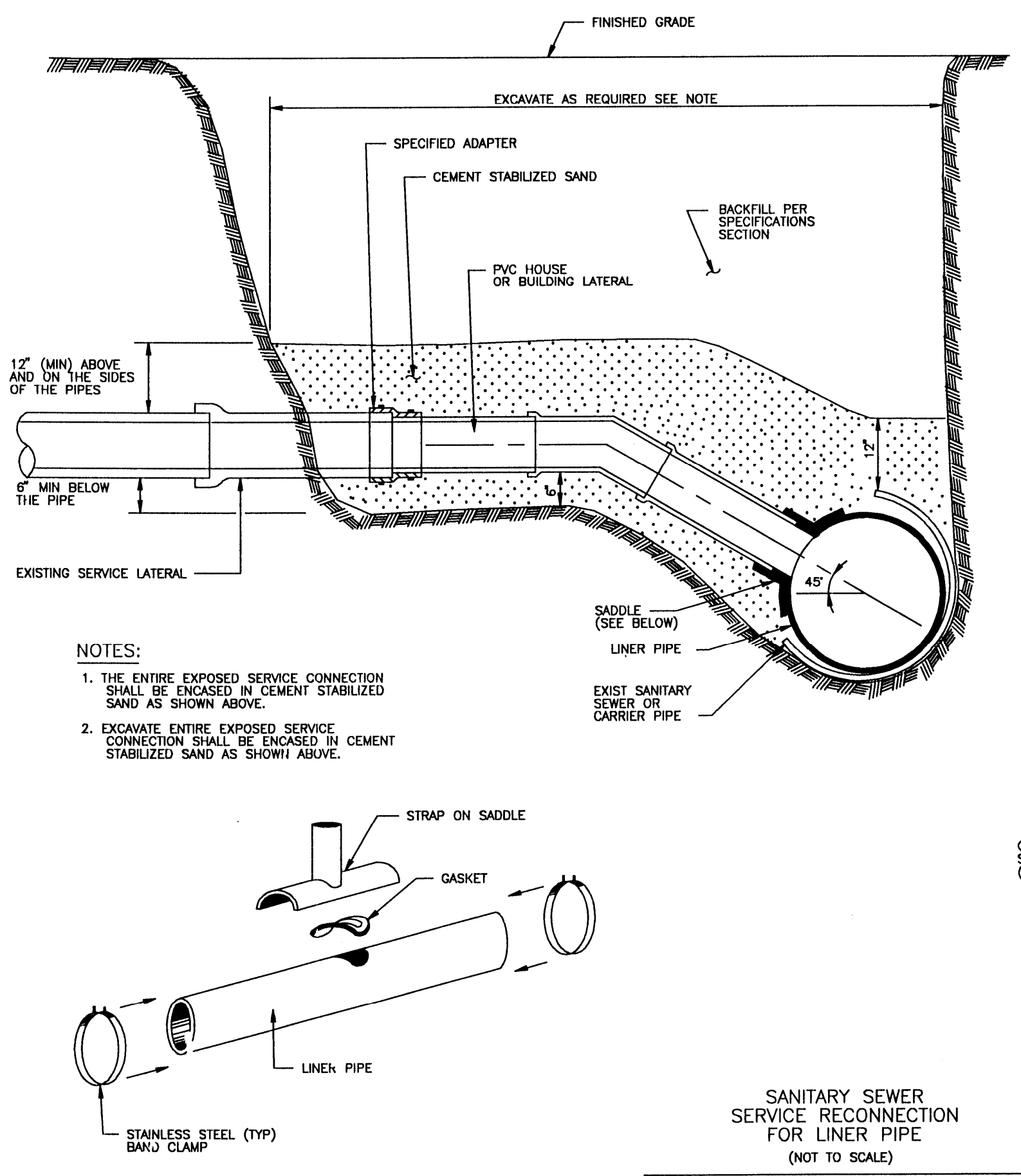
- INSTALLATION REQUIREMENTS**
- IF "X" IS LESS THAN 9" AND SEPARATION IS LESS THAN 6", USE PRESSURE-RATED PIPE MH TO MH. "X" MUST BE AT LEAST 4 FT.
 - IF "X" IS GREATER THAN OR EQUAL TO 4" AND SEPARATION IS 9" OR GREATER, USE STANDARD PIPE AND EMBEDMENT.

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

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

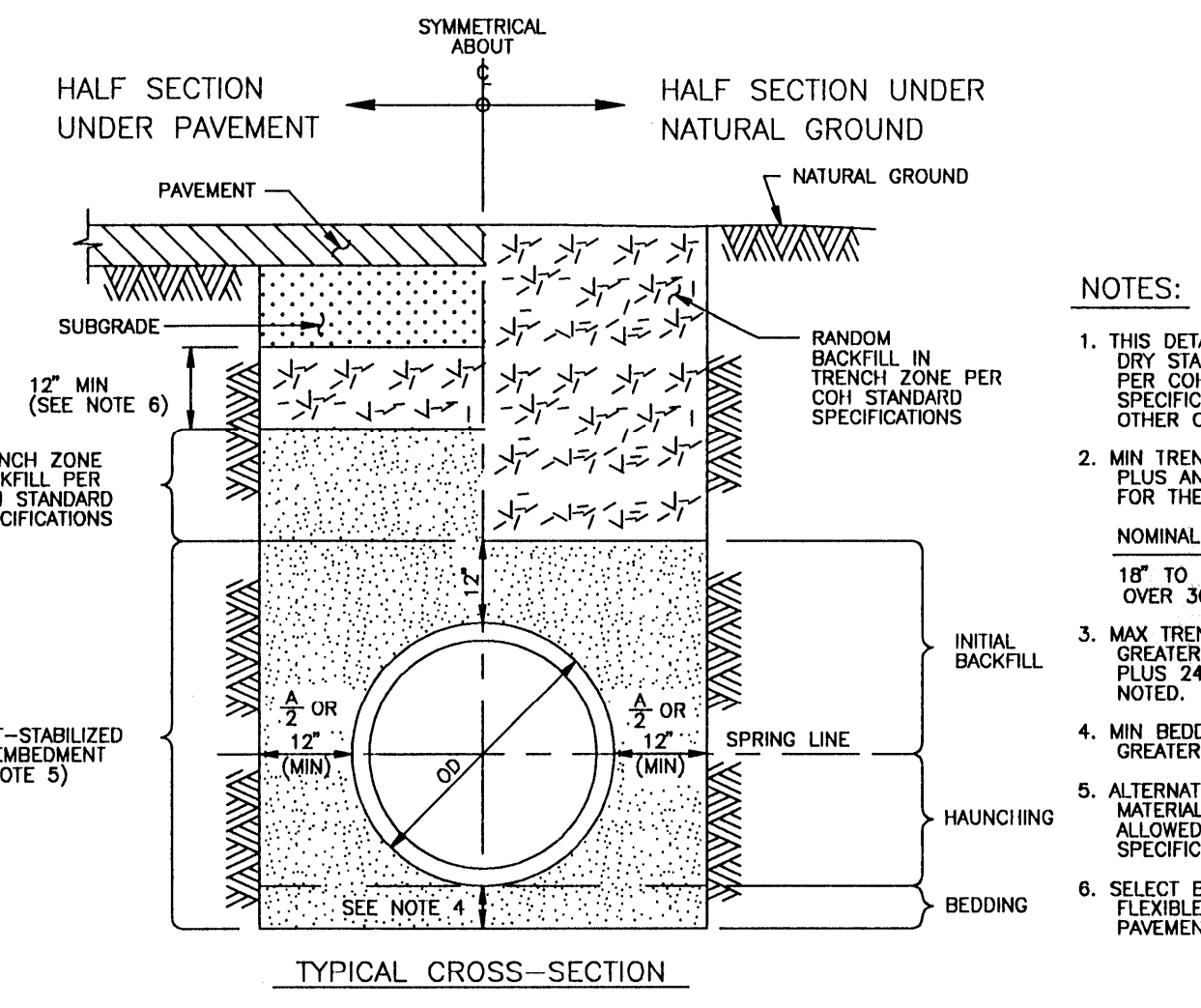
GRAVITY SANITARY SEWER PIPE SIZE	PRESSURE-RATED PIPE SIZE & TYPE (NOTE 2)	ADAPTERS REQUIRED
6" to 12" (ASTM D3034)	SAME SIZE ASTM D2241, SOR 28	ASTM D3034 TO D2665 (SEWERS TO D.W.V. ADAPTER COUPLING)
15" (ASTM D3034)	1 1/2" LINED DUCTILE IRON OR ANNA C905, D125	NONE REQUIRED
18" AND 24"	SAME SIZE ANNA C905, 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:	INSTALL AS CASING PIPE MIN 18 FT JOINT OF PRESSURE PIPE AT LEAST 2 NOMINAL SIZES LARGER THAN SAN. SEWER CARRIER PIPE. GROUT ANNULAR SPACE WITH TUNNEL GROUT	NOT APPLICABLE
ANY SIZE AND TYPE		

**SANITARY SEWER
INSTALLING SANITARY SEWERS
CROSSING OR PARALLEL TO WATER LINES
(NOT TO SCALE)**
EFF DATE: JUL-01-97 DWG NO: 02531-07



- NOTES:**
- THE ENTIRE EXPOSED SERVICE CONNECTION SHALL BE ENCASED IN CEMENT STABILIZED SAND AS SHOWN ABOVE.
 - EXCAVATE ENTIRE EXPOSED SERVICE CONNECTION SHALL BE ENCASED IN CEMENT STABILIZED SAND AS SHOWN ABOVE.

LATERAL STRAP-ON SADDLE
EFF DATE: JUL-01-97 DWG NO: 02531-01



- NOTES:**
- THIS DETAIL MAY BE USED ONLY FOR DRY STABLE TRENCH CONDITIONS PER COH STANDARD SPECIFICATION FOR REQUIREMENTS IN OTHER CONDITIONS.
 - MIN TRENCH WIDTH SHALL BE PIPE OD PLUS AN ALLOWANCE "A" FOR THE NOMINAL PIPE SIZE:
NOMINAL PIPE SIZE "A"
18" TO 30" 24"
OVER 30" 36"
 - MAX TRENCH WIDTH SHALL BE NOT GREATER THAN MIN TRENCH WIDTH PLUS 24 INCHES, UNLESS OTHERWISE NOTED.
 - MIN BEDDING DEPTH SHALL BE THE GREATER OF 1/4 OD OR 6 INCHES.
 - ALTERNATIVE EMBEDMENT BACKFILL MATERIALS FOR FORCE MAINS MAY BE ALLOWED. SEE COH STANDARD SPECIFICATIONS.
 - SELECT BACKFILL FOR RIGID PAVEMENT; FLEXIBLE BASE MATERIAL FOR ASPHALT PAVEMENT.

**SANITARY SEWER
BEDDING AND BACKFILL
FOR DRY STABLE TRENCH
(NOT TO SCALE)**
EFF DATE: JUL-01-97 DWG NO: 02317-08

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

REVIEWED BY

PRIVATELY FUNDED PUBLIC WORKS	CITY FUNDED PUBLIC WORKS
WATER	PROJECT MANAGER
WASTEWATER	CONSTRUCTION
STORM WATER	CHIEF ENGINEER
STREET & BRIDGE	

OTHER APPROVAL

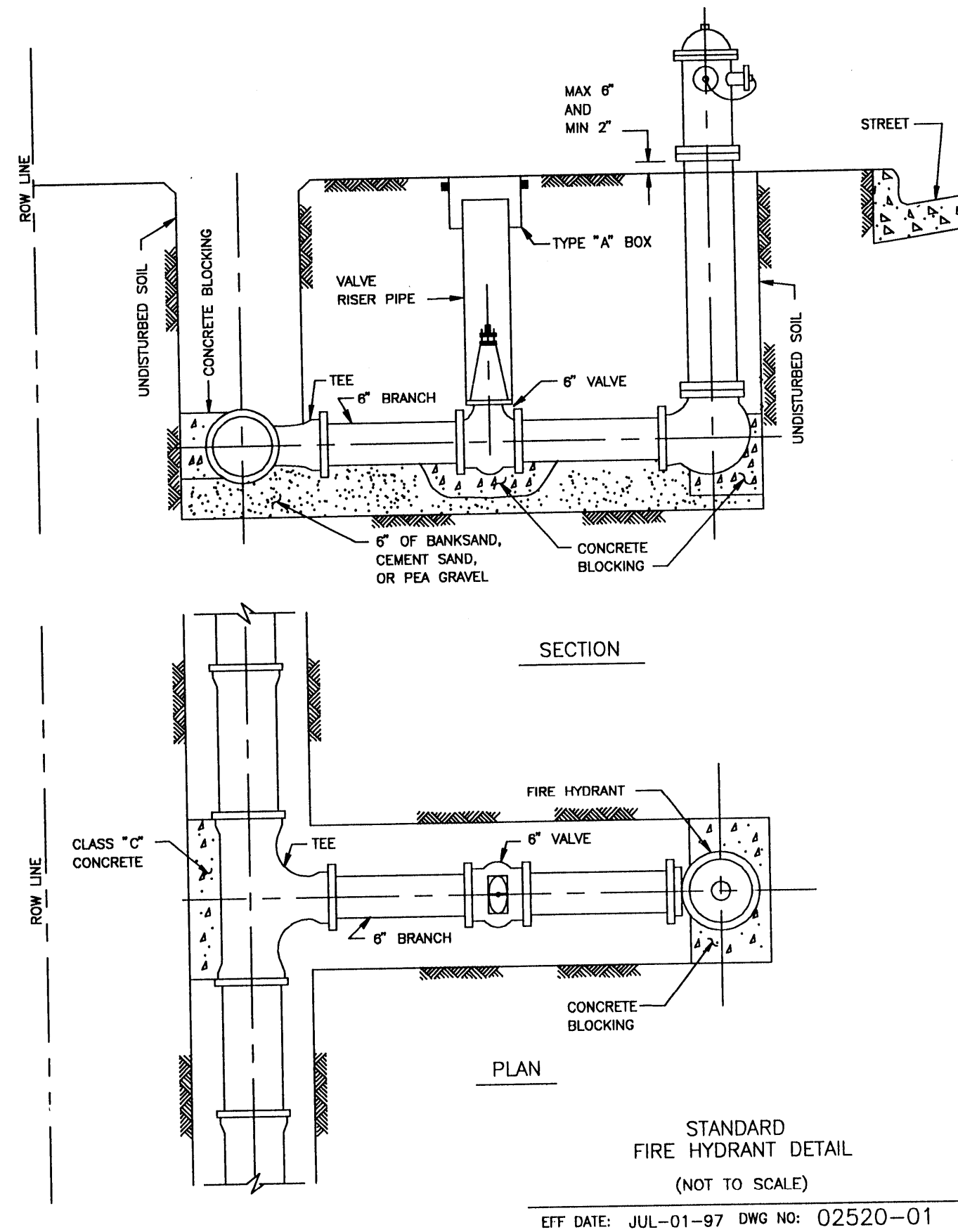
TRAFFIC AND TRANSPORTATION	SPONSOR DEPARTMENT
<i>M. J. ...</i>	7-6-99
CITY ENGINEER	DATE
<i>M. J. ...</i>	7-6-99
DIRECTOR OF PUBLIC WORKS AND ENGINEERING	DATE

DESIGNED BY: TIM
DRAWN BY: TIM
DATE: MAY 1999
SHEET NO. 16 OF 21 SHEETS
CITY DWG. NO:

SANITARY SEWER DETAILS

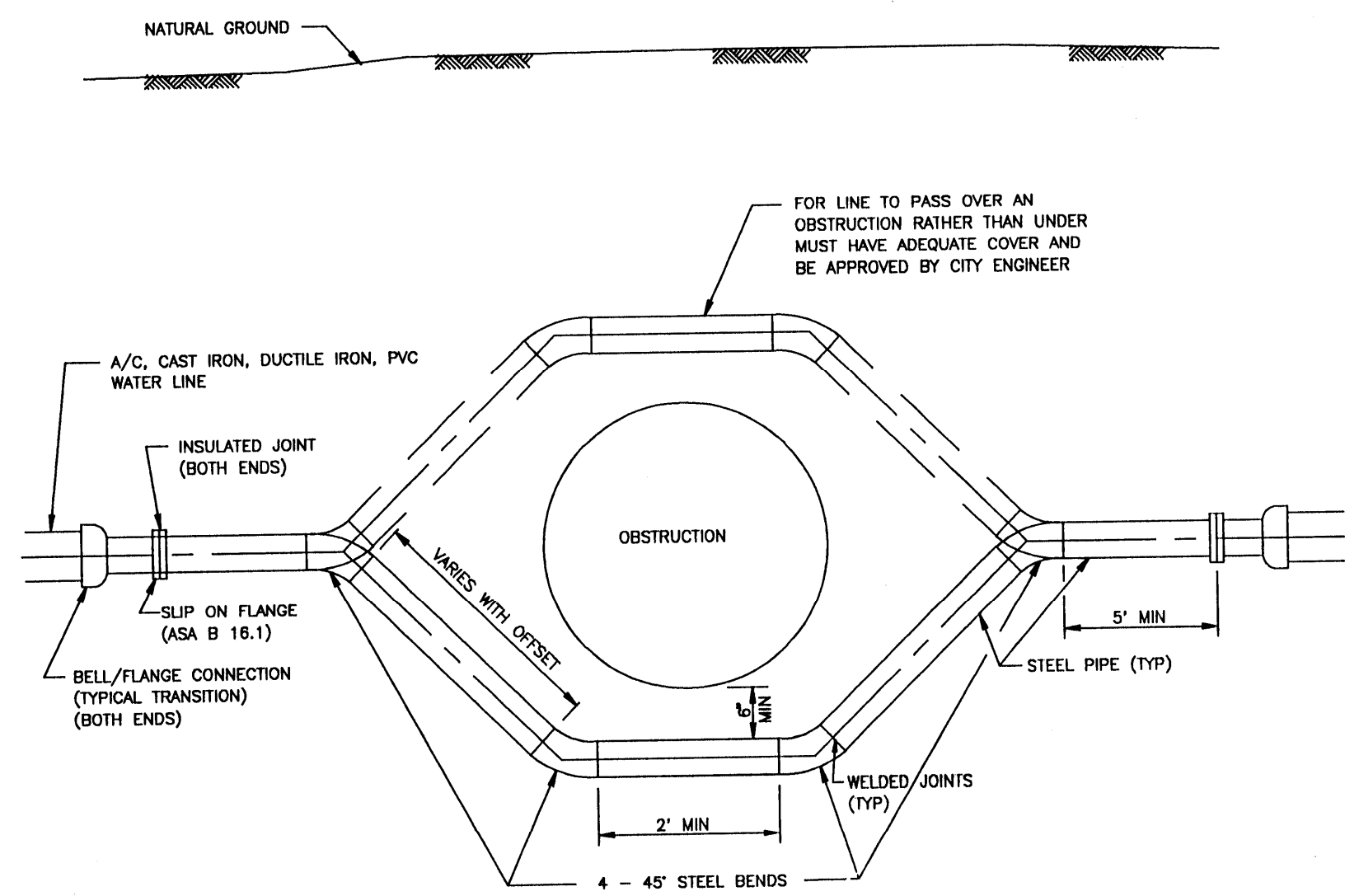
PCI PROVIDENT CONSULTANT, INC.
1200 WEST 11TH ST.
HOUSTON, TEXAS 77008

- NOTES:
1. LOCATE FIRE HYDRANTS AT PC OF THE INTERSECTION CURB RADIUS, 3 FEET BEHIND CURB OR PROJECTED FUTURE CURB.
 2. ON OPEN-DITCH ROADWAYS, SET THE FIRE HYDRANTS WITHIN 3 FEET OF RIGHTS-OF-WAY LINES.
 3. THE FIRE HYDRANT STEAMER NOZZLE SHALL FACE THE STREET.



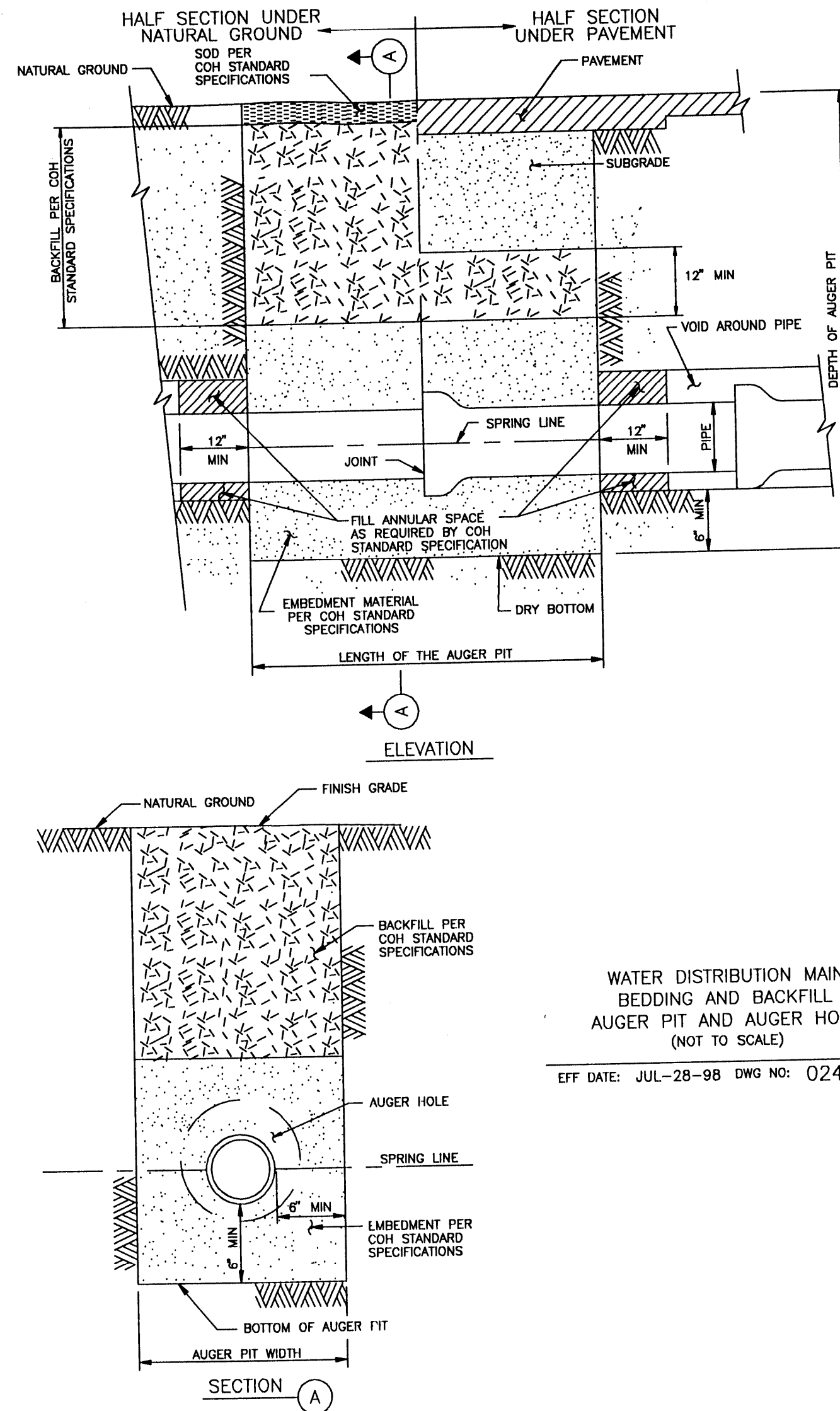
STANDARD FIRE HYDRANT DETAIL
(NOT TO SCALE)
EFF DATE: JUL-01-97 DWG NO: 02520-01

- NOTE:
1. MATERIALS AND COATINGS TO BE IN ACCORDANCE WITH WATER MAIN STANDARD SPECIFICATIONS.
 2. RESTRAIN EXISTING PIPING BEYOND STEEL SECTION AS REQUIRED TO PREVENT MOVEMENT.



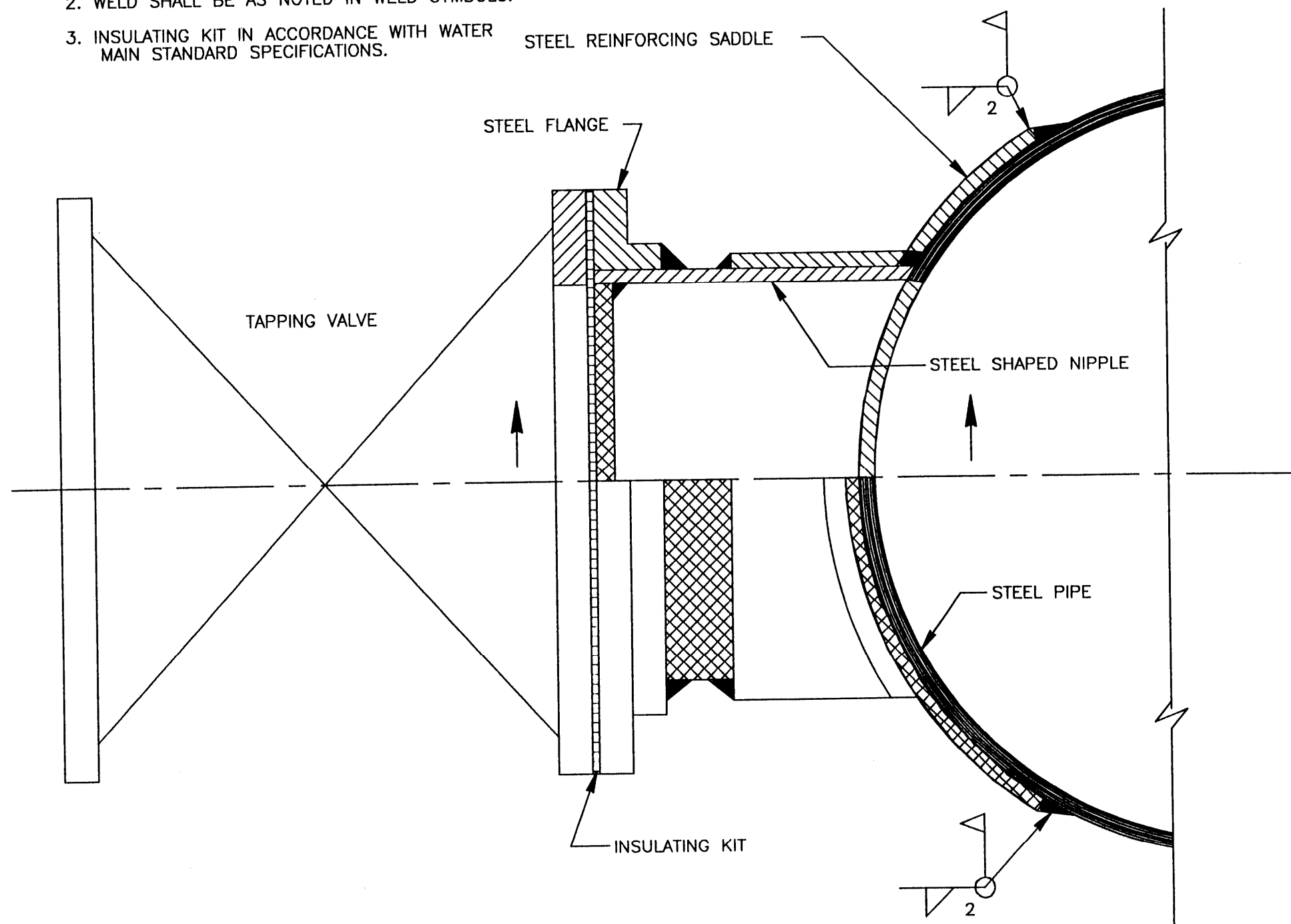
TYPICAL STEEL SECTION FITTINGS	
4 -	45° STEEL BENDS
2 -	4\"/>

TYPICAL STEEL PIPE OFFSET SECTION FOR WATER MAINS
(NOT TO SCALE)
EFF DATE: JUL-28-98 DWG NO: 02502-02

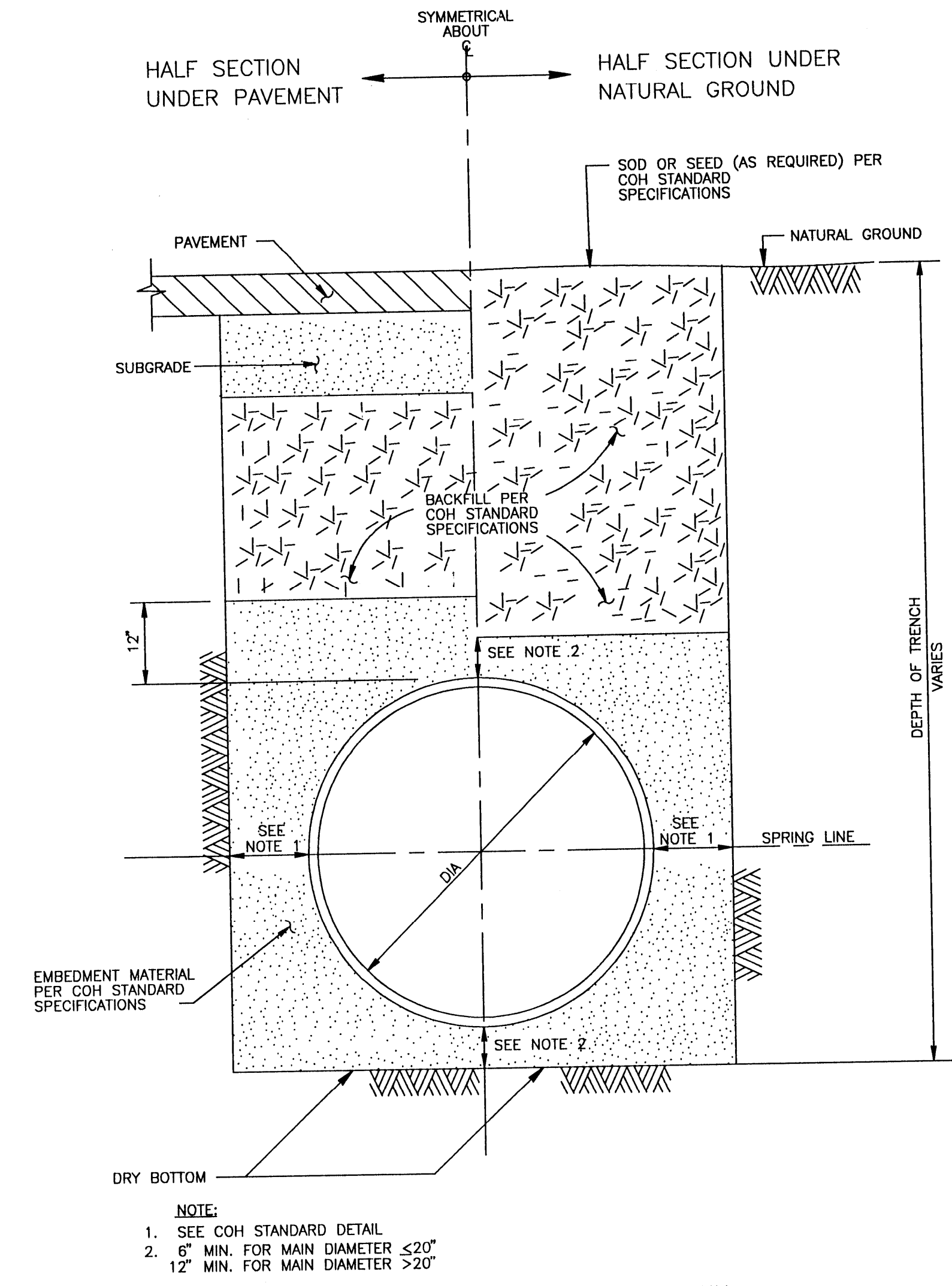


WATER DISTRIBUTION MAIN BEDDING AND BACKFILL AUGER PIT AND AUGER HOLE
(NOT TO SCALE)
EFF DATE: JUL-28-98 DWG NO: 02447-01

- GENERAL NOTES:
1. PROVIDE STEEL TAPPING SLEEVE AS PER WATER MAIN SPECIFICATIONS.
 2. WELD SHALL BE AS NOTED IN WELD SYMBOLS.
 3. INSULATING KIT IN ACCORDANCE WITH WATER MAIN STANDARD SPECIFICATIONS.



STANDARD TAP TO STEEL MAIN
(NOT TO SCALE)
EFF DATE: JUL-28-98 DWG NO: 02512-04

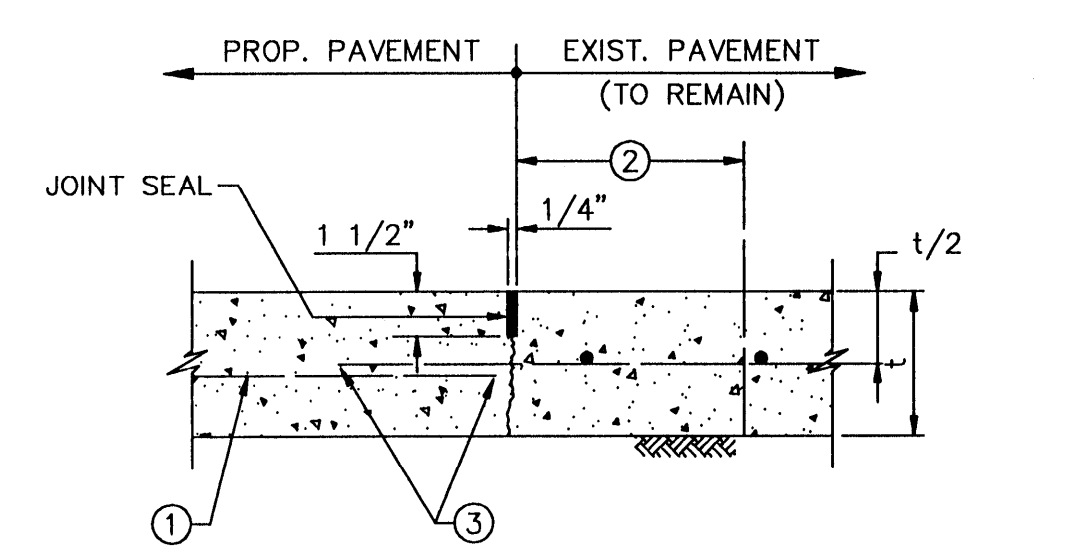
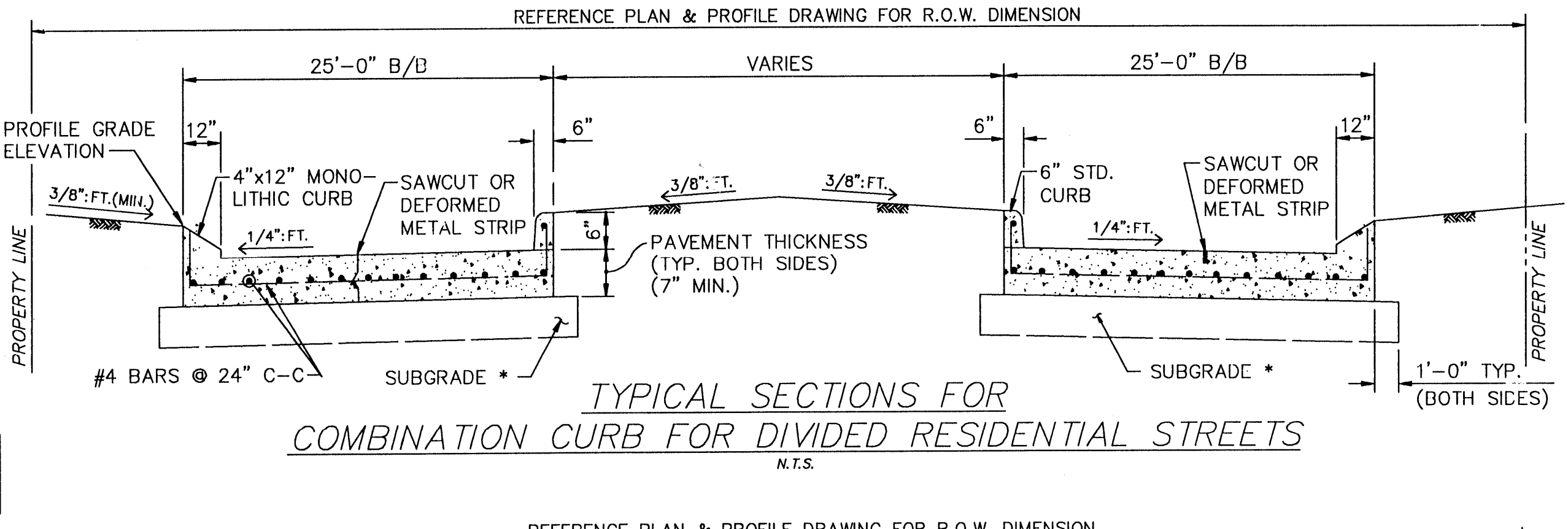
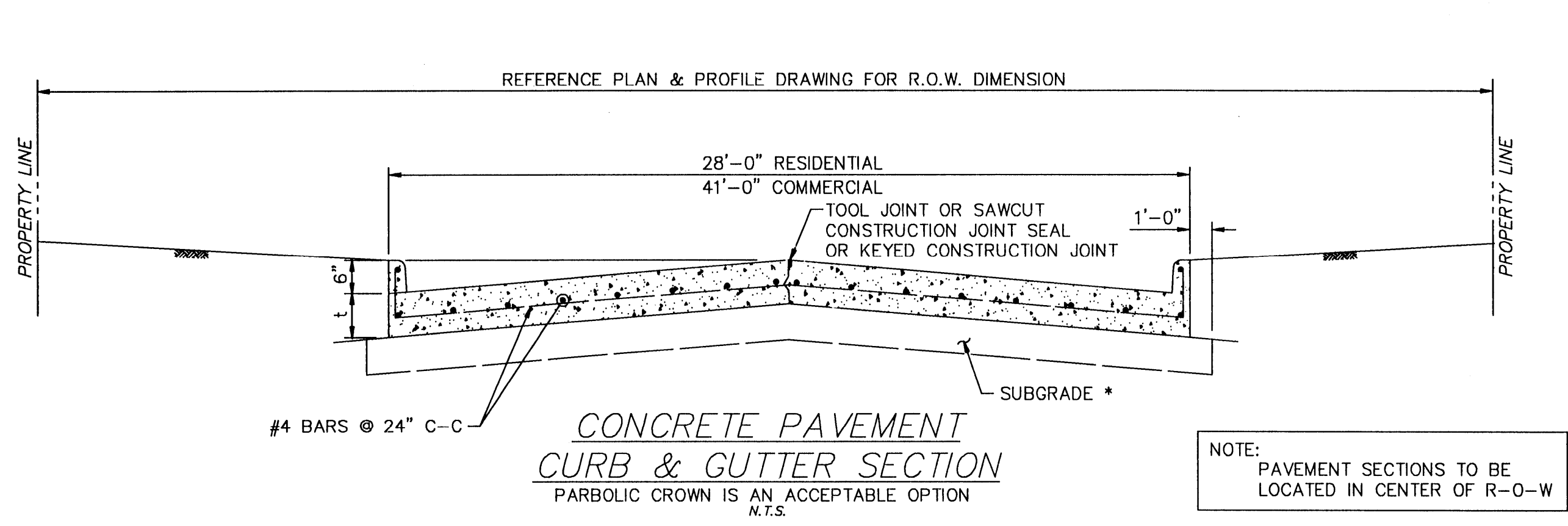


WATER DISTRIBUTION MAIN BEDDING AND BACKFILL FOR OPEN CUT TRENCHES
(NOT TO SCALE)
EFF DATE: JUL-28-98 DWG NO: 02511-01

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
REVIEWED BY	
PRIVATELY FUNDED PUBLIC WORKS	CITY FUNDED PUBLIC WORKS
<i>Walter K. Sullivan</i> 6/24/99 WATER	
WASTEWATER	PROJECT MANAGER
<i>W. Sullivan</i> 6/24/99 STORM WATER	CONSTRUCTION
STREET & BRIDGE	CHIEF ENGINEER
OTHER APPROVAL	
TRAFFIC AND TRANSPORTATION	SPONSOR DEPARTMENT
<i>Walter K. Sullivan</i> 7-6-99 CITY ENGINEER	DATE
<i>Walter K. Sullivan</i> 7-6-99 DIRECTOR OF PUBLIC WORKS AND ENGINEERING	DATE
SUBMITTED: _____	DESIGNED BY: TIM
SCALE: N/A	DRAWN BY: TIM
DATE: MAY 1999	SHEET NO. 17 OF 21 SHEETS
SURVEY BY: _____	CITY DWG. NO:
F B NO: _____	

Walter K. Sullivan
6-23-99

WATER DETAILS



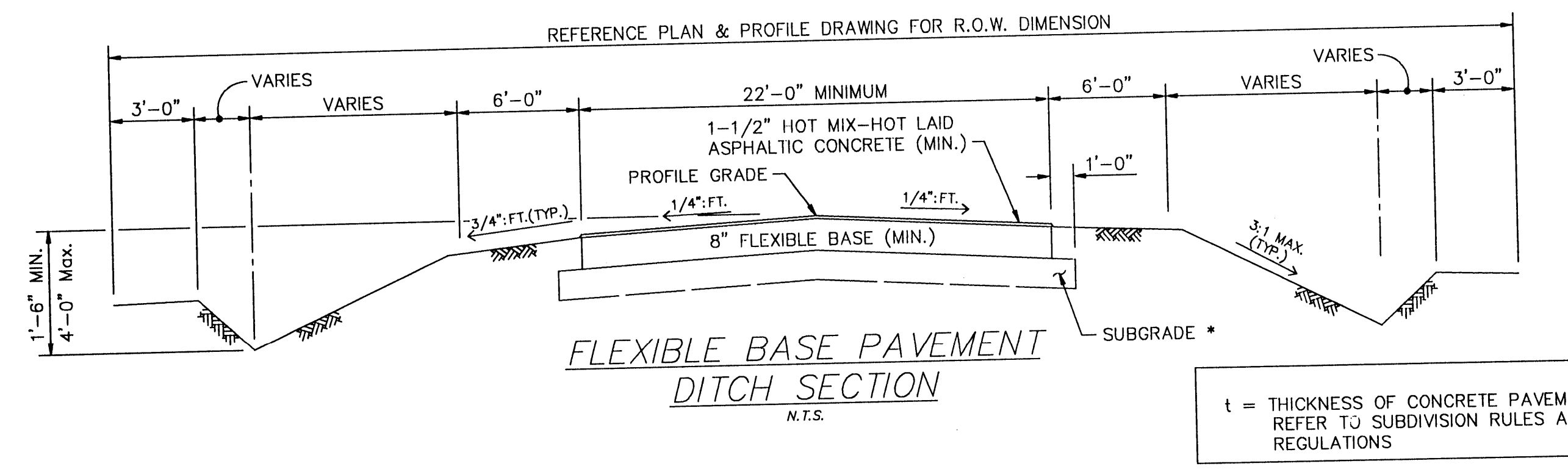
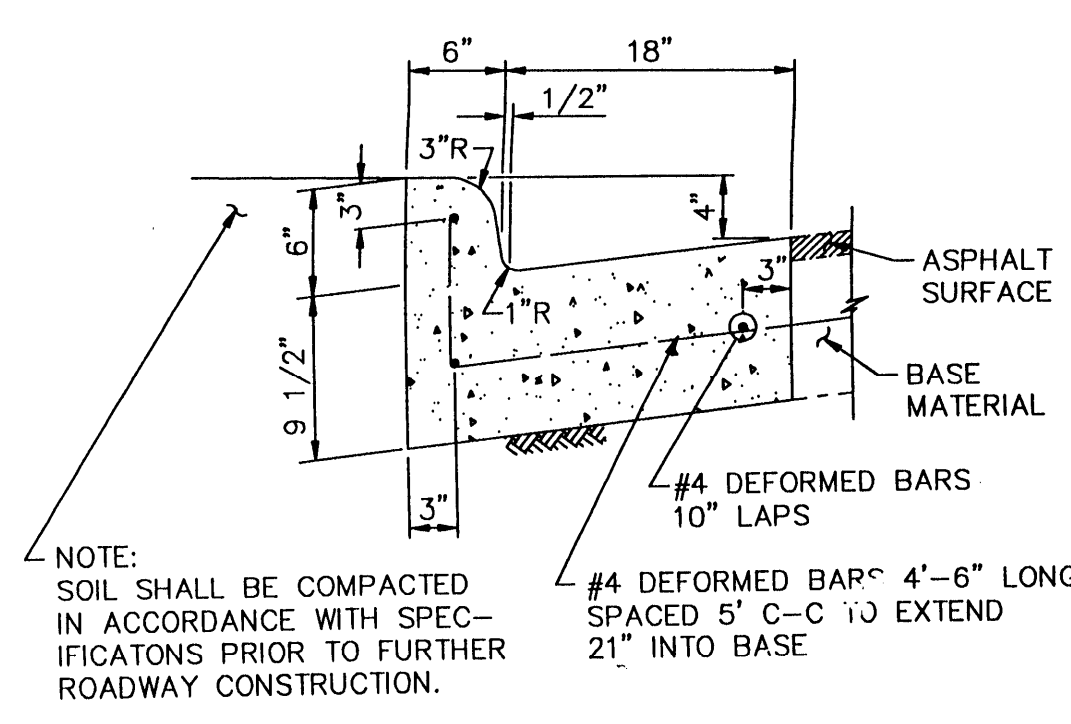
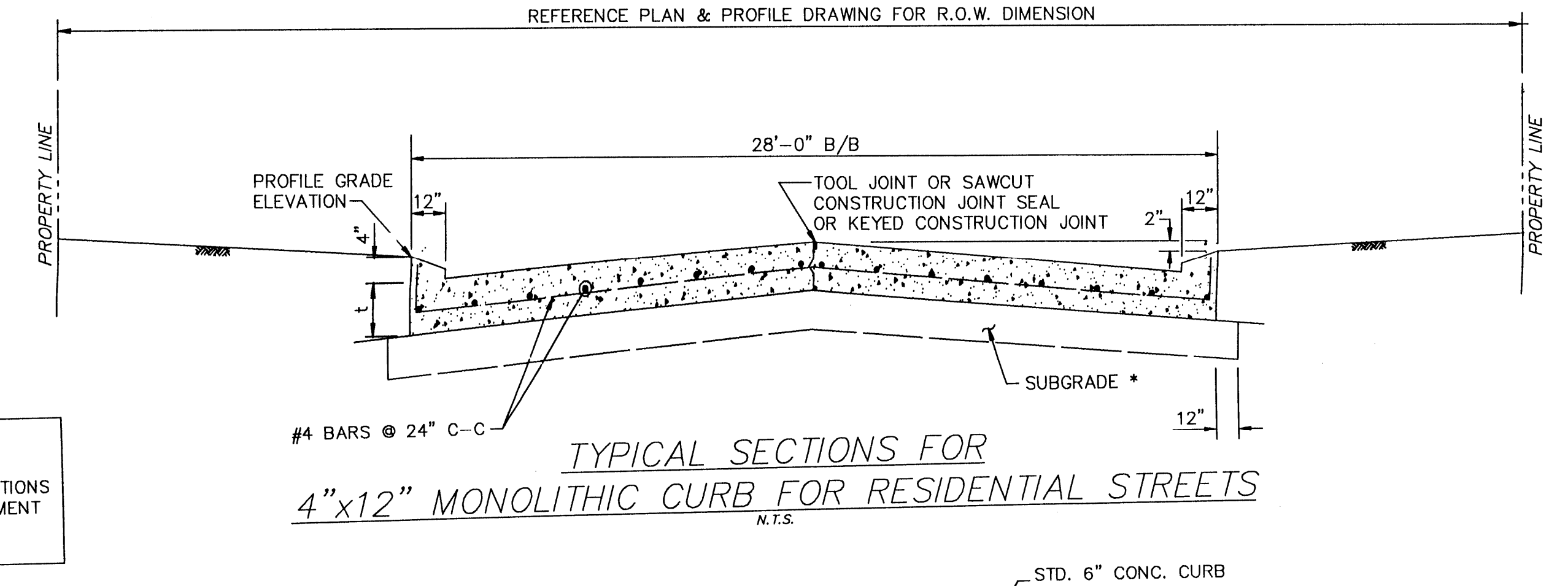
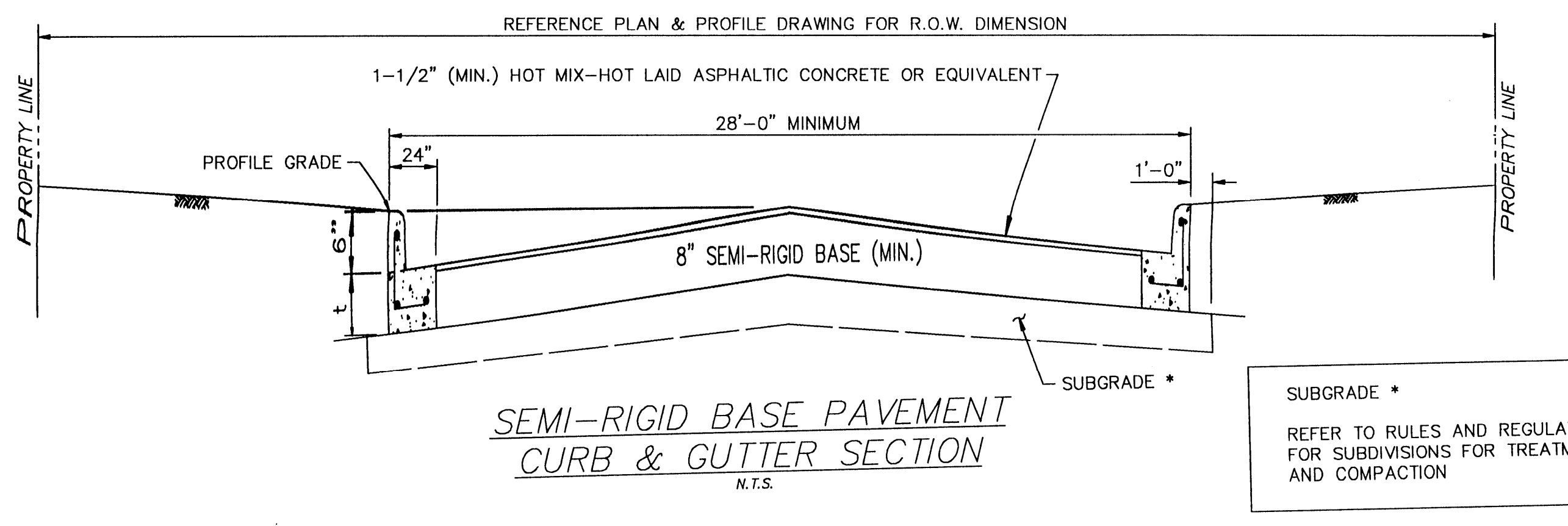
CONCRETE TO CONCRETE STANDARD PAVEMENT TIE-IN

(SEE NOTES)

① Reinforcing centered in proposed pavement, 3" clear at edges.

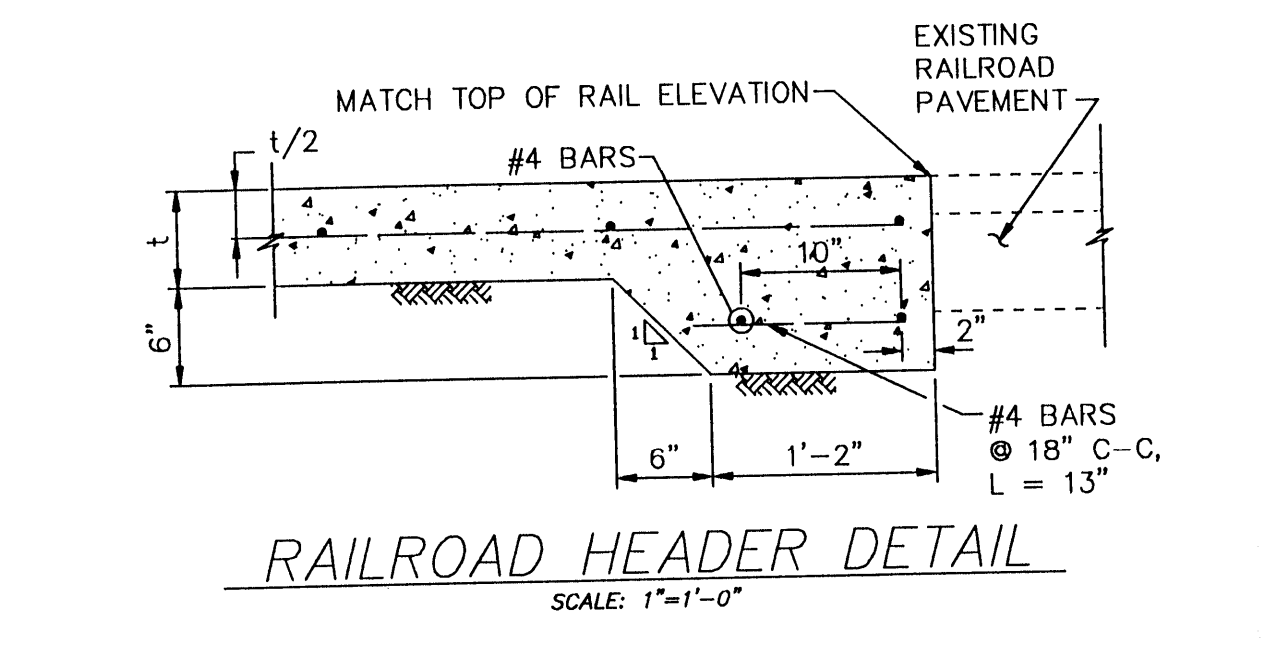
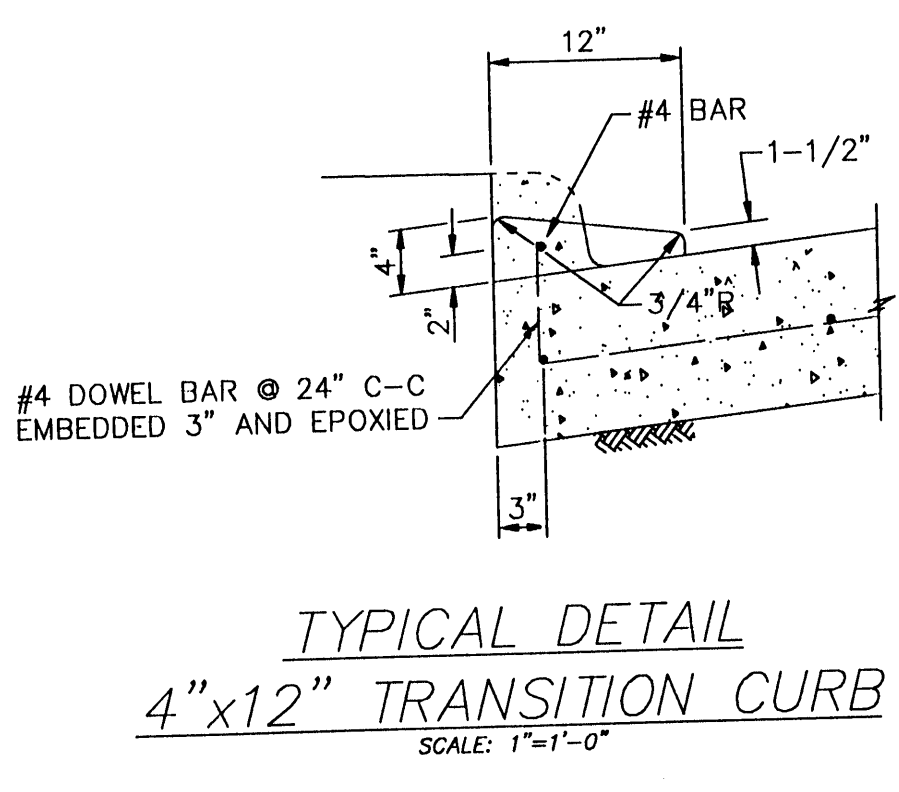
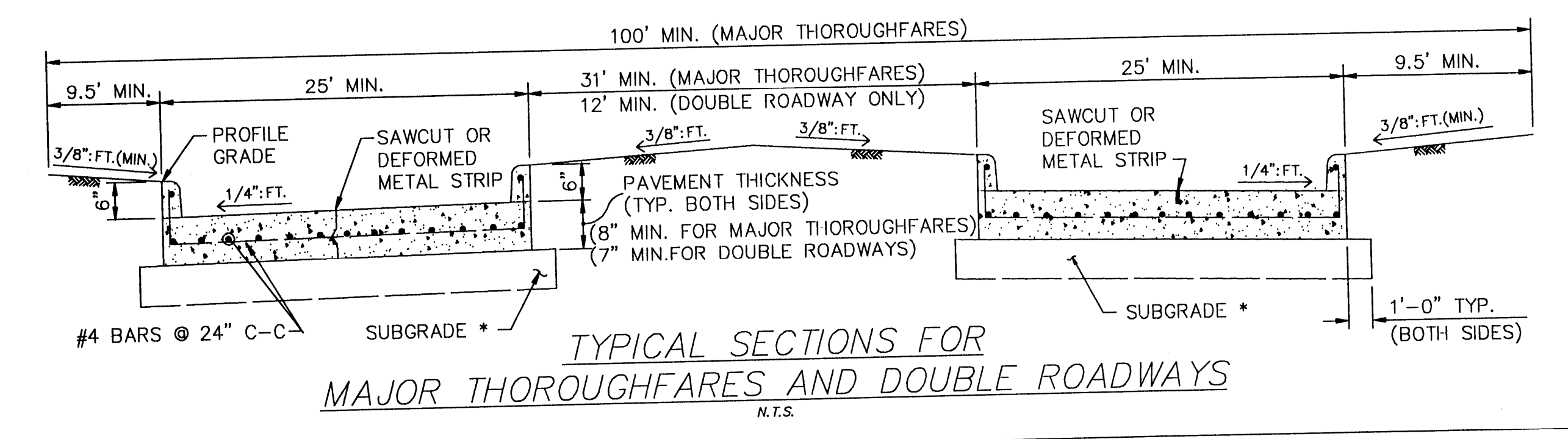
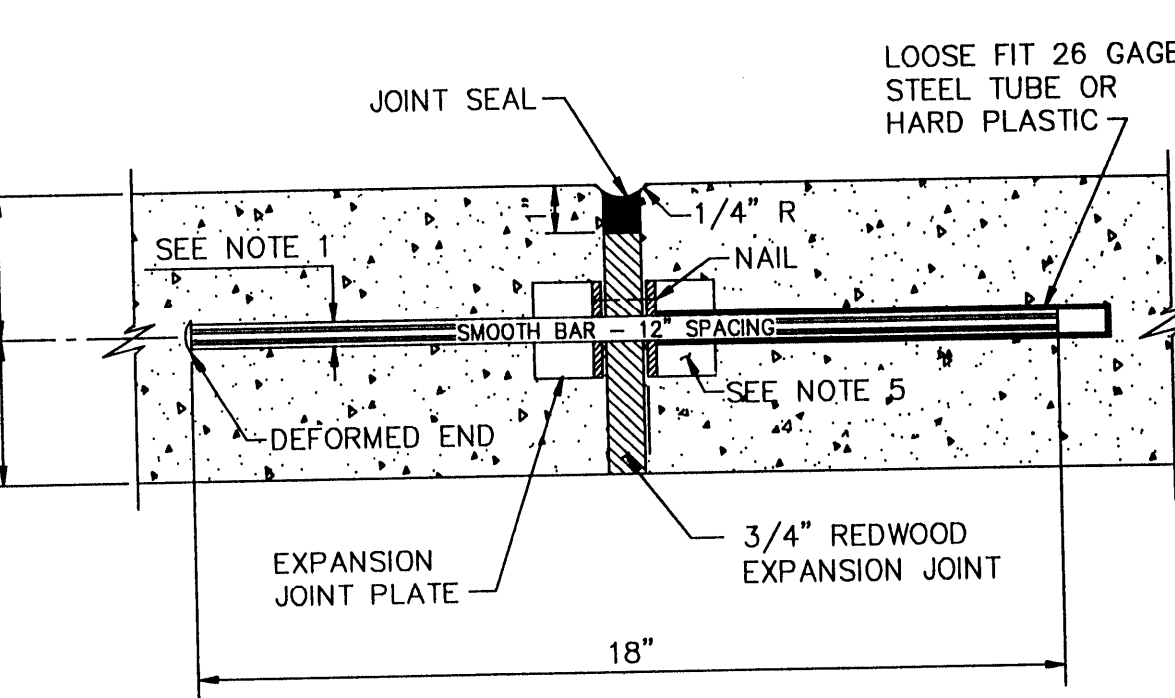
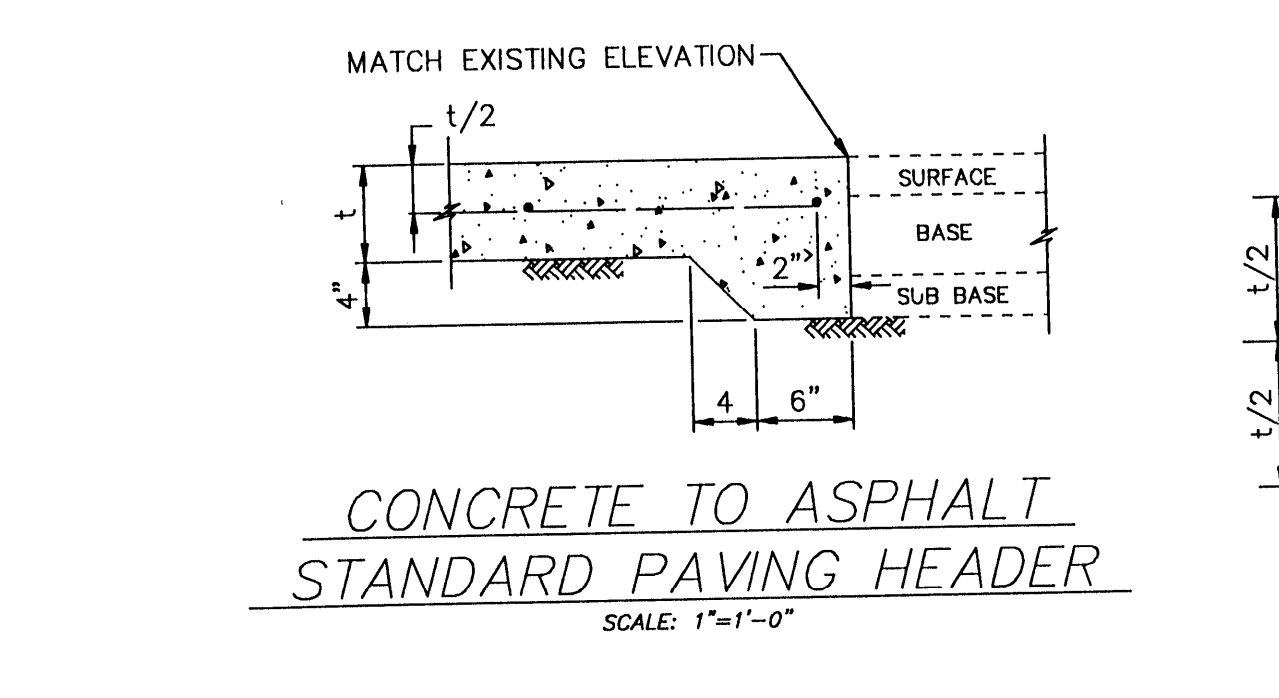
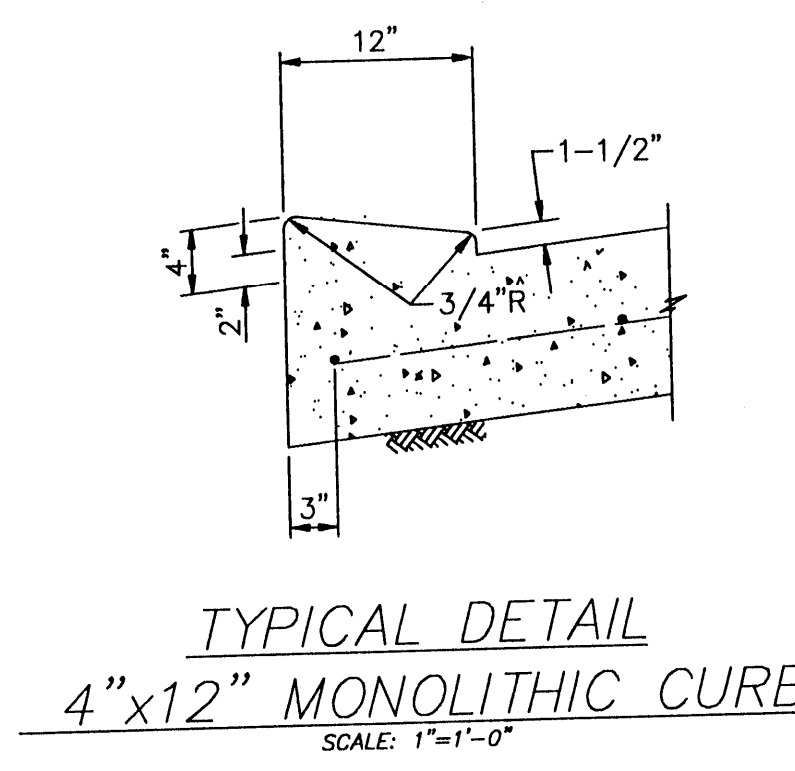
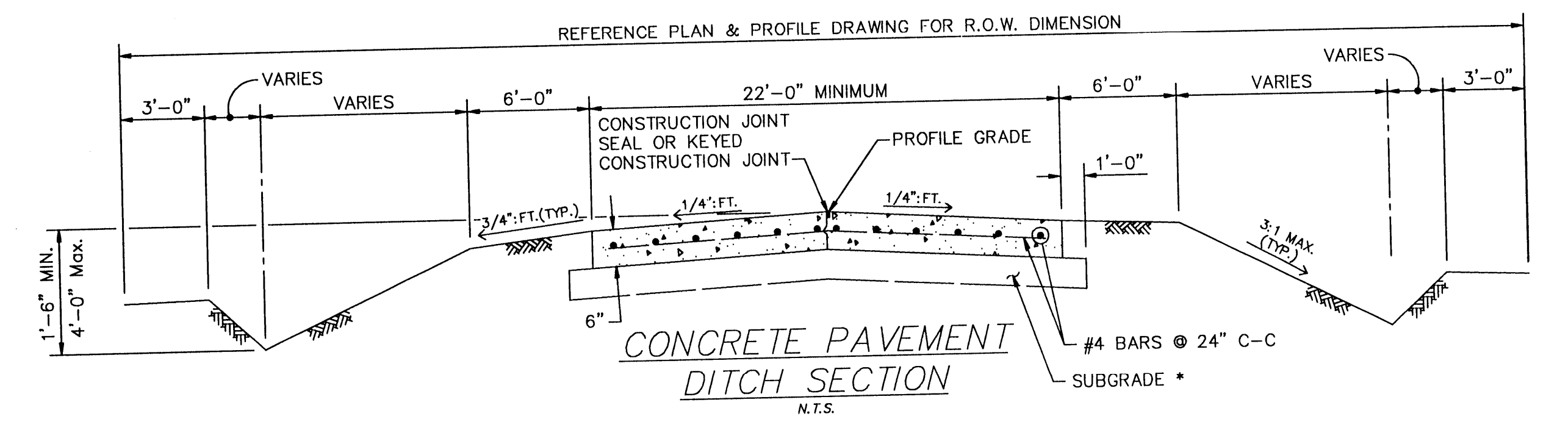
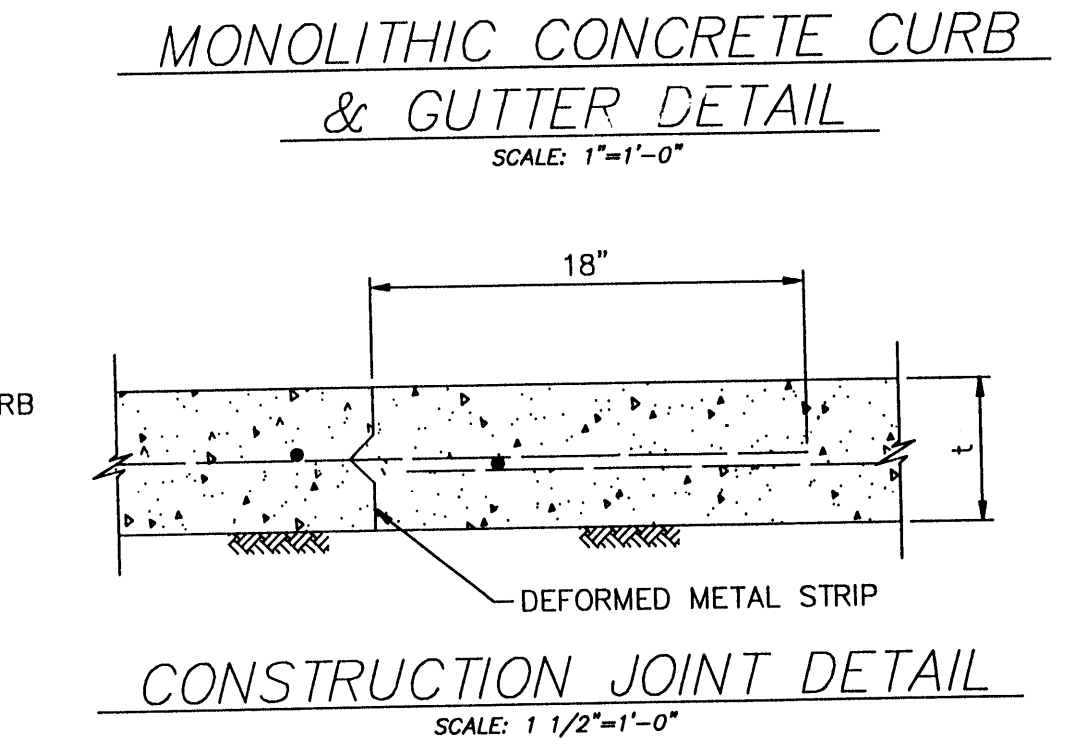
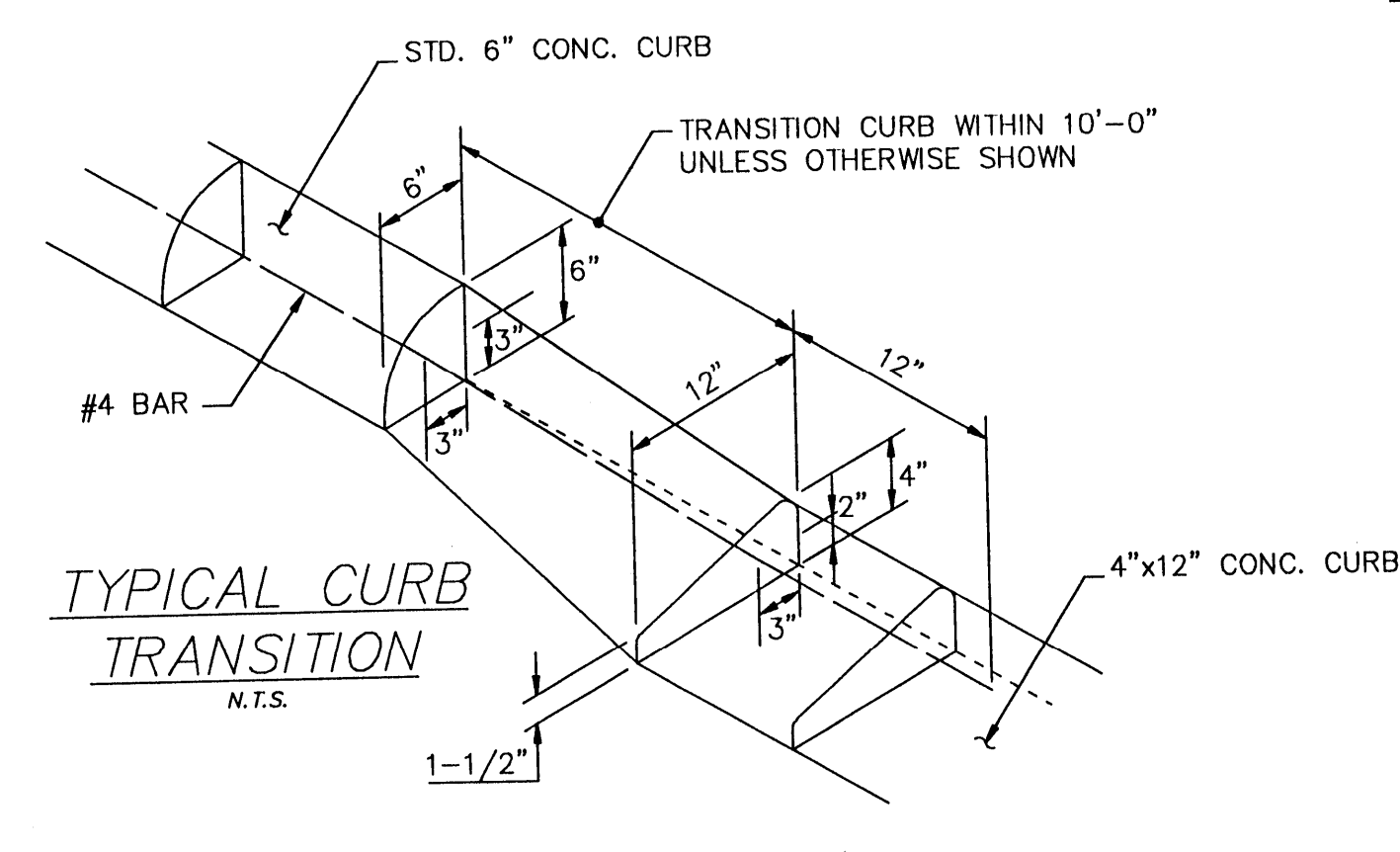
② Saw-cut & remove 2" existing pavement or pavement with curb. Expose and clean existing reinforcing.

③ 24 bar diameter lap or weld, if directed.



4" x 12" 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.

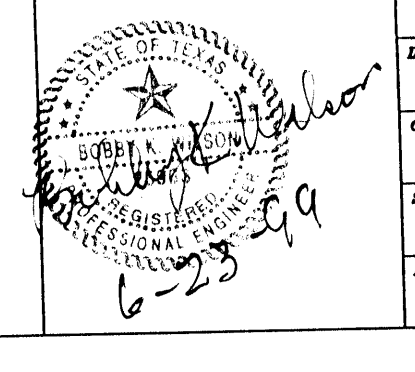


NOTES:

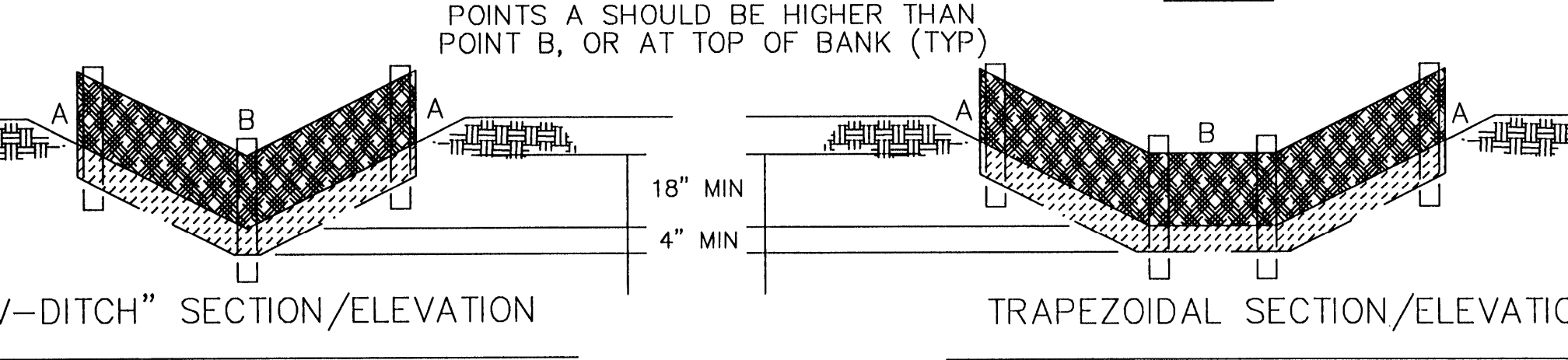
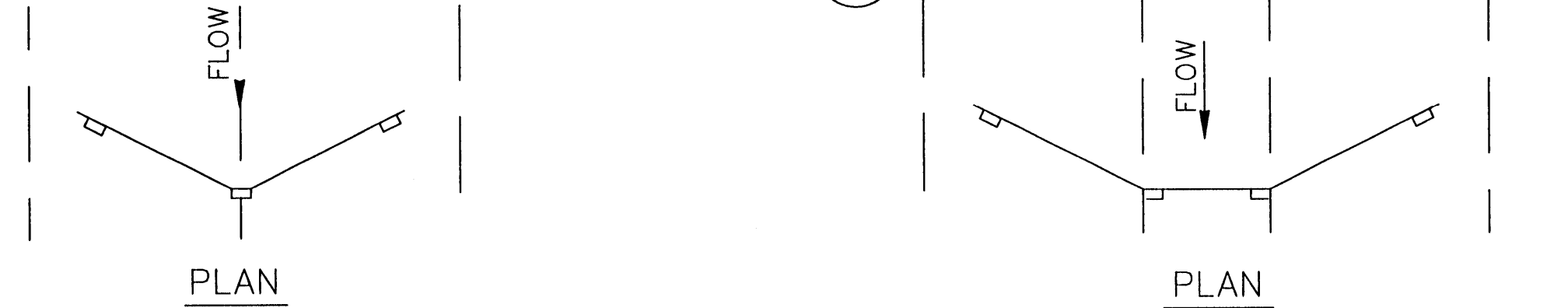
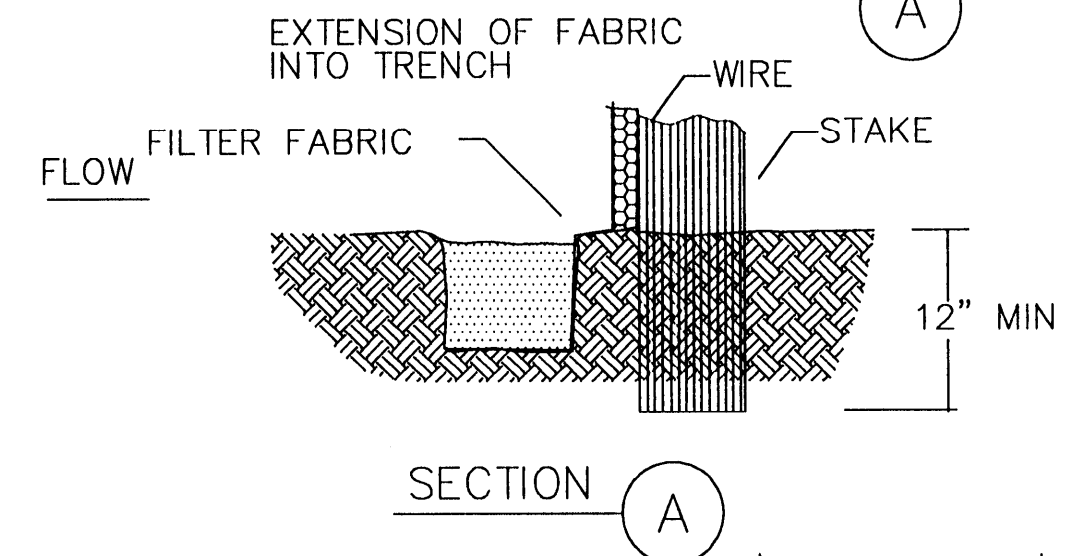
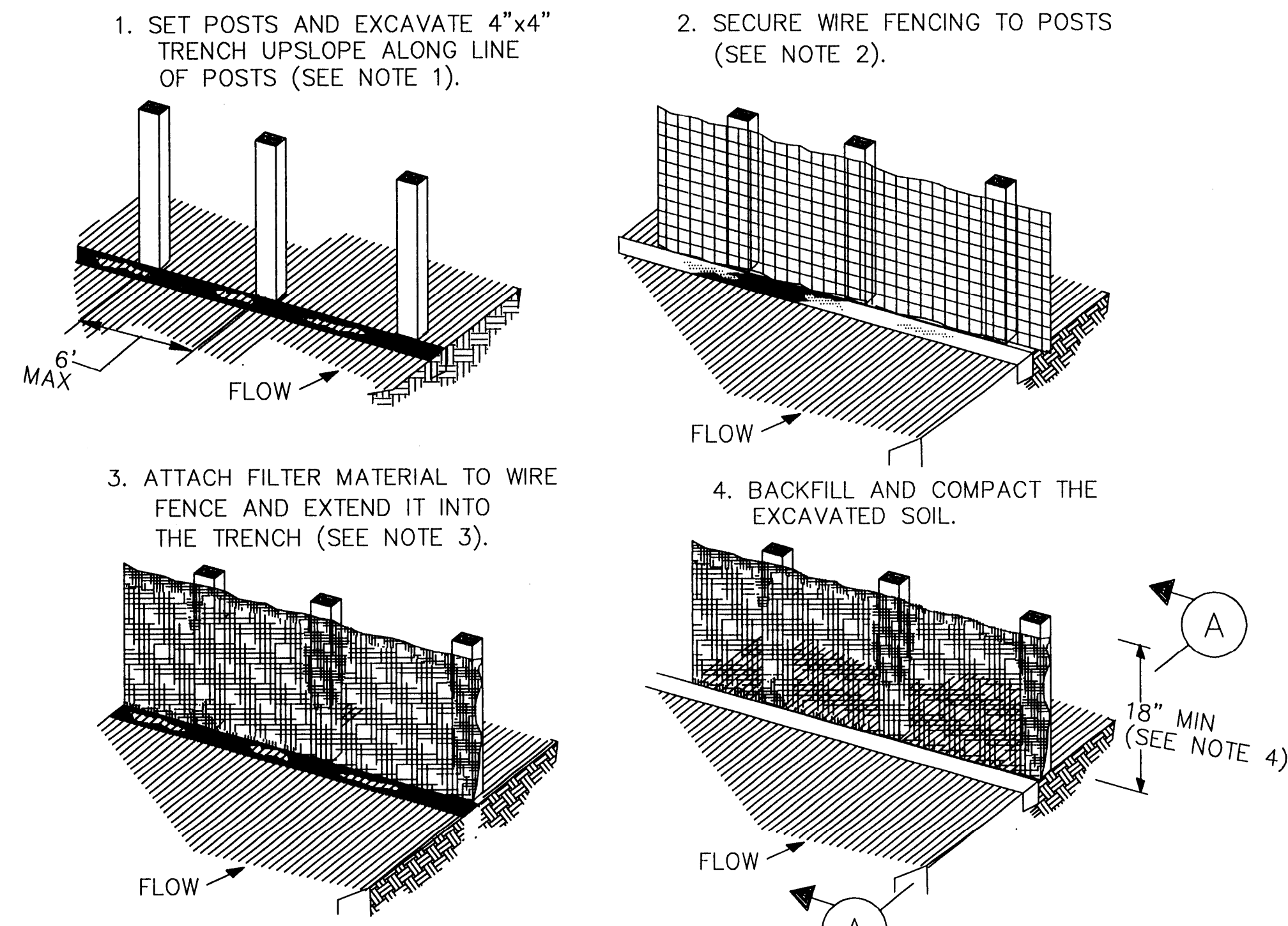
- Dowels for pavement expansion joints shall be 3/4" # for 6" to less than 7" pavement thickness, 1" # for 7" to less than 9" pavement thickness and 1 1/4" # for 9" or greater pavement thickness.
- Expansion joint shall be placed at the end of each curb return and at maximum 80' spacing (See plans).
- All joint seal material shall be asphalt rubber in accordance with ASTM designation D3405.
- If deformed metal strips are allowed, they shall be staked in place with #3 bars.
- Pre-manufactured joint plate.

NO.	REVISIONS	DATE	NAME

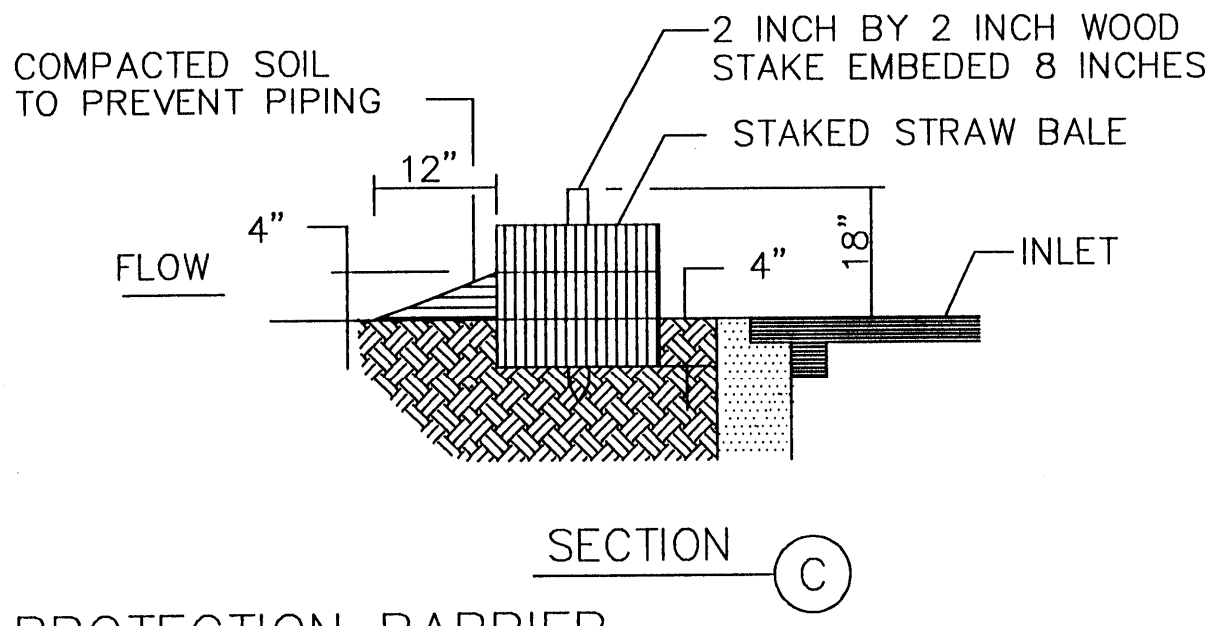
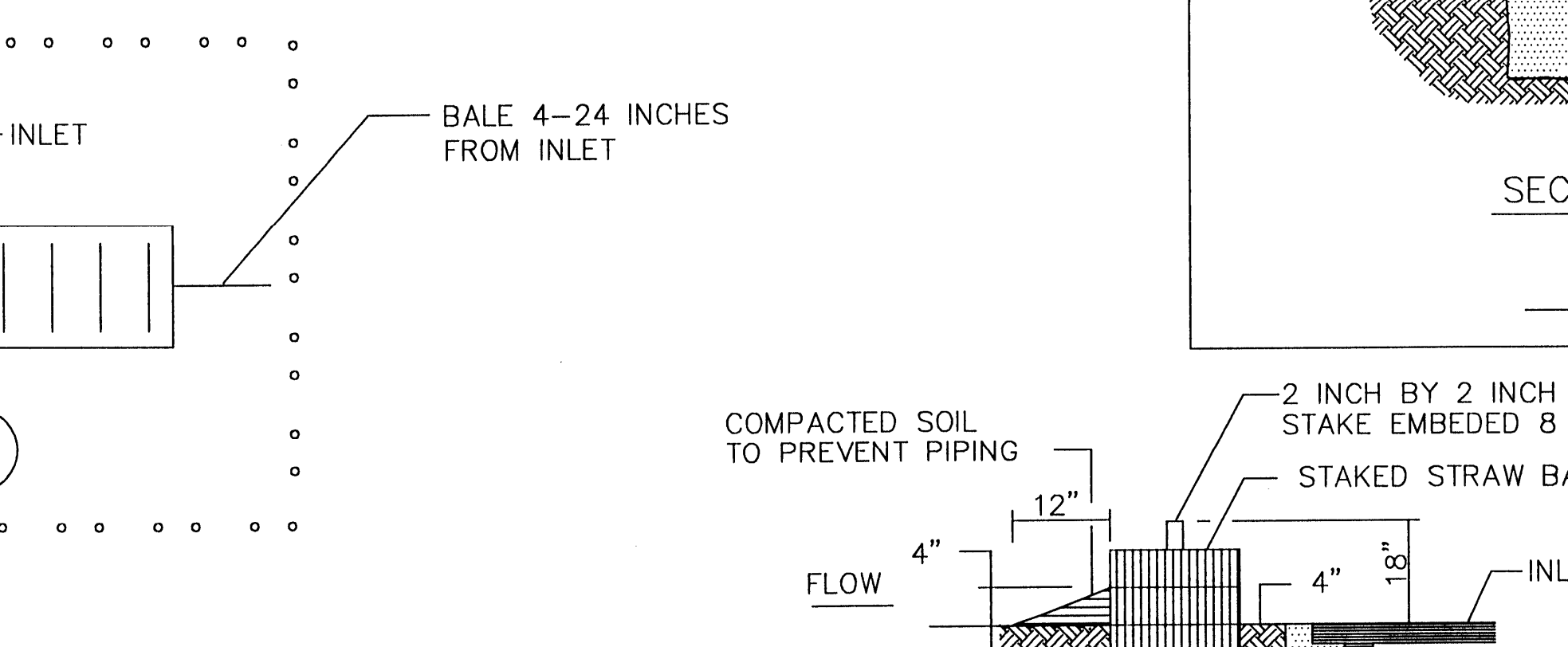
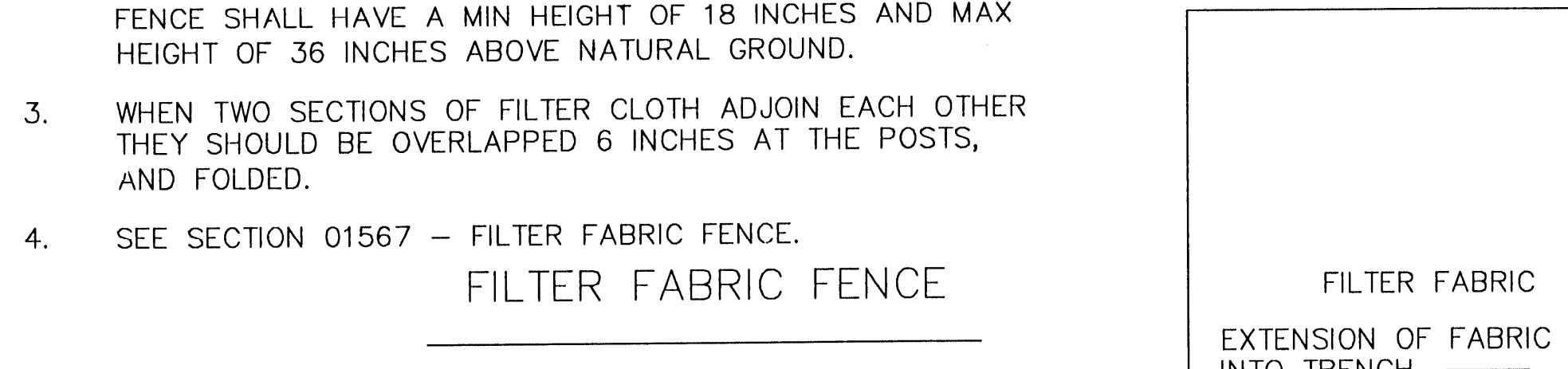
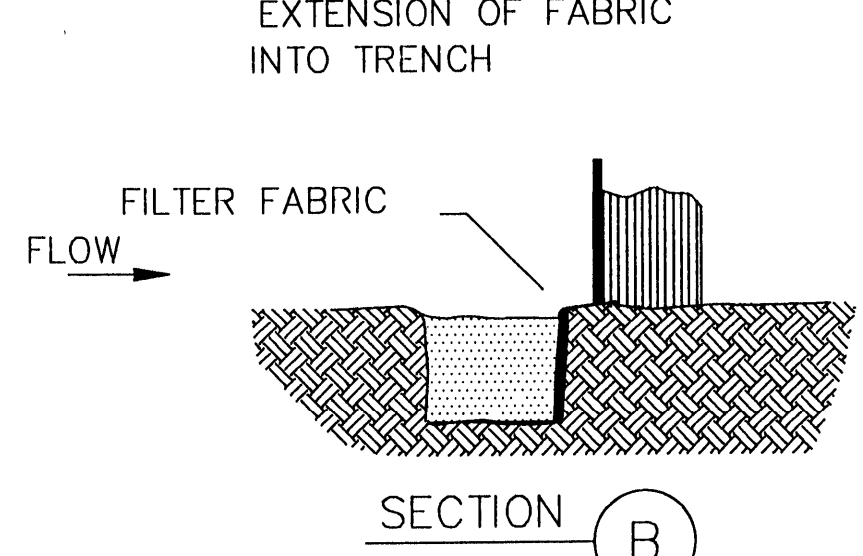
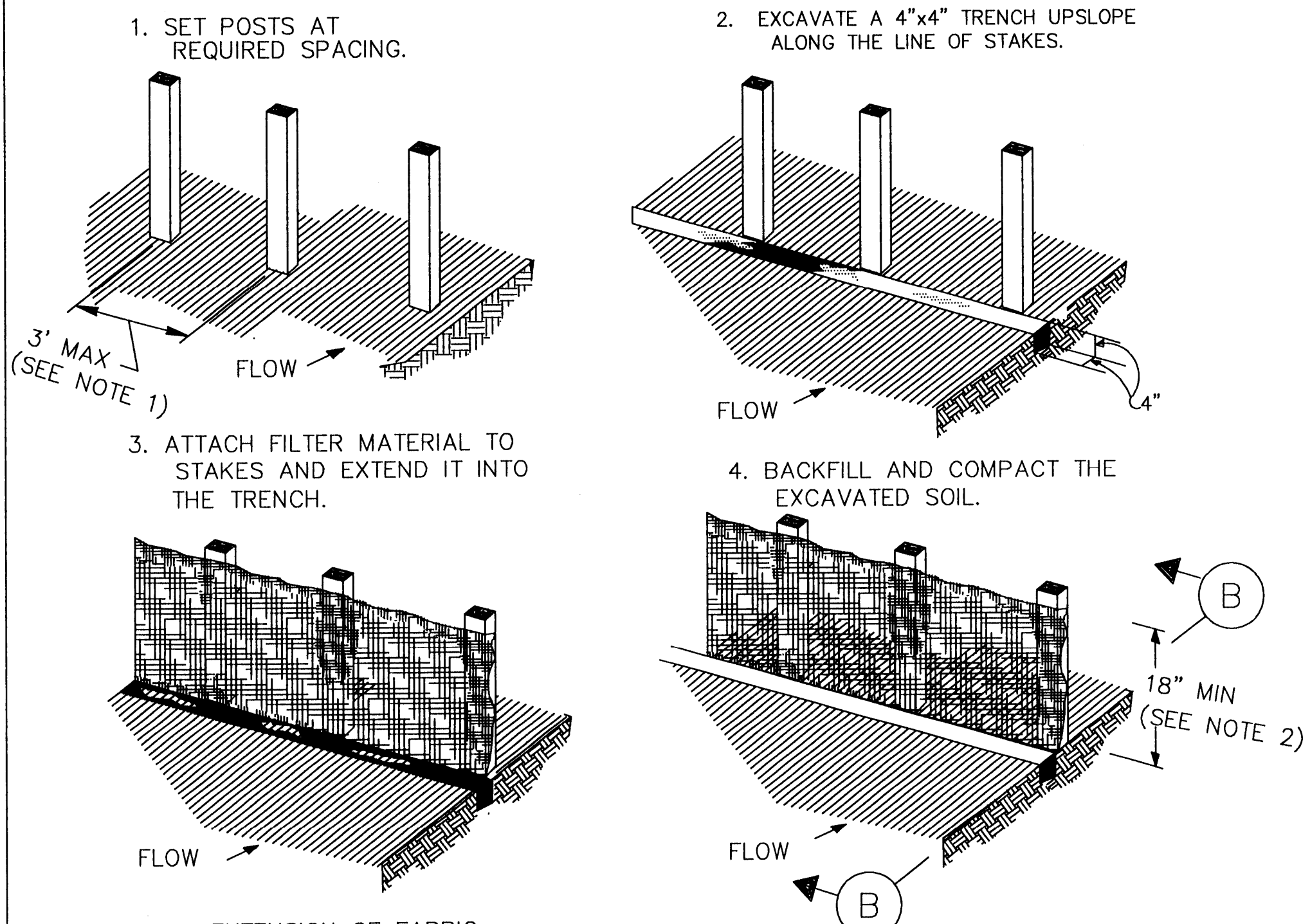
HARRIS COUNTY ENGINEERING DEPARTMENT



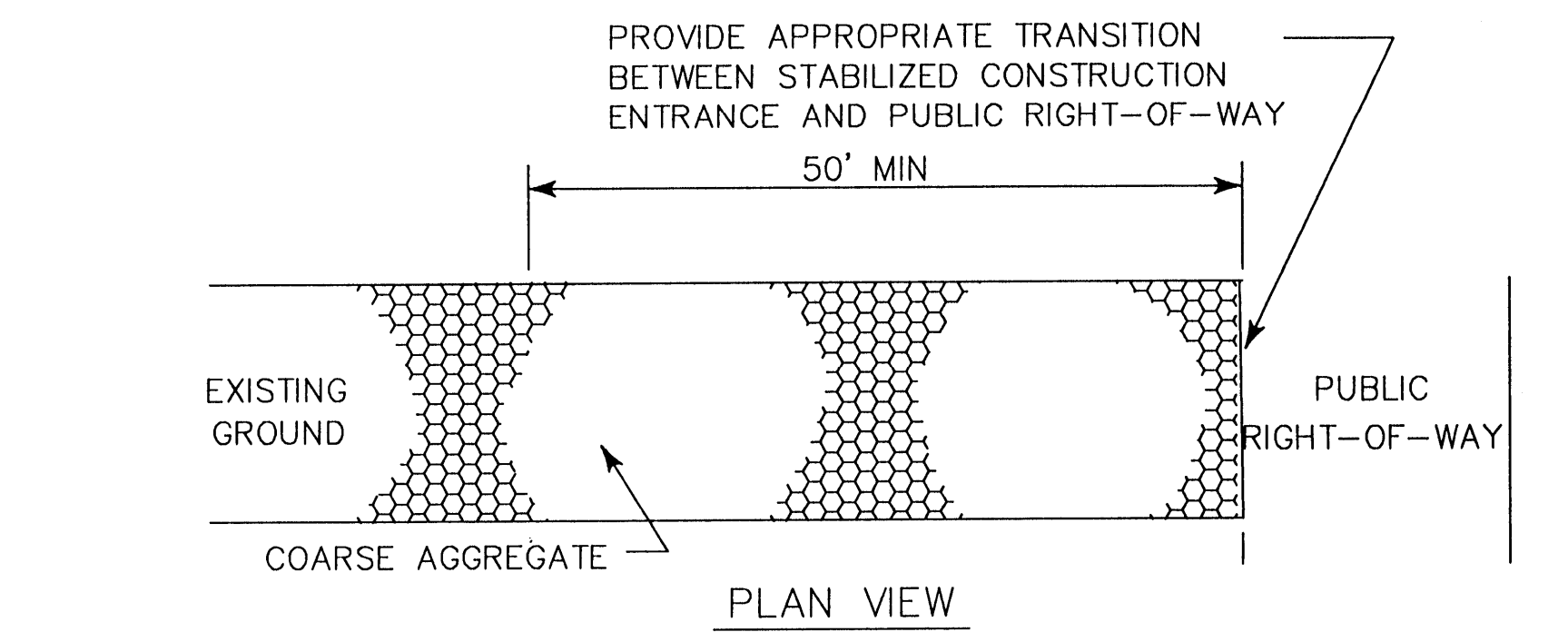
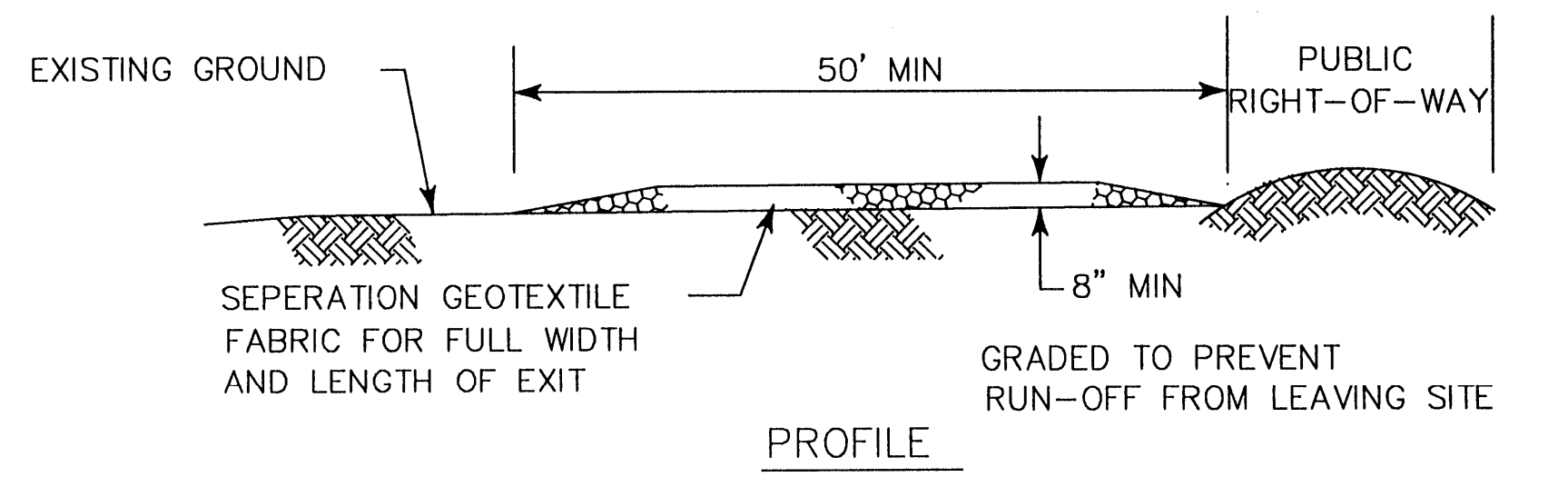
PROJECT TITLE	HIGHLAND TIMBERS, SECTION ONE		
DRAWN BY	L.M.J.	DATE	09/03/93
CHECKED BY		DATE	
SCALE	AS NOTED	APPROVED BY	
FILE NAME	SUBDIVISION STANDARD PAVEMENT DETAILS		
FILE NO.	PAVING1		
SHEET NO.	18 OF 20		S/D-1



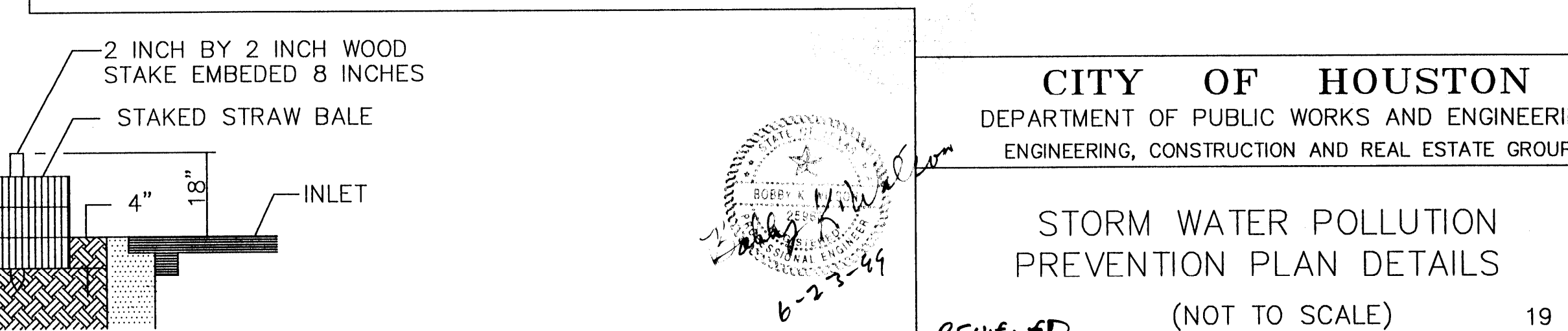
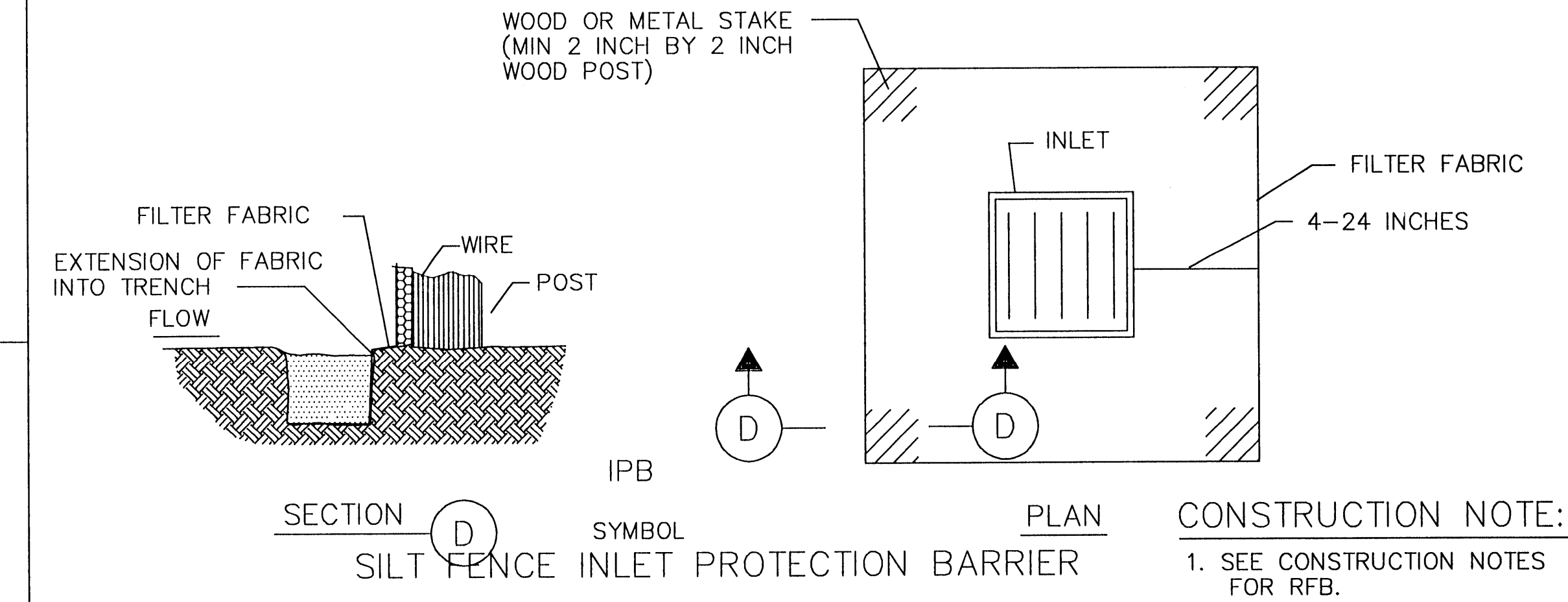
- CONSTRUCTION NOTES:**
1. SET 2 INCH BY 2 INCH WOODEN STAKES SPACED A MAX OF 6 FEET APART AND EMBEDDED A MIN OF 12 INCHES.
 2. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH STAPLES.
 3. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE, WITH TIES SPACED EVERY 24 INCHES AT TOP AND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



STRAW BALE DROP INLET PROTECTION BARRIER



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



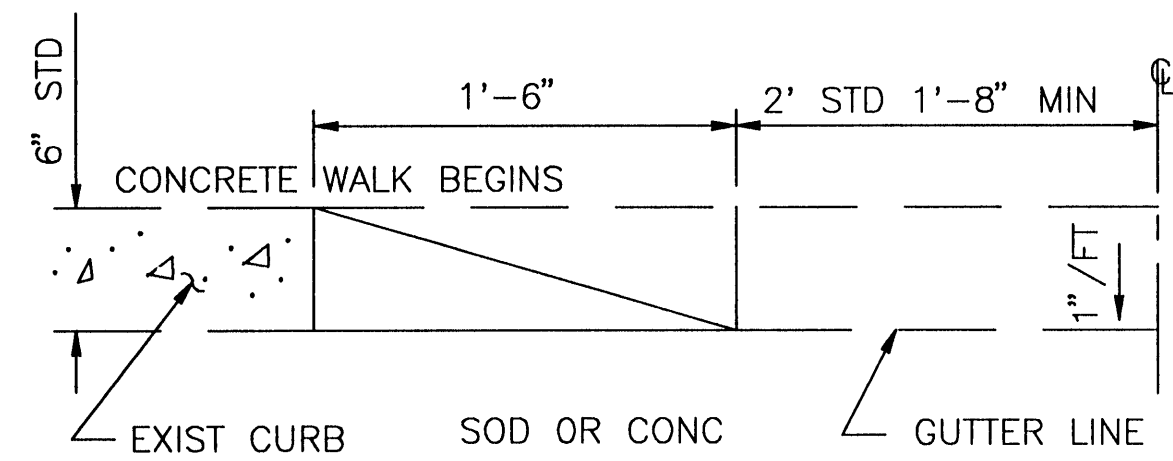
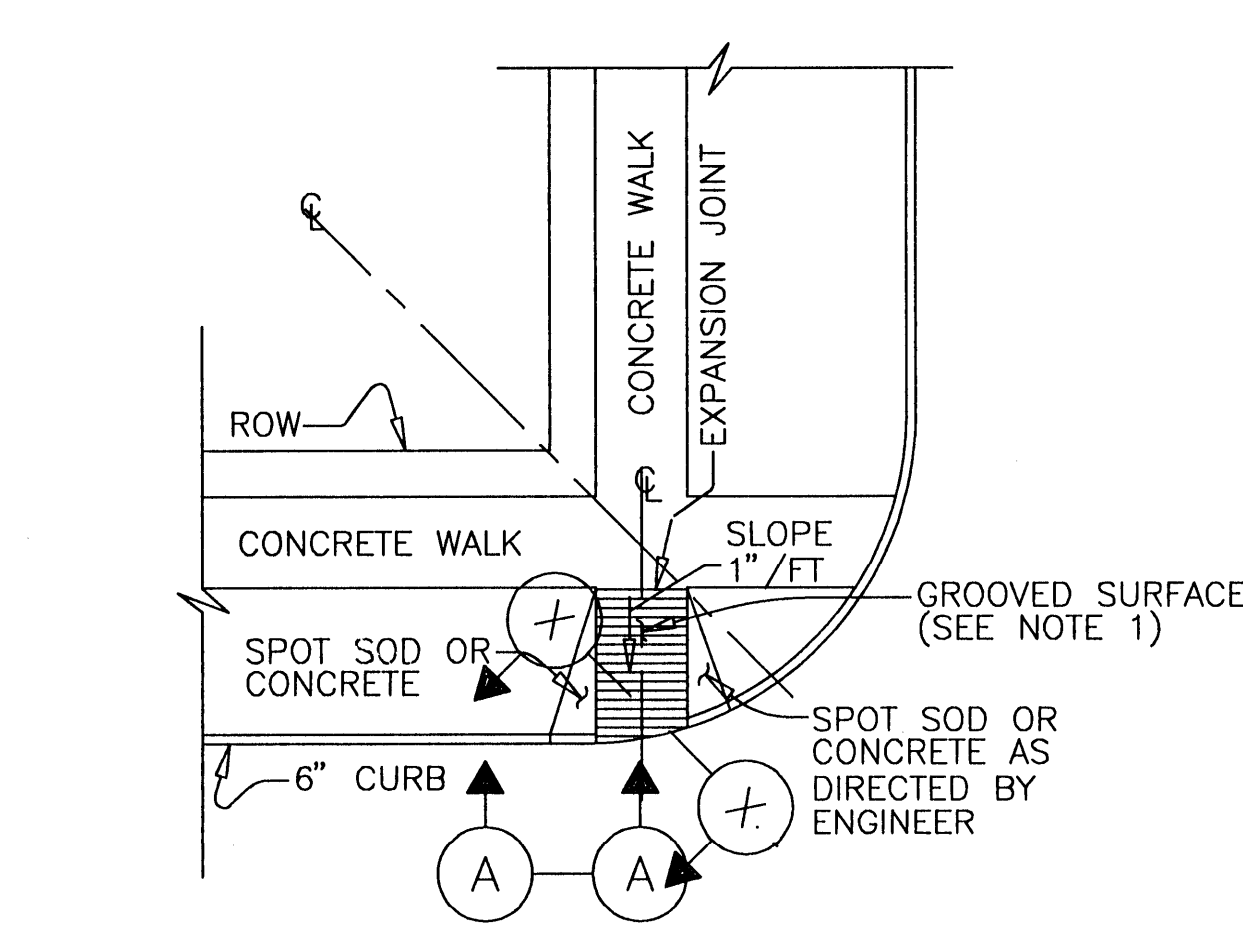
CITY OF HOUSTON
 DEPARTMENT OF PUBLIC WORKS AND ENGINEERING
 ENGINEERING, CONSTRUCTION AND REAL ESTATE GROUP

STORM WATER POLLUTION PREVENTION PLAN DETAILS
 (NOT TO SCALE) 19 OF 20

REVIEWED BY: [Signature]
 APPROVED BY: [Signature]
 CITY ENGINEER 7-6-99

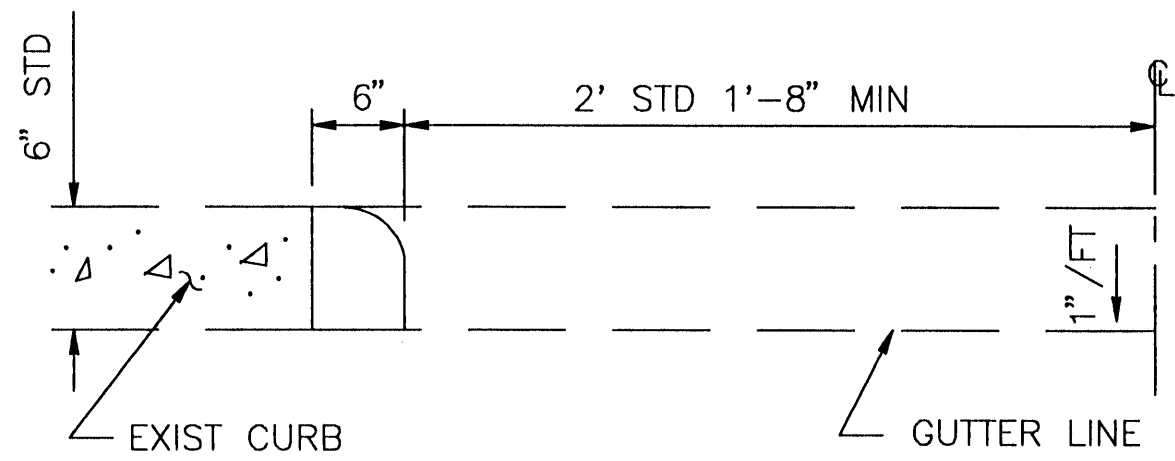
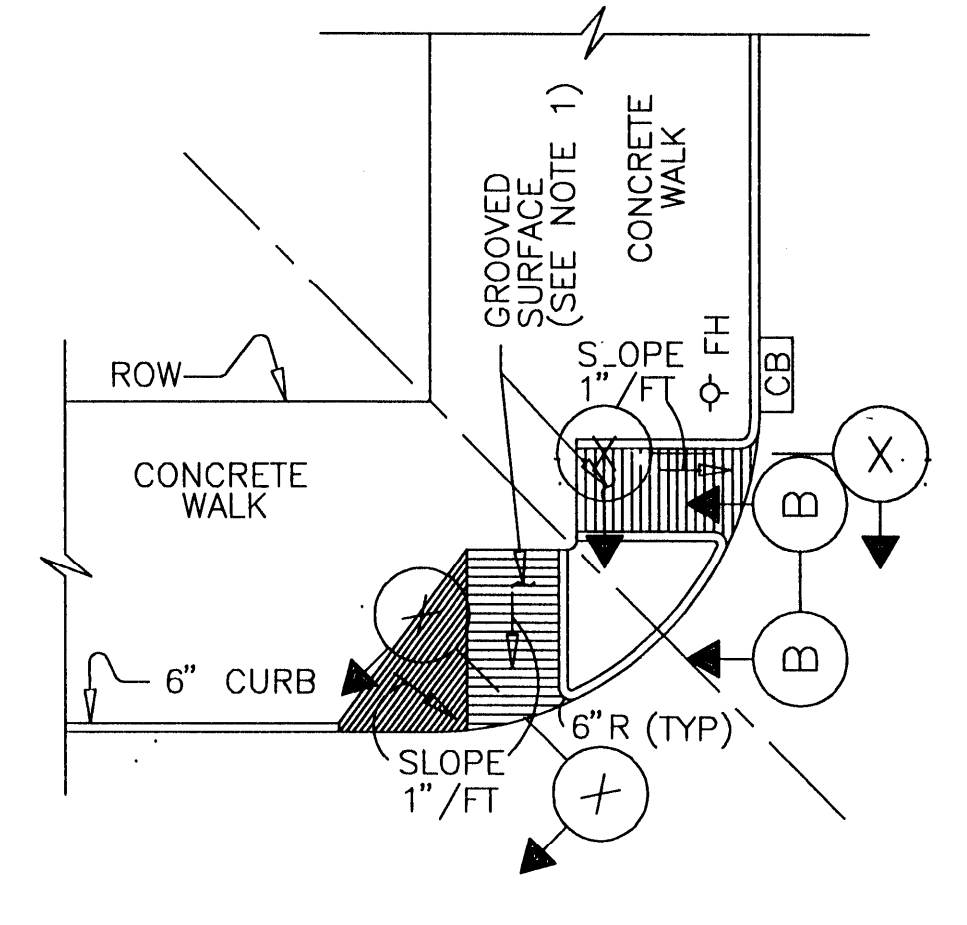
APPROVED BY: [Signature]
 DIRECTOR OF PUBLIC WORKS AND ENGINEERING

EFF DATE: OCT-20-95 DWG NO: 01565-01C



SECTION A

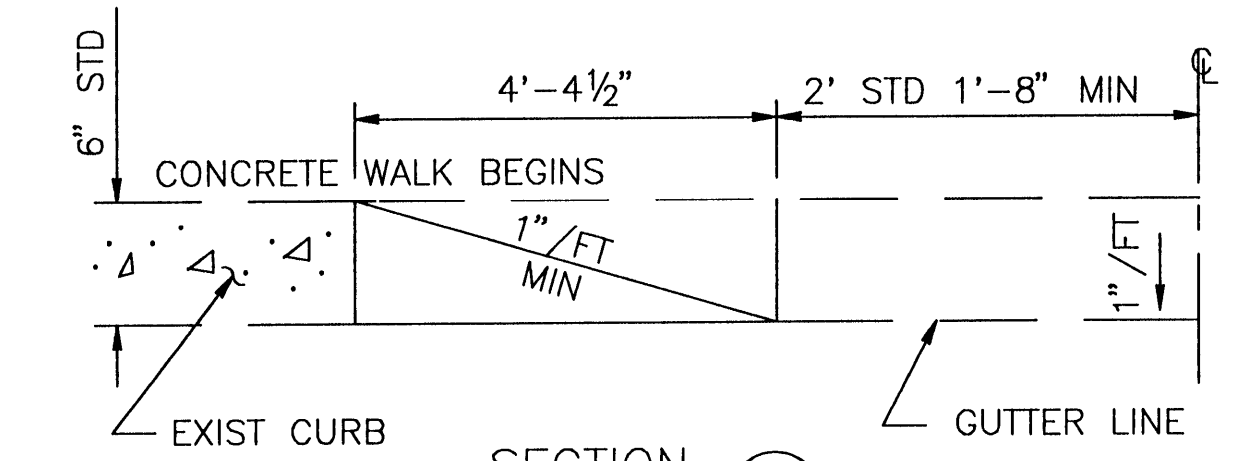
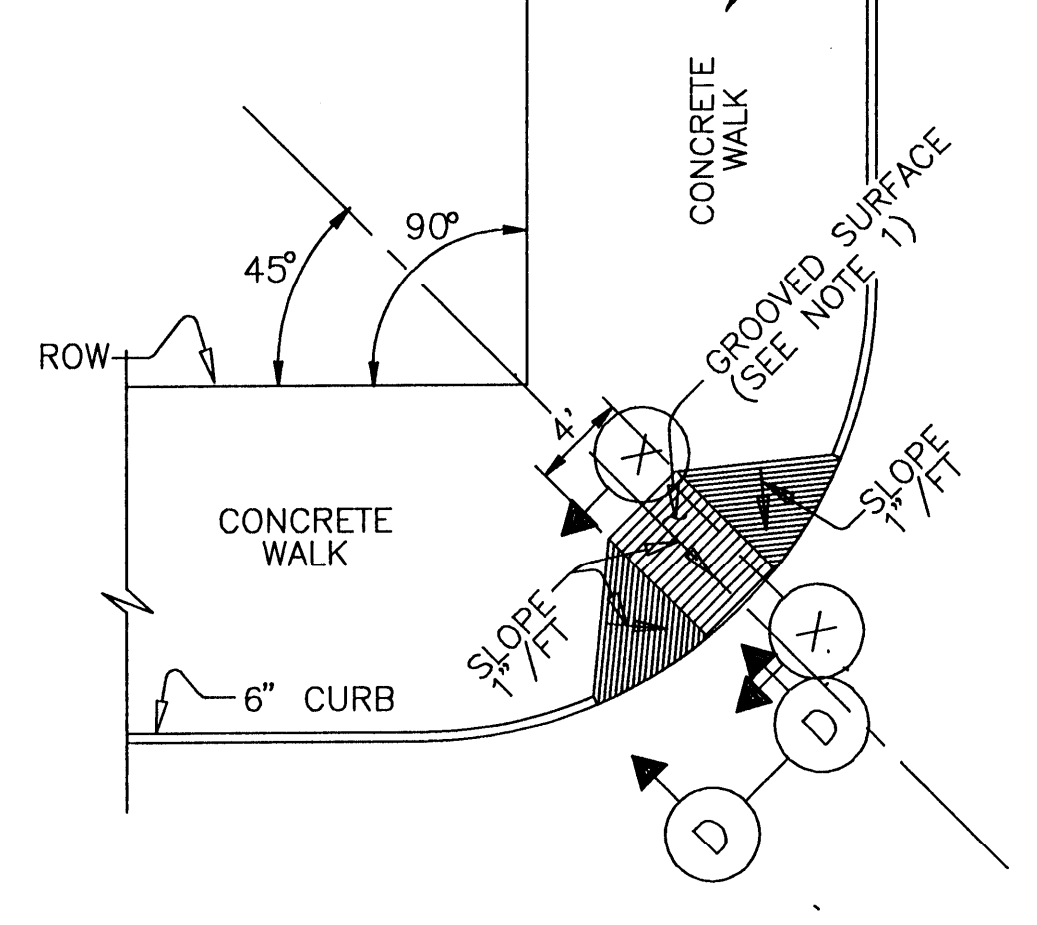
(A) RESIDENTIAL & RURAL CONDITIONS



SECTION B

(B) URBAN AREAS RESTRICTED BY SMALL RADII, FH, ETC

(C) COMBINATION OF (B) & (D)

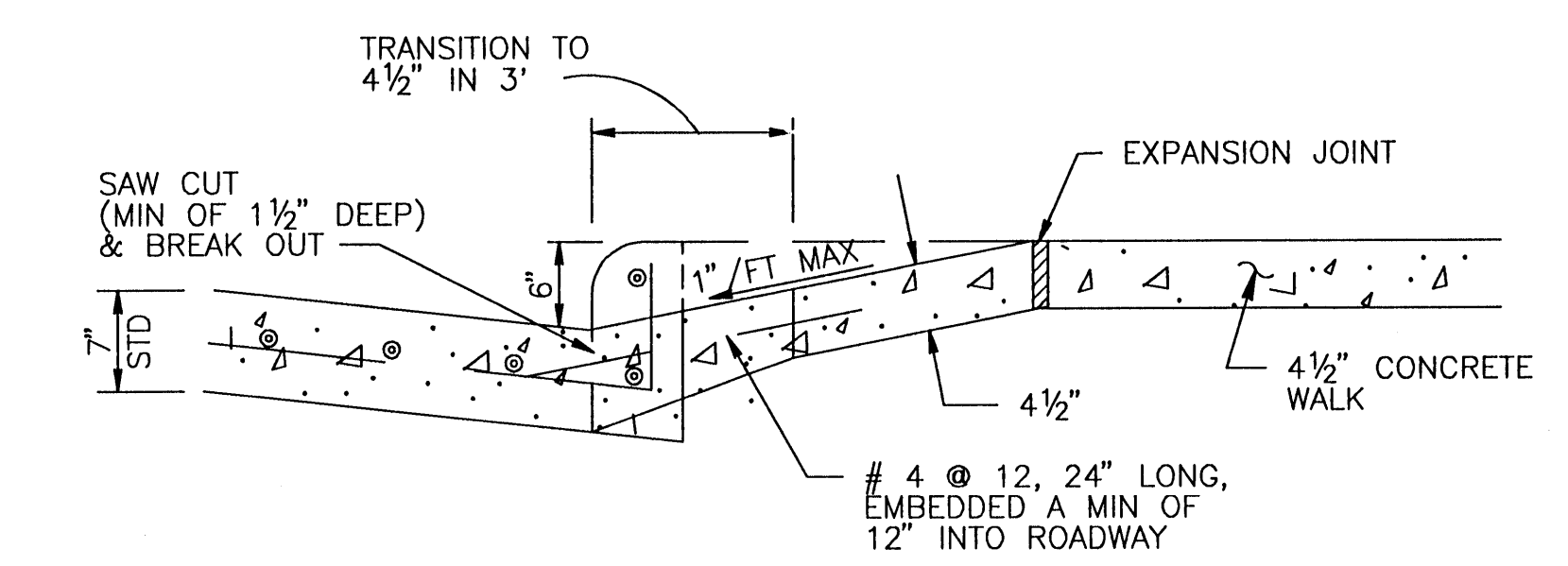


SECTION D

(D) URBAN & METROPOLITAN AREAS WITH LARGE RADII & NO RESTRICTIONS

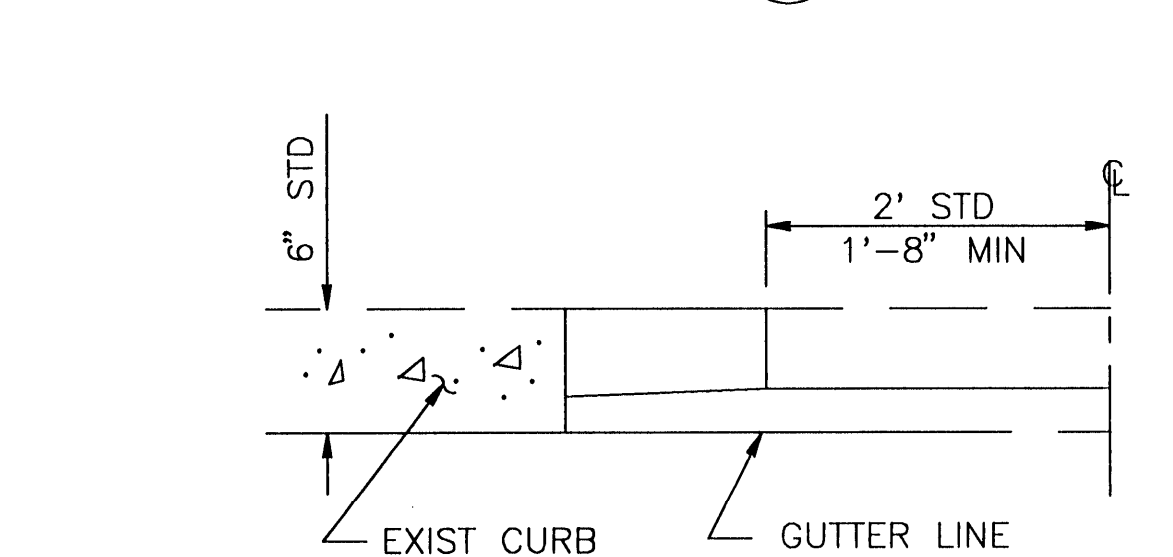
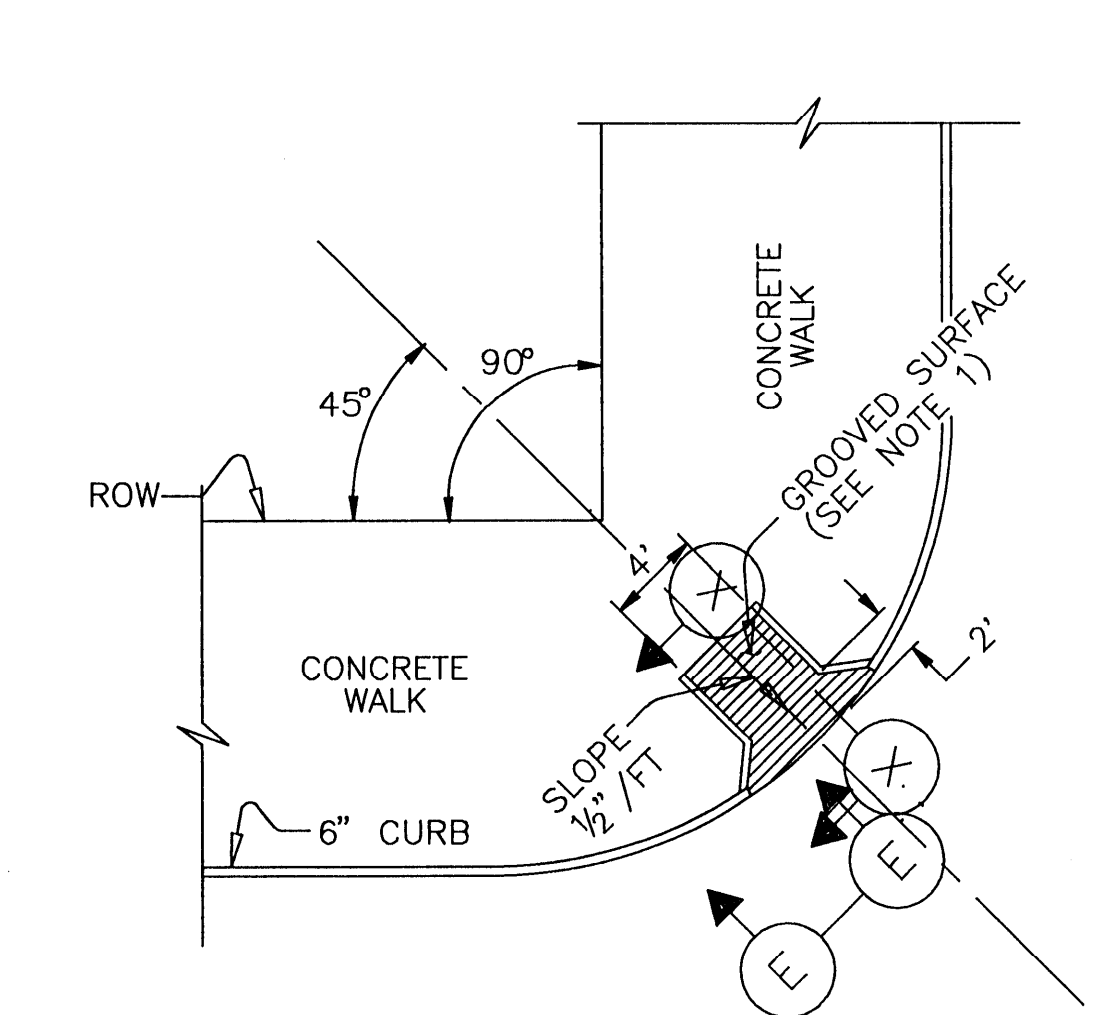
NOTES:

1. THE FINISHED SURFACE OF A WHEELCHAIR RAMP IS TO BE GROOVED LATERALLY WITH 1/4" WIDE BY 1/4" DEEP GROOVES, SPACED 2 1/4", AND ROUGHENED WITH NO LESS THAN A BROOM FINISH TO PREVENT SLIPPING, AND TO DIFFERENTIATE ITS TEXTURE FROM THAT OF STANDARD SIDEWALK.
2. THE LOCATION OF A WHEELCHAIR RAMP MAY BE SHIFTED FROM THE PROPOSED LOCATION ON THE PLANS, BECAUSE OF UNFORSEEN EXISTING CONDITIONS AT THE TIME OF CONSTRUCTION, A CHANGE IN LOCATION WILL BE AS DIRECTED BY THE ENGINEER.
3. THE LOCATIONS AND AREAS OF USES OF THE VARIOUS TYPES OF WHEEL CHAIR RAMPs SHOWN ARE FOR ILLUSTRATIVE AND SUGGESTIVE PURPOSES ONLY. ANY ONE OF THE TYPES SHOWN (A, B, C, OR D) MAY BE LOCATED IN ANY AREA, IE URBAN, RESIDENTIAL, ETC OR AT ANY POINT ON OR OFF THE RADIUS, ACCORDING TO TYPE AND LOCATION AS SHOWN ON PLANS OR AS DIRECTED BY ENGINEER.
4. ALL REINFORCING STEEL SHALL BE NEW BILLET STEEL AND MEET THE REQUIREMENTS OF ASTM DESIGNATION A-615, GRADE 60 DEFORMED BARS, FOR CONCRETE REINFORCEMENT.
5. MIN CLEAR WIDTH OF WHEEL CHAIR RAMP IS 4'-0".



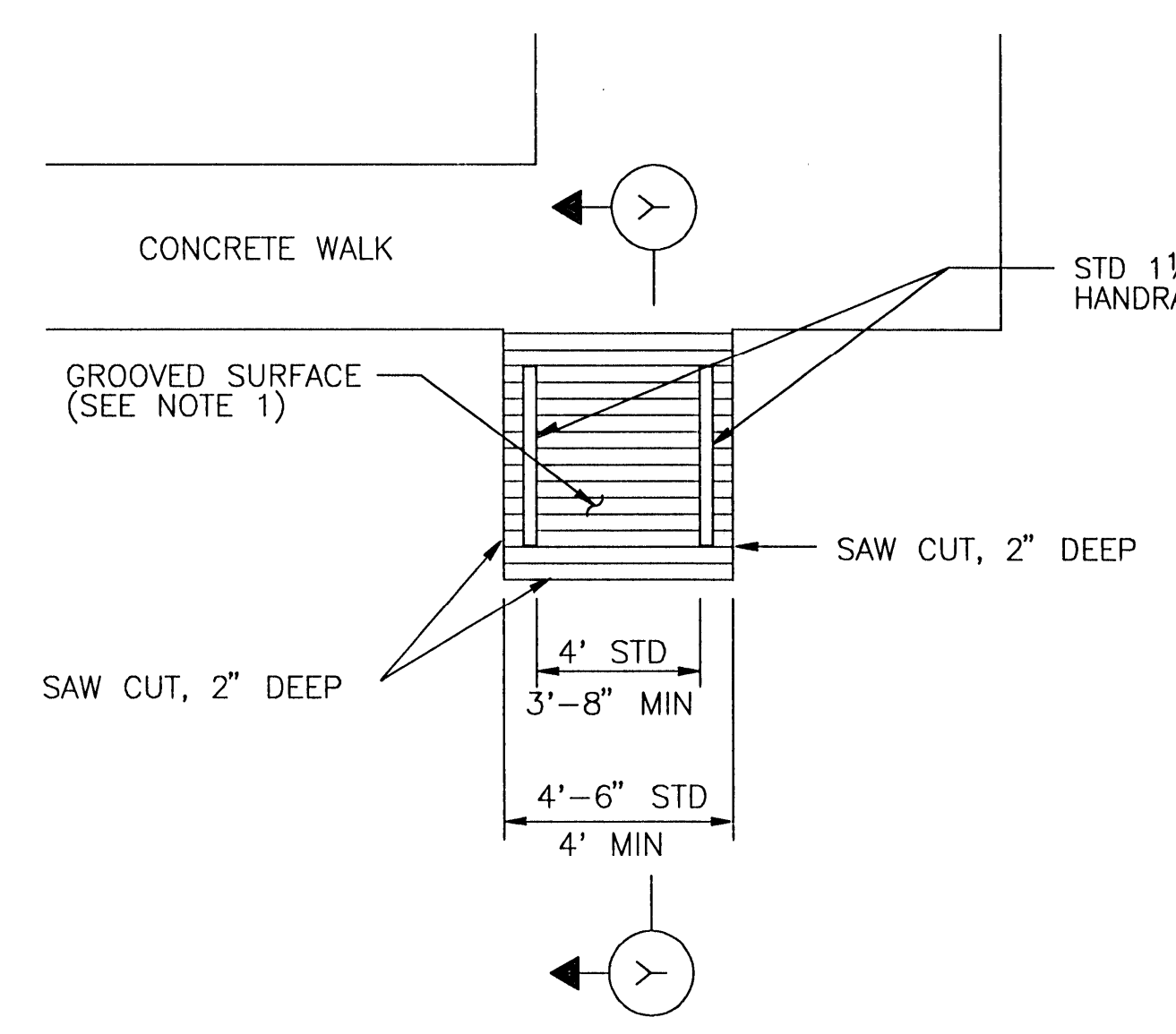
SECTION X

EXISTING CONCRETE PAVEMENT CONSTRUCTION

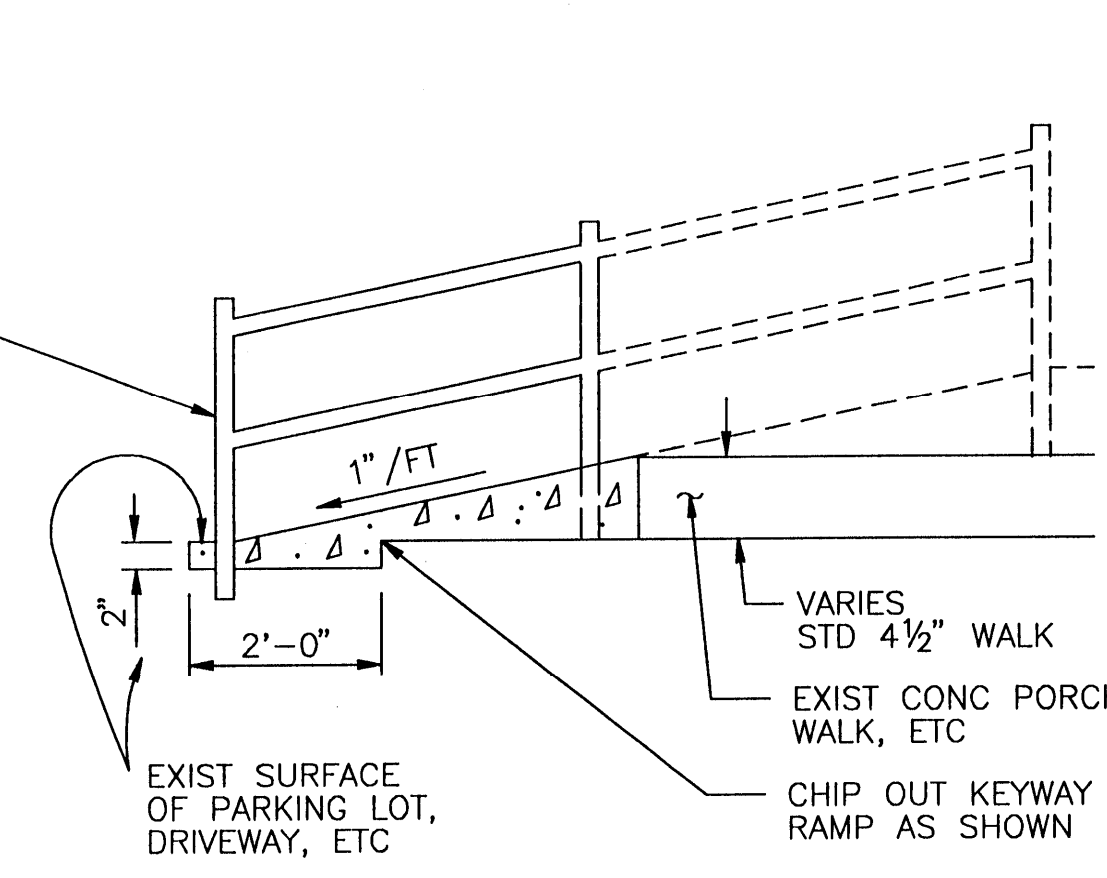


SECTION E

(E) MODIFICATION OF TYPE

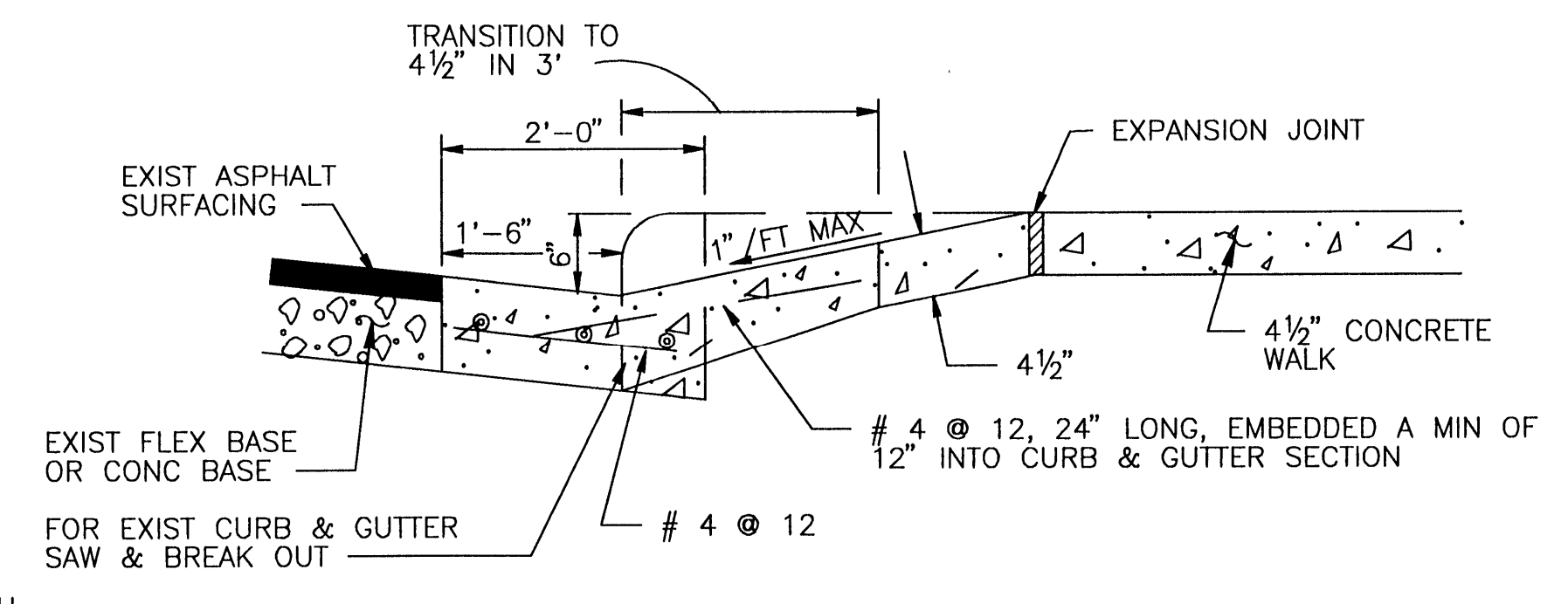


(F) ACCESS TO AREAS WHERE CUT IS NOT REQUIRED



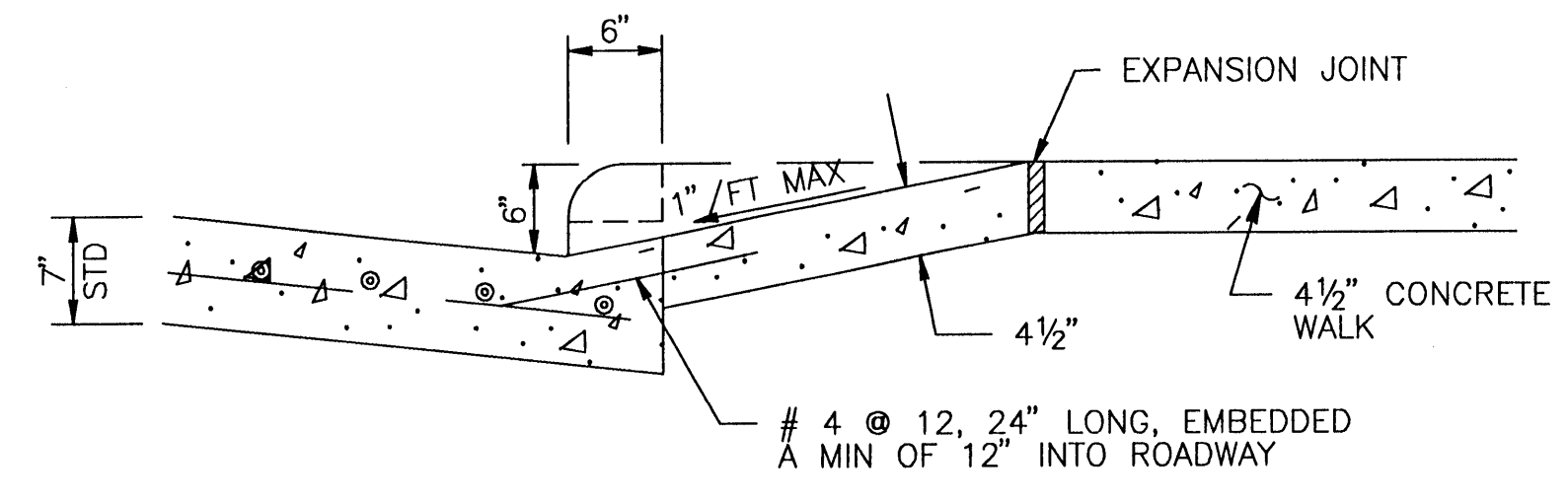
SECTION Y

NEW CONCRETE PAVEMENT CONSTRUCTION



SECTION X

NEW & EXISTING * CURB & GUTTER CONSTRUCTION

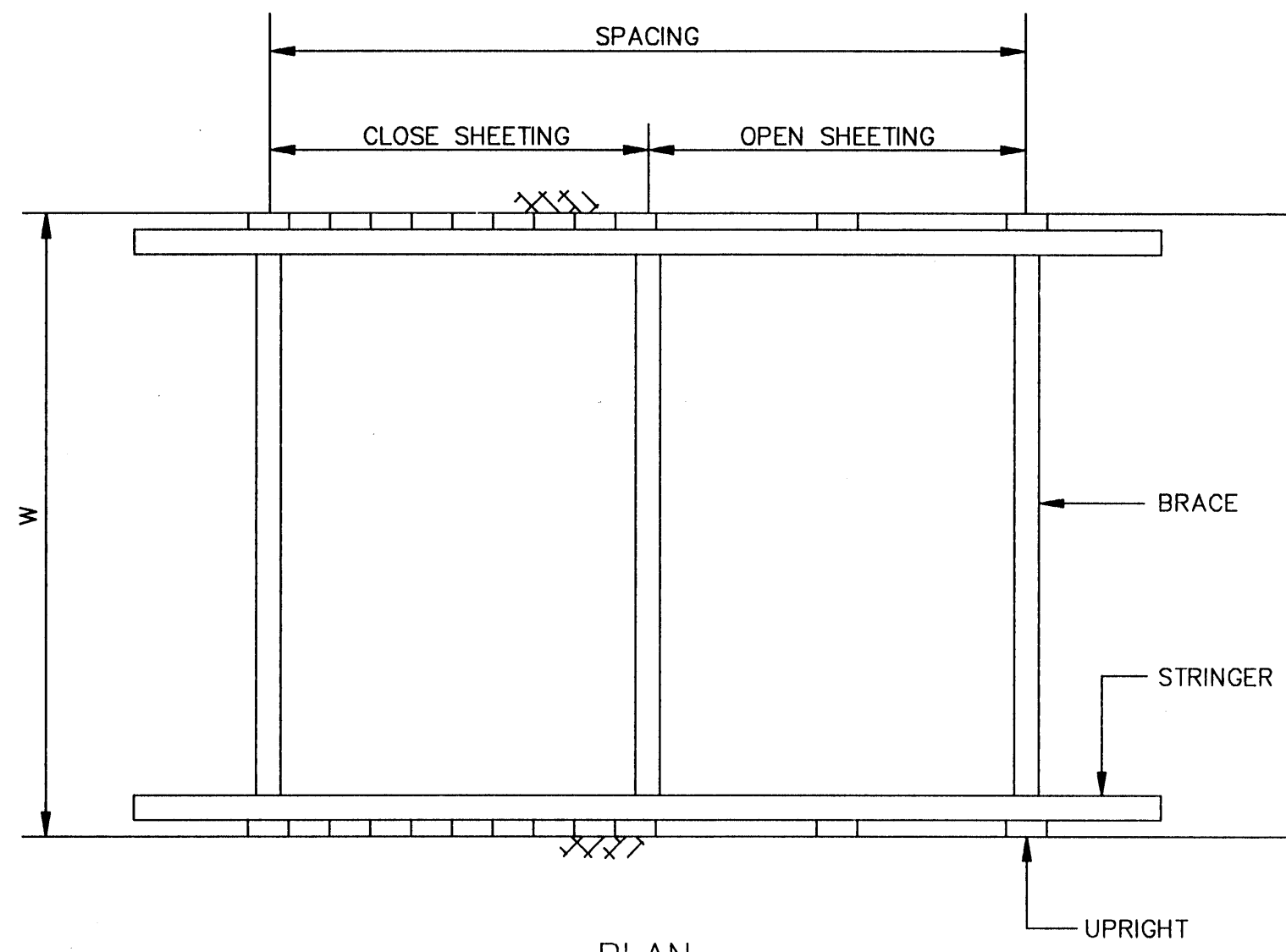


SECTION X

NEW CONCRETE PAVEMENT CONSTRUCTION

CITY OF HOUSTON DEPARTMENT OF PUBLIC WORKS AND ENGINEERING	
REVIEWED BY	
PRIVATELY FUNDED PUBLIC WORKS	CITY FUNDED PUBLIC WORKS
<i>Walter Sullivan</i> WATER 6/24/99	
WASTEWATER	PROJECT MANAGER
<i>Walter Sullivan</i> STORM WATER 6/24/99	
	CONSTRUCTION
STREET & BRIDGE	CHIEF ENGINEER
OTHER APPROVAL	
TRAFFIC AND TRANSPORTATION	SPONSOR DEPARTMENT
<i>Walter Sullivan</i> CITY ENGINEER	DATE 7-6-99
<i>Walter Sullivan</i> DIRECTOR OF PUBLIC WORKS AND ENGINEERING	DATE 7-6-99
SUBMITTED: _____	DESIGNED BY: _____
SCALE: 1" = 1'	DRAWN BY: _____
DATE: MAY 1999	SHEET NO. 20 OF 21 SHEETS
SURVEY BY: _____	CITY DWG. NO. _____
F B NO: _____	

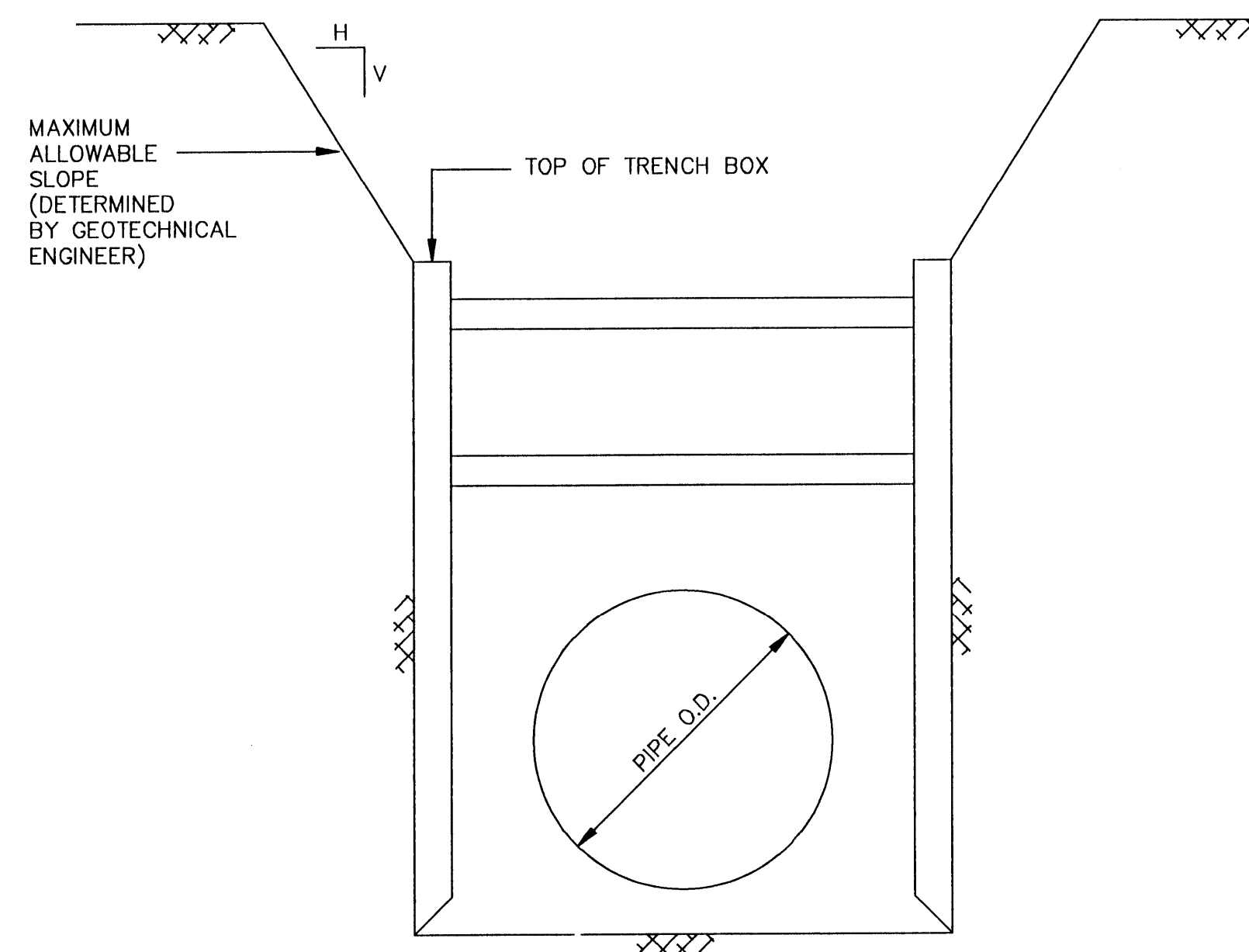
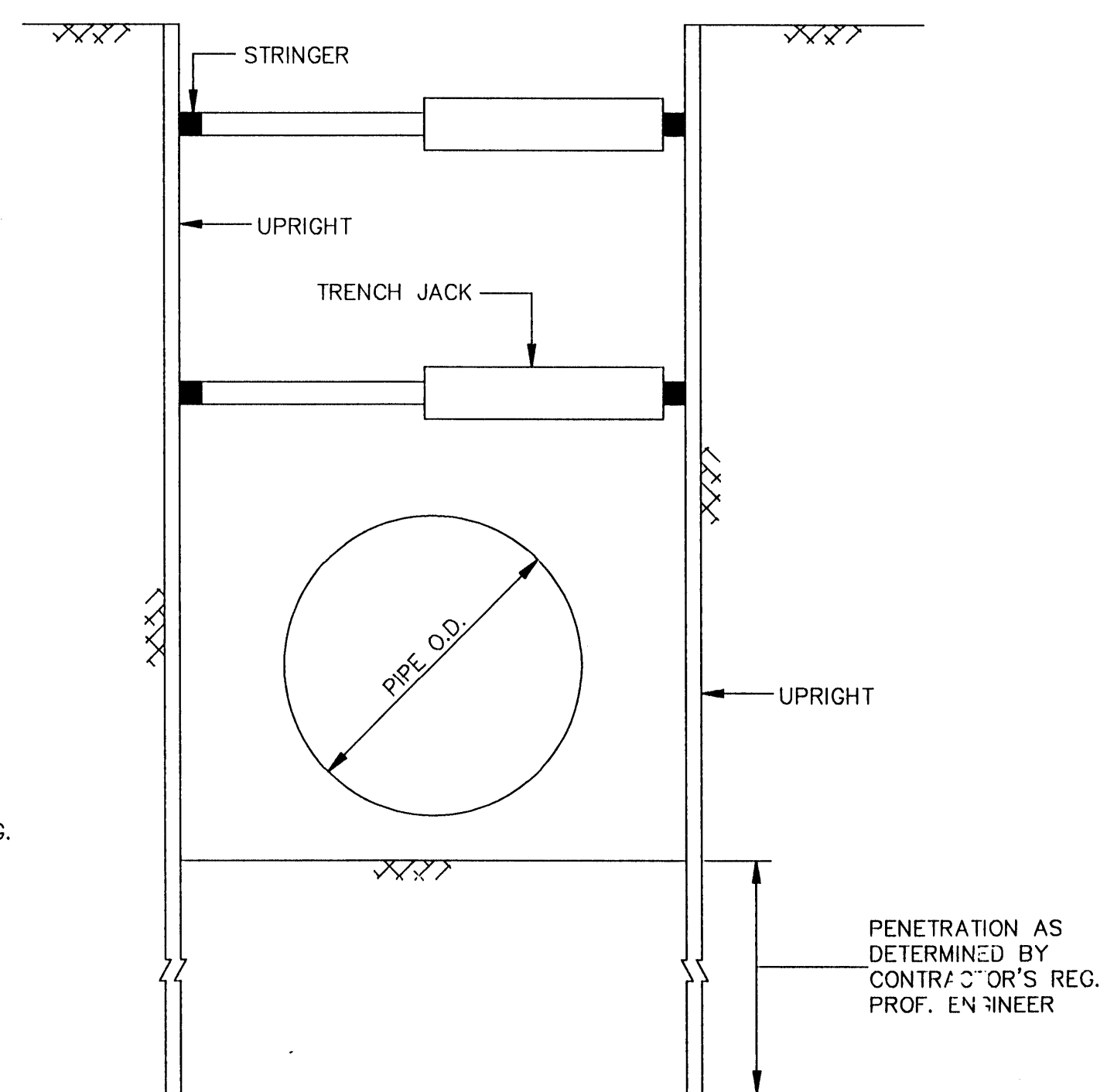
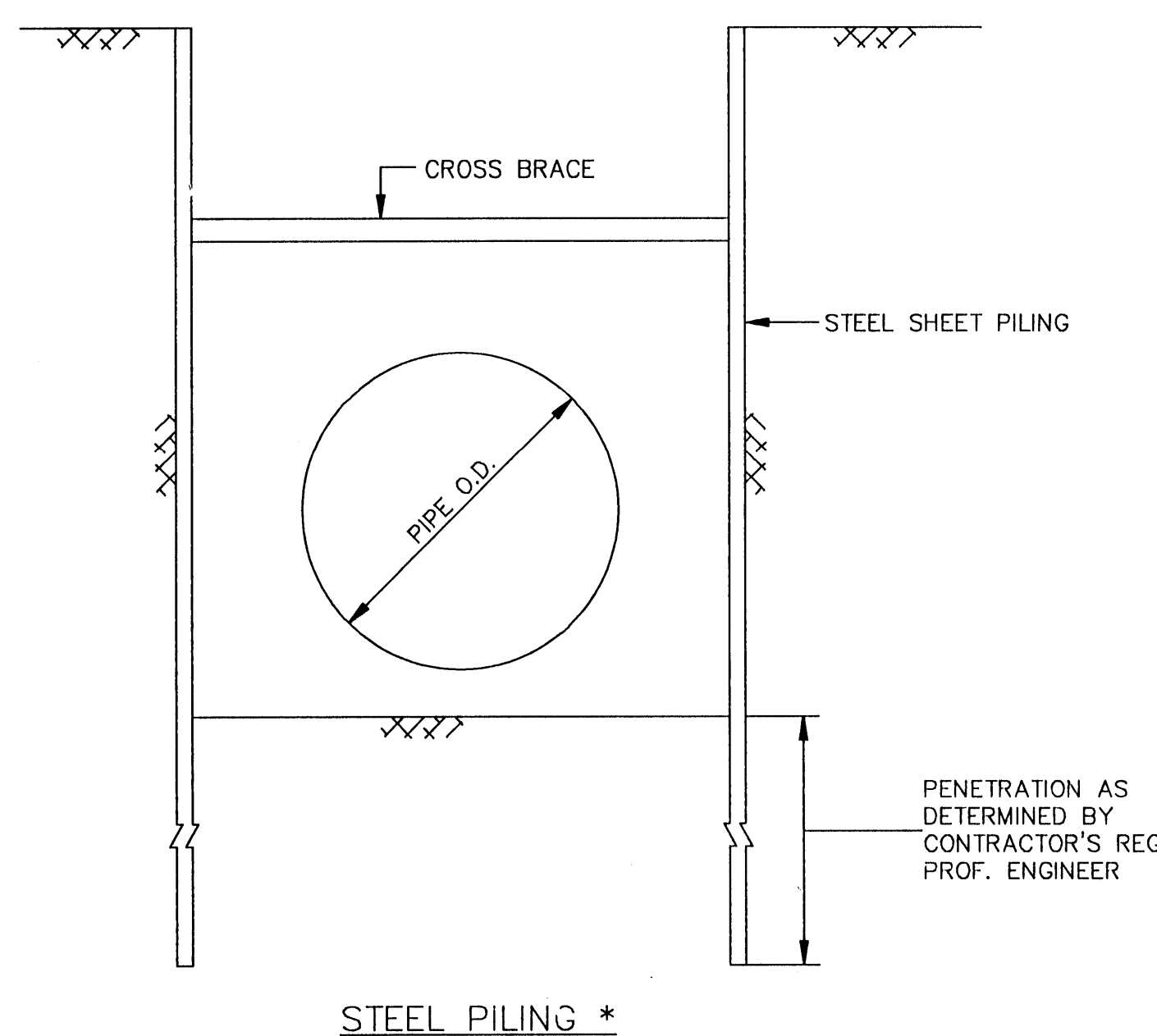
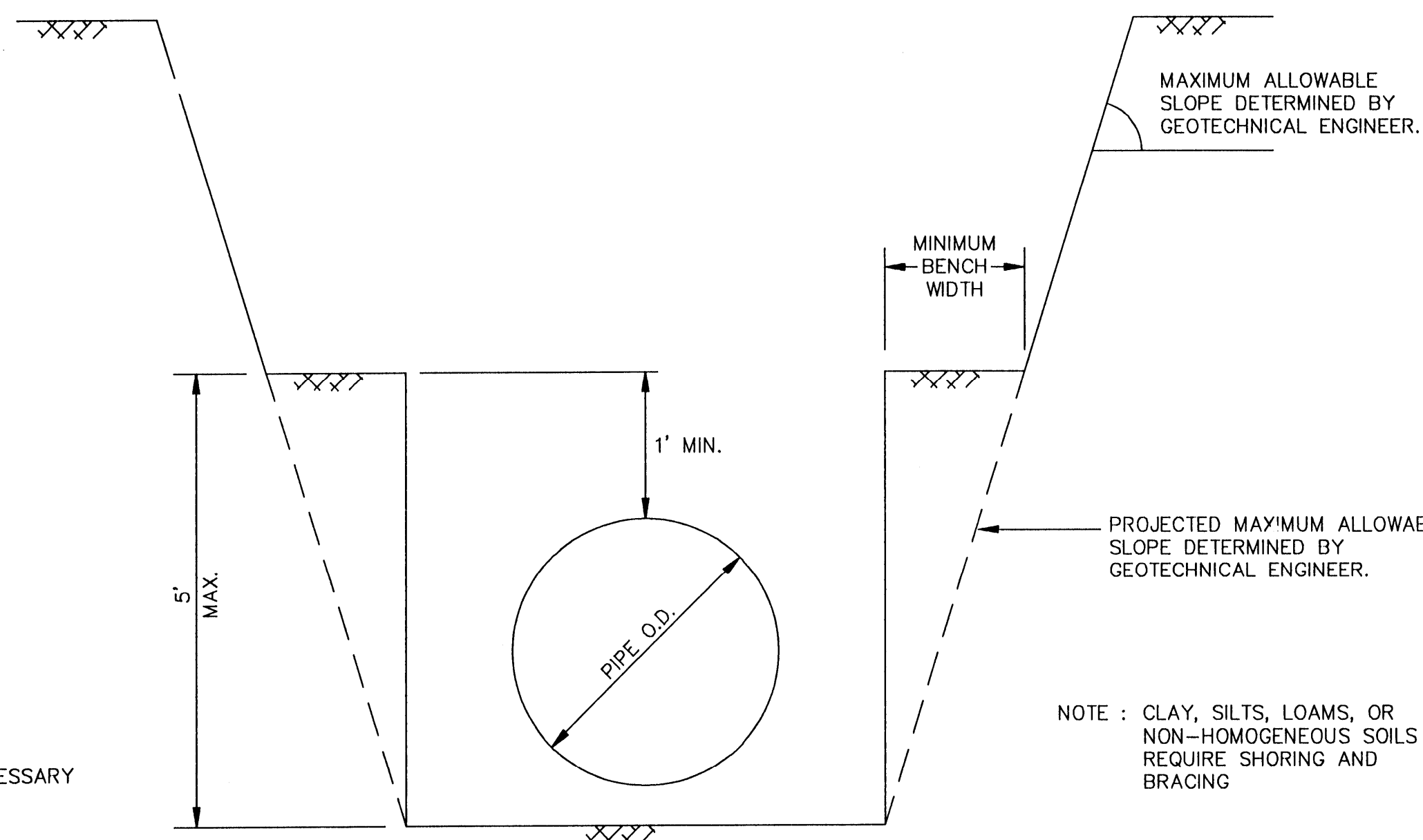
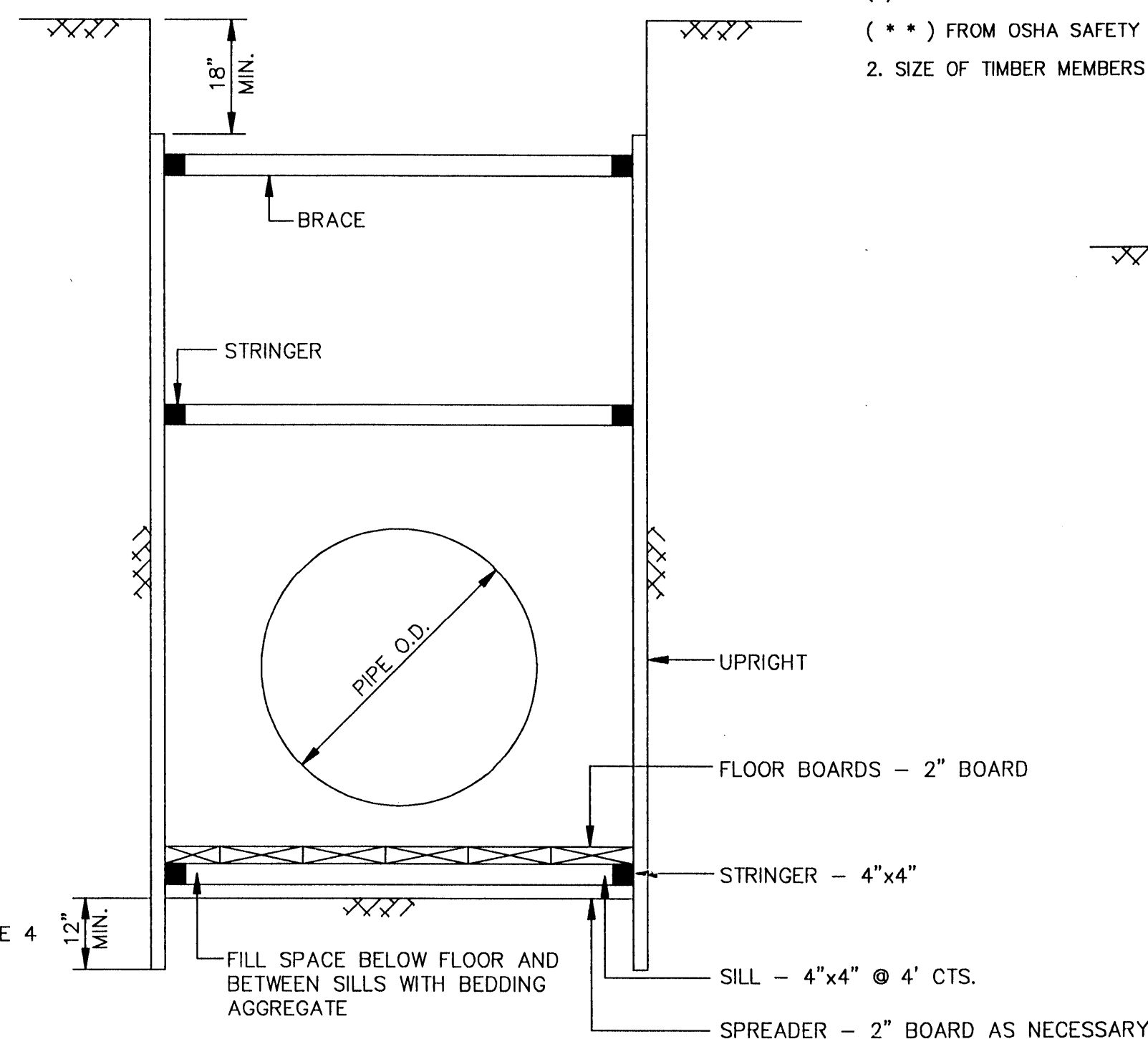
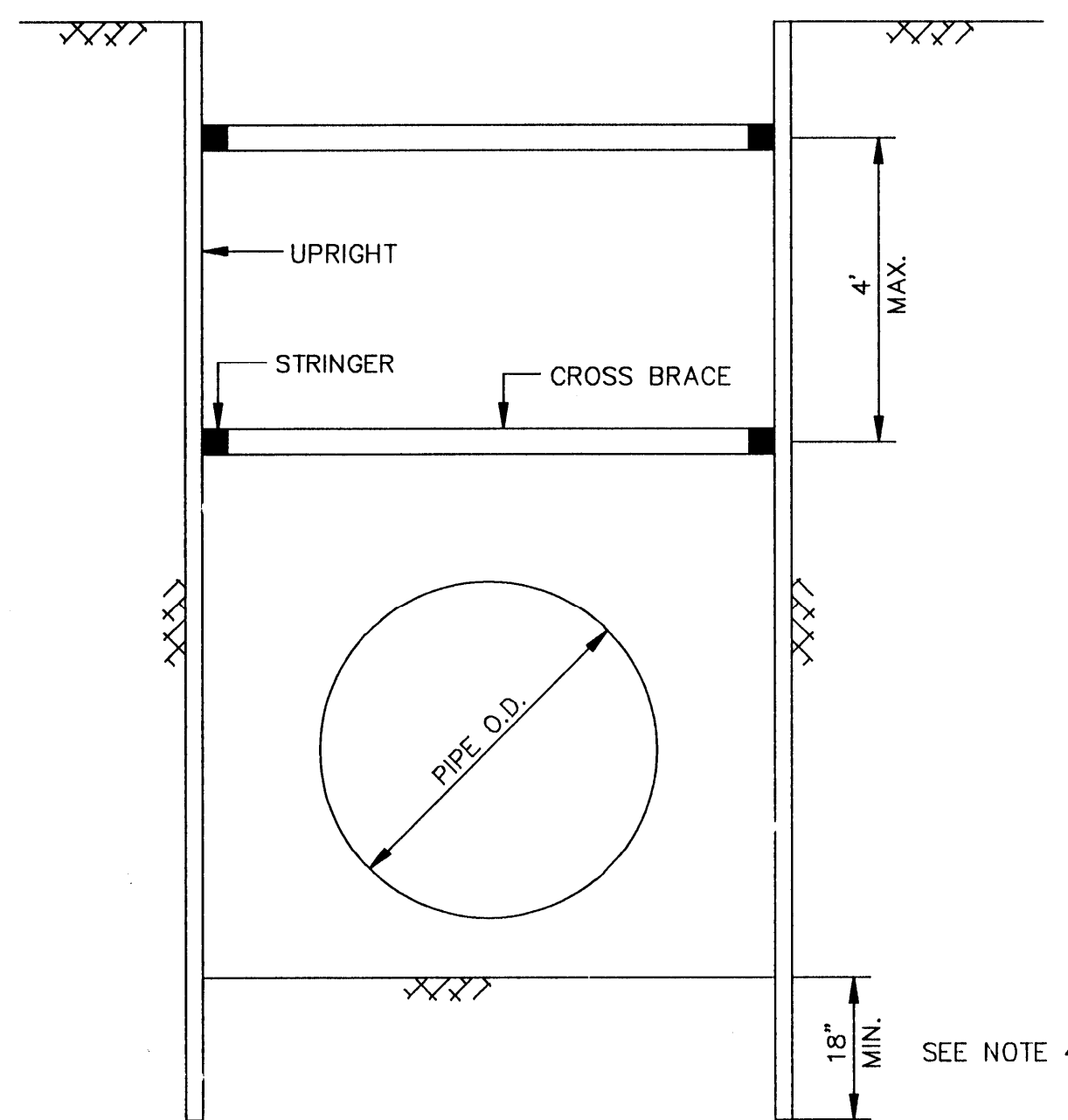
WHEELCHAIR RAMP DETAILS
DWG. NO: 02530-03



TRENCH SHORING - MINIMUM REQUIREMENTS (* *)

DEPTH OF TRENCH	KIND OF CONDITION OF EARTH	SIZE AND SPACING OF MEMBERS										
		UPRIGHTS		STRINGERS		CROSS BRACES ¹						
		MINIMUM DIMENSION	MAXIMUM SPACING	MINIMUM DIMENSION	MAXIMUM SPACING	WIDTH OF TRENCH		MAXIMUM SPACING		VERTICAL	HORIZONTAL	
FEET	TYPE	INCHES	FEET	INCHES	FEET	UP TO 3 FEET	3 TO 6 FEET	6 TO 9 FEET	9 TO 12 FEET	12 TO 15 FEET	FEET	FEET
5 TO 10	(A) HARD, COMPACT	3x4 OR 2x6	6	4	2x6	4x4	4x6	6x6	6x8	6x8	4	6
	(B) LIKELY TO CRACK	3x4 OR 2x6	3	4x6	4	2x6	4x4	4x6	6x6	6x8	4	6
	(C) SOFT, SANDY, OR FILLED	3x4 OR 2x6	CLOSE SHEETING	4x6	4	4x4	4x6	6x6	6x8	8x8	4	6
	(D) HYDROSTATIC PRESSURE	3x4 OR 2x6	CLOSE SHEETING	6x8	4	4x4	4x6	6x6	6x8	8x8	4	6
10 TO 15	(A) HARD, COMPACT	3x4 OR 2x6	4	4x6	4	4x4	4x6	6x6	6x8	8x8	4	6
	(B) LIKELY TO CRACK	3x4 OR 2x6	2	4x6	4	4x4	4x6	6x6	6x8	8x8	4	6
	(C) SOFT, SANDY, OR FILLED	3x4 OR 2x6	CLOSE SHEETING	4x6	4	4x6	6x6	6x8	8x8	8x10	4	6
	(D) HYDROSTATIC PRESSURE	3x6	CLOSE SHEETING	8x10	4	4x6	6x6	6x8	8x8	8x10	4	6
15 TO 20	(E) ALL KINDS OR CONDITIONS	3x6	CLOSE SHEETING	4x12	4	4x12	6x8	8x8	8x10	10x10	4	6
OVER 20	(E) ALL KINDS OR CONDITIONS	3x6	CLOSE SHEETING	6x8	4	4x12	8x8	8x10	10x10	10x12	4	6

¹ TRENCH JACKS MAY BE USED IN LIEU OF, OR IN COMBINATION WITH, CROSS BRACES. SHORING IS NOT REQUIRED IN SOLID ROCK, HARD SHALE, OR HARD SLAG. WHERE DESIRABLE, STEEL SHEET PILING AND BRACING OF EQUAL STRENGTH MAY BE SUBSTITUTED FOR WOOD.
 () DESIGNATION FOR PROPOSAL (BID) PURPOSES
 (* *) FROM OSHA SAFETY AND HEALTH REGULATIONS PART 1926, SUBPART P
 2. SIZE OF TIMBER MEMBERS ARE ROUGH CUT DIMENSIONS (FULL SIZE)



- TRENCH SAFETY SYSTEM TO MEET, AS A MINIMUM, THE REQUIREMENTS OF OSHA SAFETY AND HEALTH REGULATIONS PART 1926, SUBPART P.
- THE CONTRACTOR MAY ELECT TO USE AN ALTERNATE SYSTEM TO THE TIMBER TRENCH SHORING SHOWN IN THE TABLE. THE ALTERNATE SYSTEM, BE IT A TRENCH BOX, STEEL SHEET PILING, TRENCH JACKS OR A COMBINATION OF THE ABOVE, MUST BE CERTIFIED BY THE CONTRACTOR'S REGISTERED PROFESSIONAL ENGINEER THAT IT PROVIDES EQUAL OR GREATER PROTECTION THAN THE TIMBER TRENCH SHORING SHOWN ON THIS DETAIL SHEET.
- CONTRACTOR SHALL PERFORM DAILY TRENCH SAFETY SYSTEM INSPECTIONS TO INSURE THAT THE SYSTEM MEETS OSHA REQUIREMENTS AND IS APPROPRIATE FOR SPECIFIC SITE CONDITIONS OF THE OPEN TRENCH. INSPECTIONS ARE REQUIRED AFTER RAINSTORMS OR ANY CHANGE IN CONDITIONS THAT MAY INCREASE THE POSSIBILITY OF A CAVE-IN OR SLIDE.
- IN THE EVENT THAT TRENCH UPRIGHTS CAN NOT BE PLACED BELOW TRENCH BOTTOM AS SHOWN ON DETAIL, CONTRACTOR MUST PROVIDE ENGINEER WITH PLANS THAT DEMONSTRATE THAT THE UPRIGHTS WILL BE BRACED AND MAINTAINED IN A VERTICAL POSITION.
- WHERE THE TRENCH SAFETY SYSTEM CROSSES A UTILITY, THE UTILITY LINE MUST BE ADEQUATELY SUPPORTED TO PREVENT ANY DAMAGE. IN ADDITION, IN TRENCHES WITH CLOSED SHEETING, THE UPRIGHTS MUST SURROUND THE UTILITY. OPEN TRENCH SHEETING SPACING MUST BE ADJUSTED AS TO NOT EXCEED THE MAXIMUM ALLOWED SPACING. (NO SEPARATE PAY)
- TRENCH SHALL BE DRAINED AS REQUIRED SO WORK MAY BE ACCOMPLISHED SAFELY AND EFFICIENTLY. IF NECESSARY, INSTALL DEWATERING SYSTEM TO PROVIDE A DRY TRENCH BOTTOM. DELIVER DISCHARGE FROM SYSTEM TO NATURAL DRAINAGE CHANNEL OR TO STORM DRAINS.
- IN TRENCHES FOUR FOOT DEEP OR MORE, CONTRACTOR TO PROVIDE ADEQUATE MEANS OF TRENCH EXIT SUCH AS LADDER OR STEPS AND THEY MUST BE LOCATED SO AS TO REQUIRE NO MORE THAN 25 FEET OF LATERAL TRAVEL.
- MEASURE "PERMANENT TIMBER TRENCH SHORING" BY LINEAR FOOT OF TRENCH PROTECTED. PAYMENT IS BY STATED DEPTH OF TRENCH AND EARTH CONDITIONS NOTED IN THE PROPOSAL (BID).
- MEASURE "TRENCH SAFETY SYSTEM" BY LINEAR FOOT OF TRENCH PROTECTED. PAYMENT IS BY STATED DEPTH OF TRENCH AND EARTH CONDITIONS NOTED IN THE PROPOSAL (BID).
- STRINGERS AND BRACES TO BE SECURELY FASTENED.
- ANY PART OF "TRENCH SAFETY SYSTEM" LEFT IN PLACE TO BE REMOVED A MINIMUM OF 18 INCHES BELOW FINISHED GRADE OR NATURAL GROUND, WHICHEVER IS LOWER.
- TRENCH SHORING SYSTEM HAS BEEN DESIGNED WITH NO ALLOWANCE FOR LIVE LOAD SURCHARGE. IF LIVE LOAD SURCHARGE IS ANTICIPATED IT SHALL NOT BE PLACED WITHIN 2 FEET OF EDGE OF TRENCH AND CONTRACTOR'S REGISTERED PROFESSIONAL ENGINEER SHALL DESIGN TRENCH SHORING SYSTEM TO ACCOMMODATE THE ANTICIPATED LIVE LOAD SURCHARGE.
- TIMBER SIZES ARE BASED ON STRESSES OF 1650 PSI FOR EXTREME FIBER IN BENDING AND 1450 PSI FOR COMPRESSION PARALLEL WITH GRAIN.
- EARTH TRENCH CONDITIONS FOR THIS PROJECT ARE ANTICIPATED TO BE AS SHOWN IN THE GEOTECHNICAL REPORT.

CITY OF HOUSTON
DEPARTMENT OF PUBLIC WORKS AND ENGINEERING

REVIEWED BY

PRIVATELY FUNDED PUBLIC WORKS	CITY FUNDED PUBLIC WORKS
WATER	7-6-99
WASTEWATER	PROJECT MANAGER
STORM WATER	CONSTRUCTION
STREET & BRIDGE	CHIEF ENGINEER

OTHER APPROVAL

TRAFFIC AND TRANSPORTATION

SPONSOR DEPARTMENT

CITY ENGINEER

DATE

DIRECTOR OF PUBLIC WORKS AND ENGINEERING

DATE

SUBMITTED BY: _____

DESIGNED BY: TIM

SCALE: N/A

DRAWN BY: TIM

DATE: MAY 1999

SHEET NO. 21 OF 21 SHEETS

SURVEY BY: _____

CITY DWG. NO: _____

TRENCH SAFETY

PCI PROVIDENT CONSULTANT, INC.
1200 WEST 11TH ST.
HOUSTON, TEXAS 77008

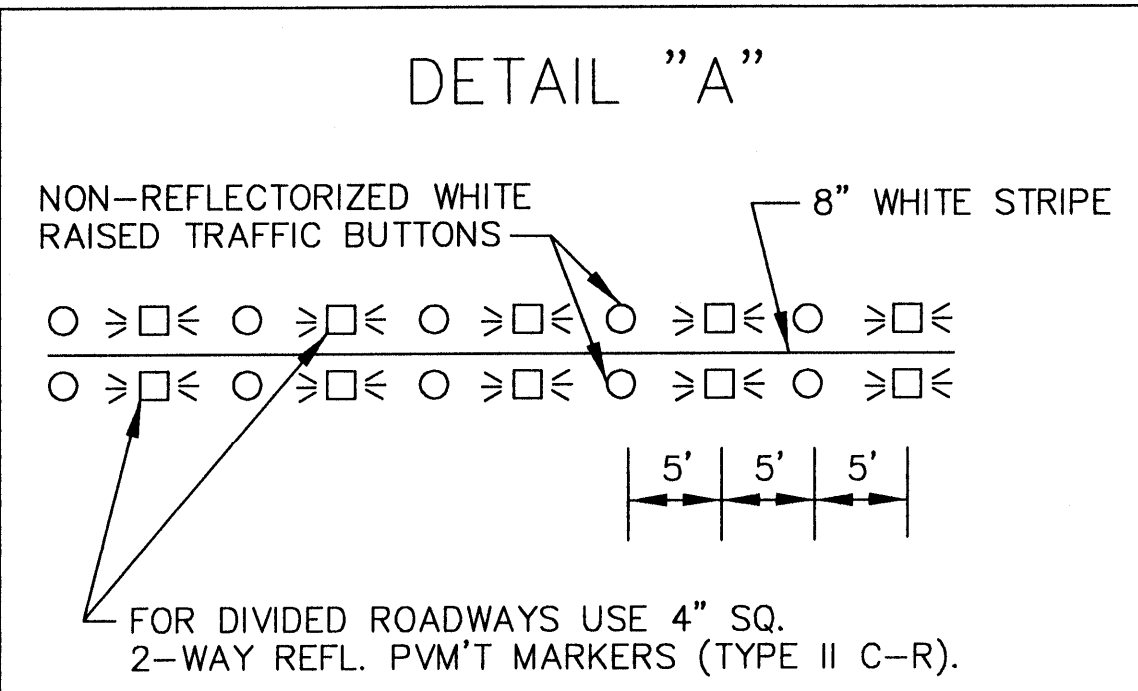
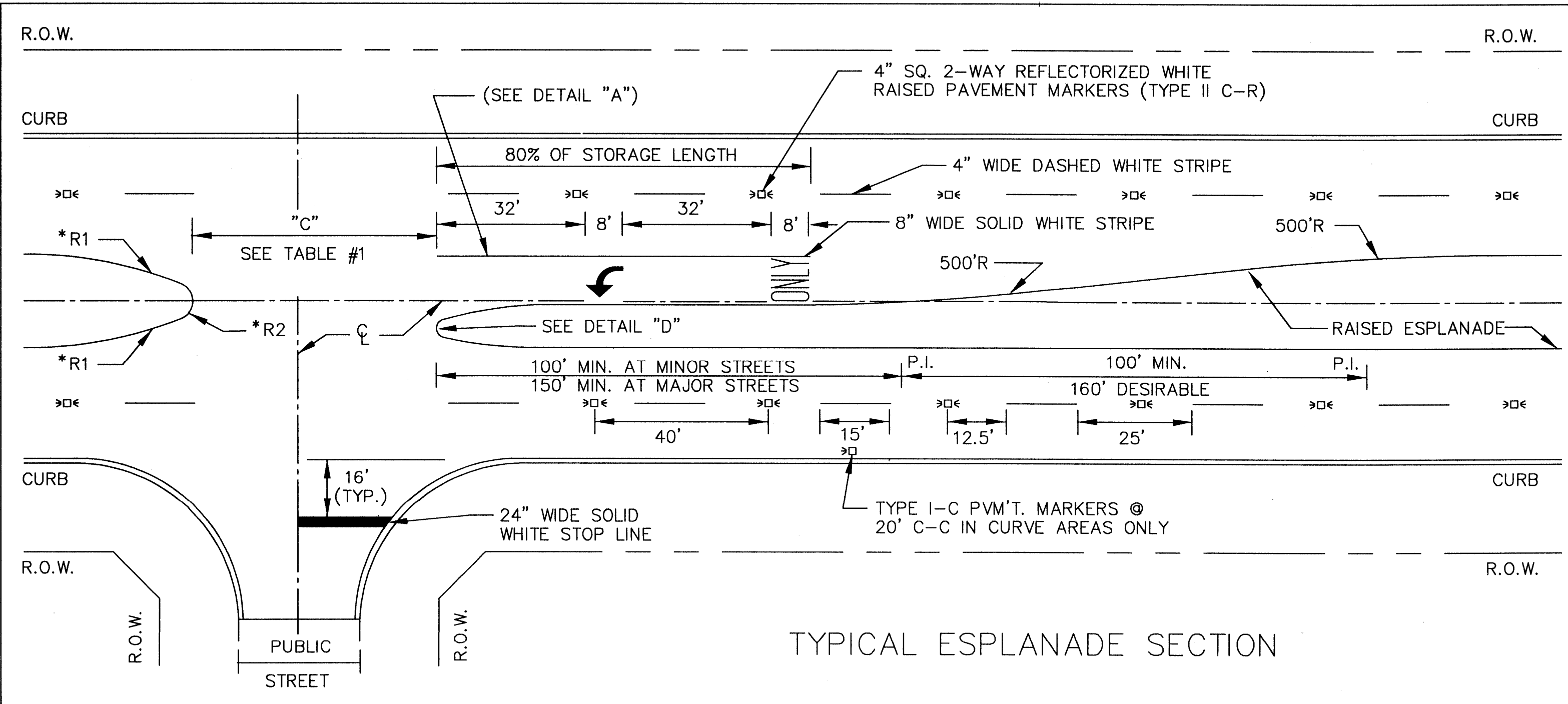


TABLE #1
TYPICAL LENGTH OF ESPLANADE OPENING "C" FOR PUBLIC STREET

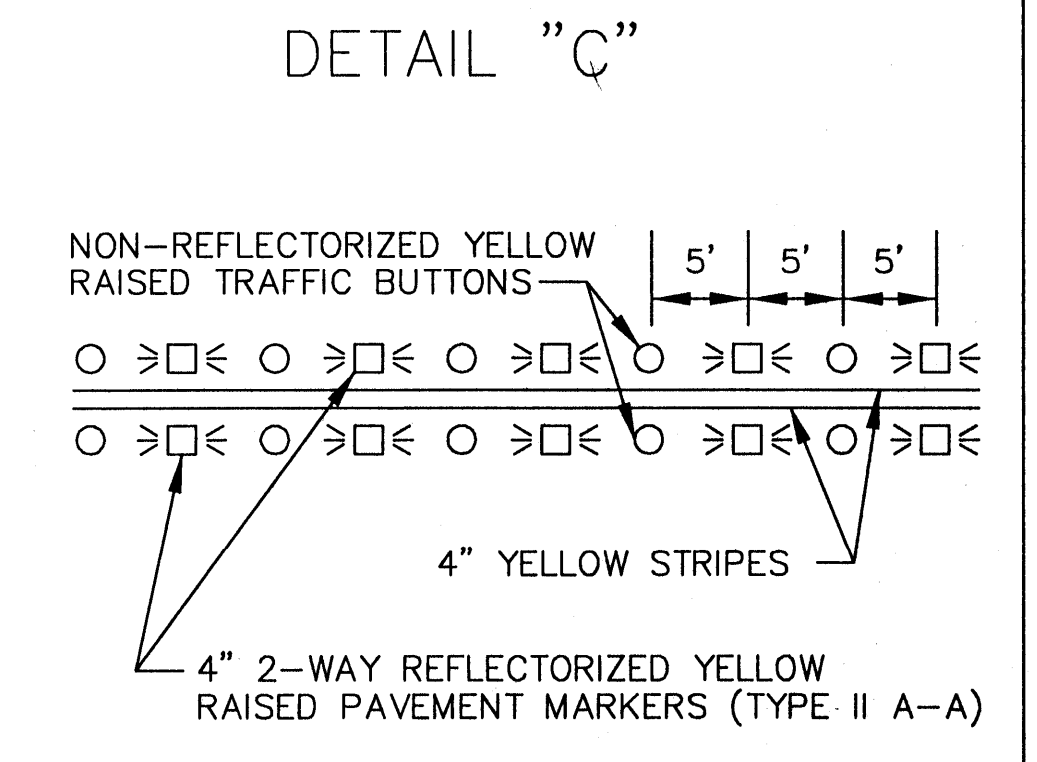
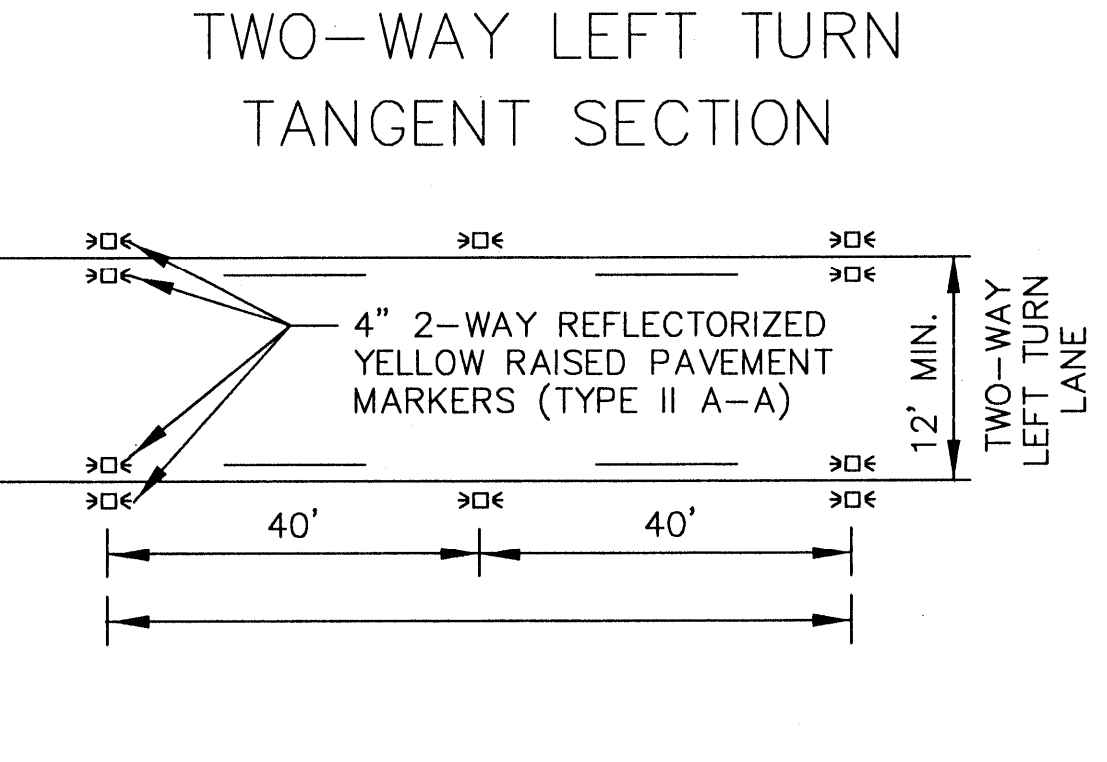
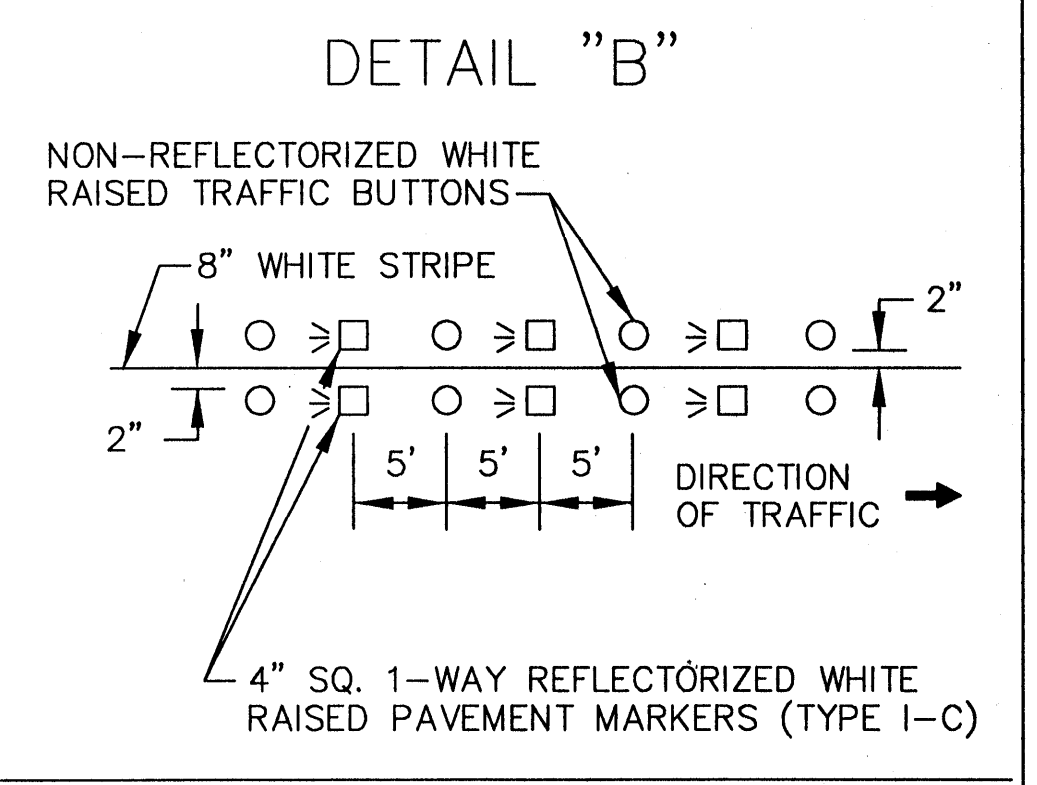
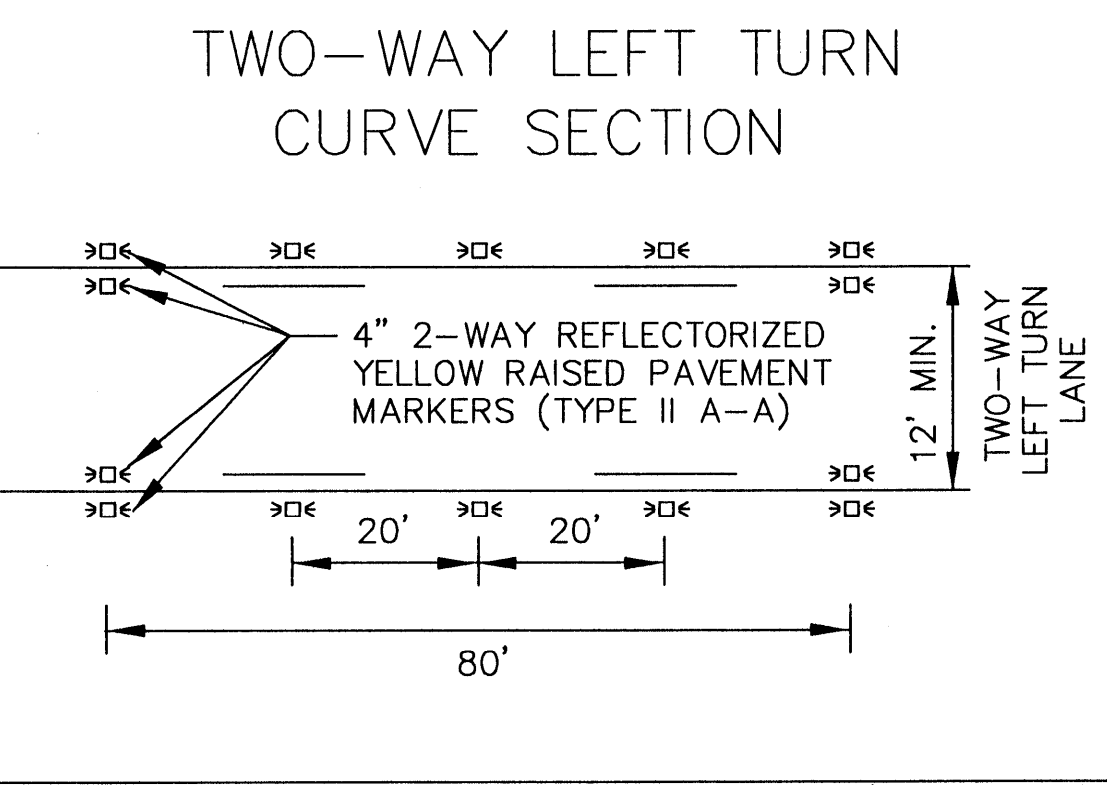
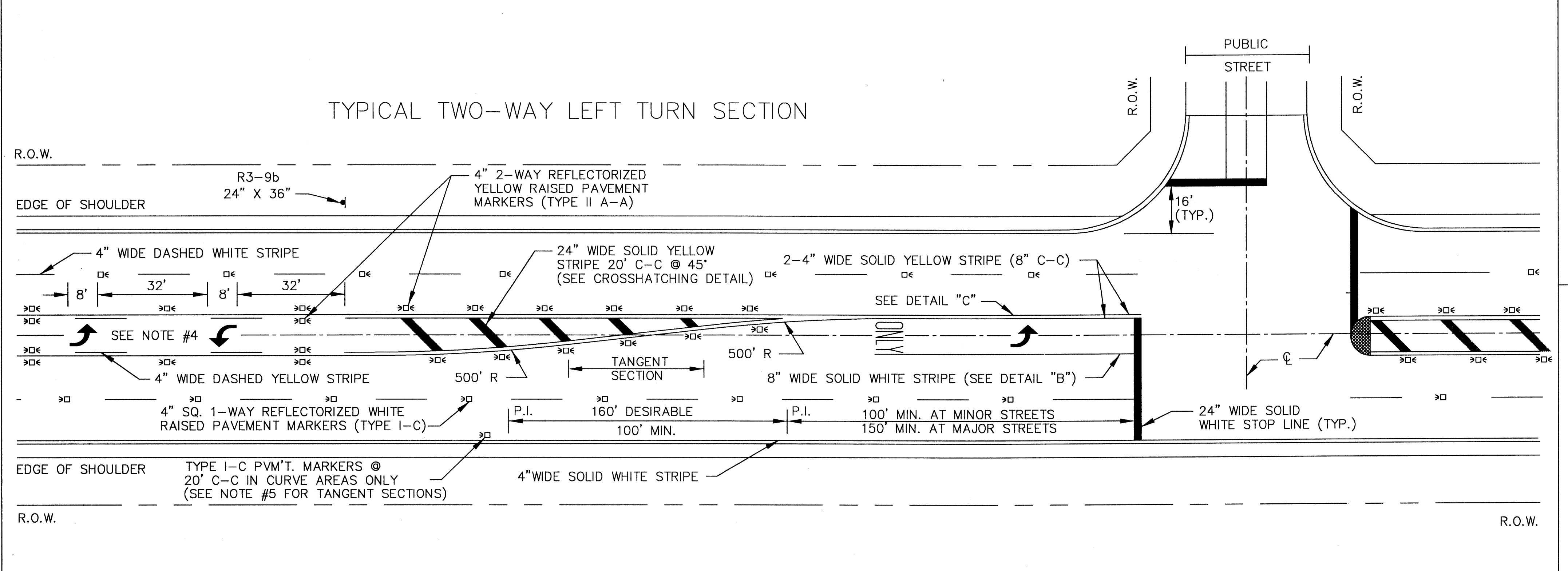
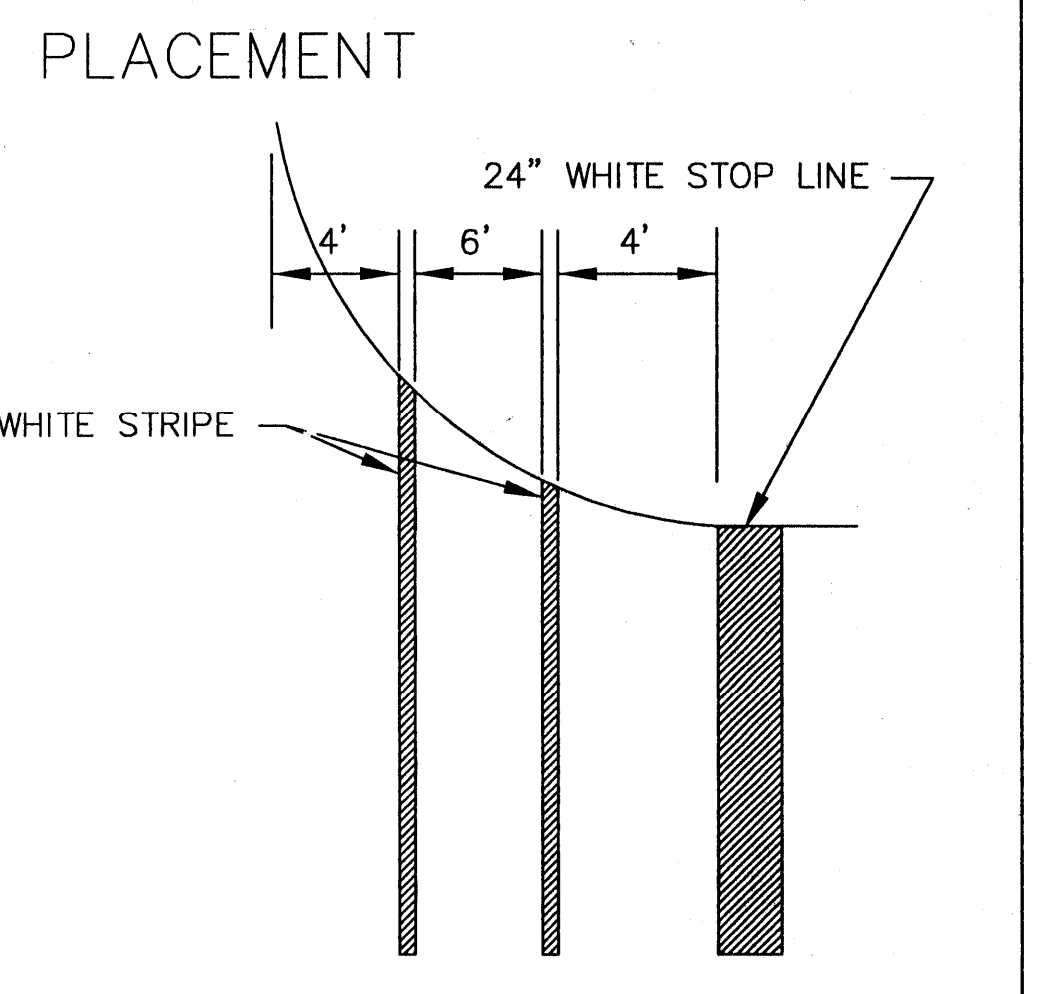
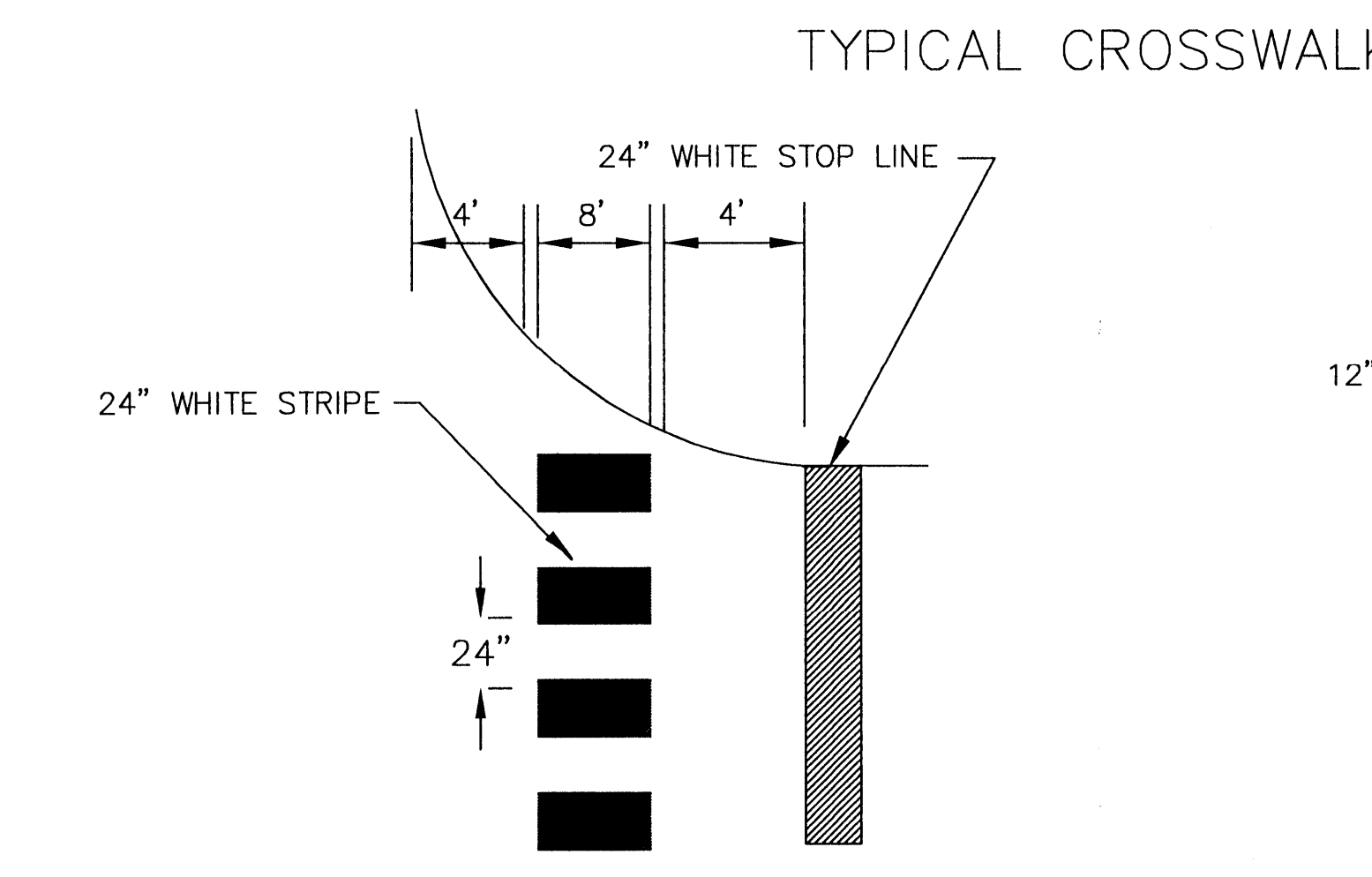
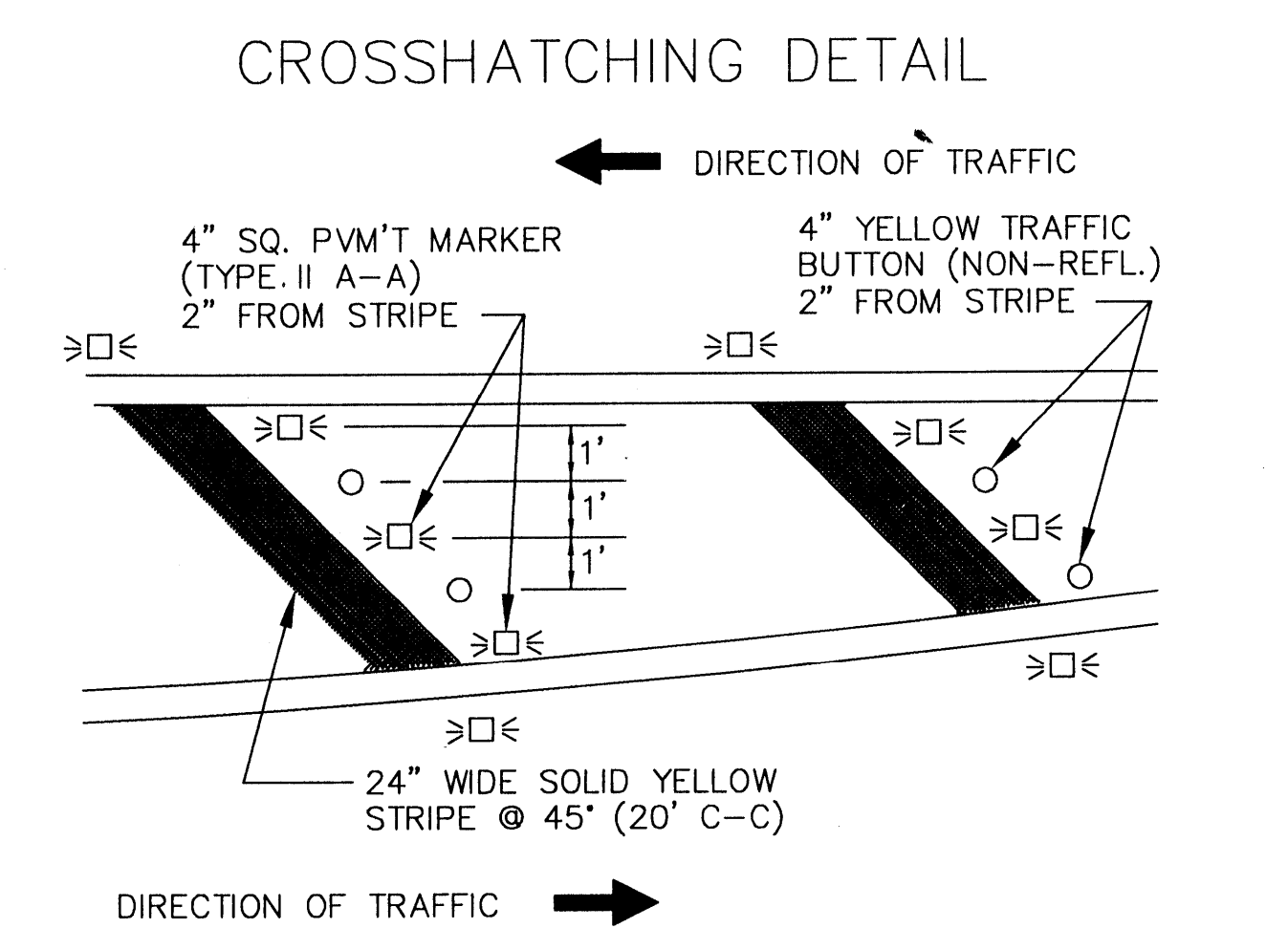
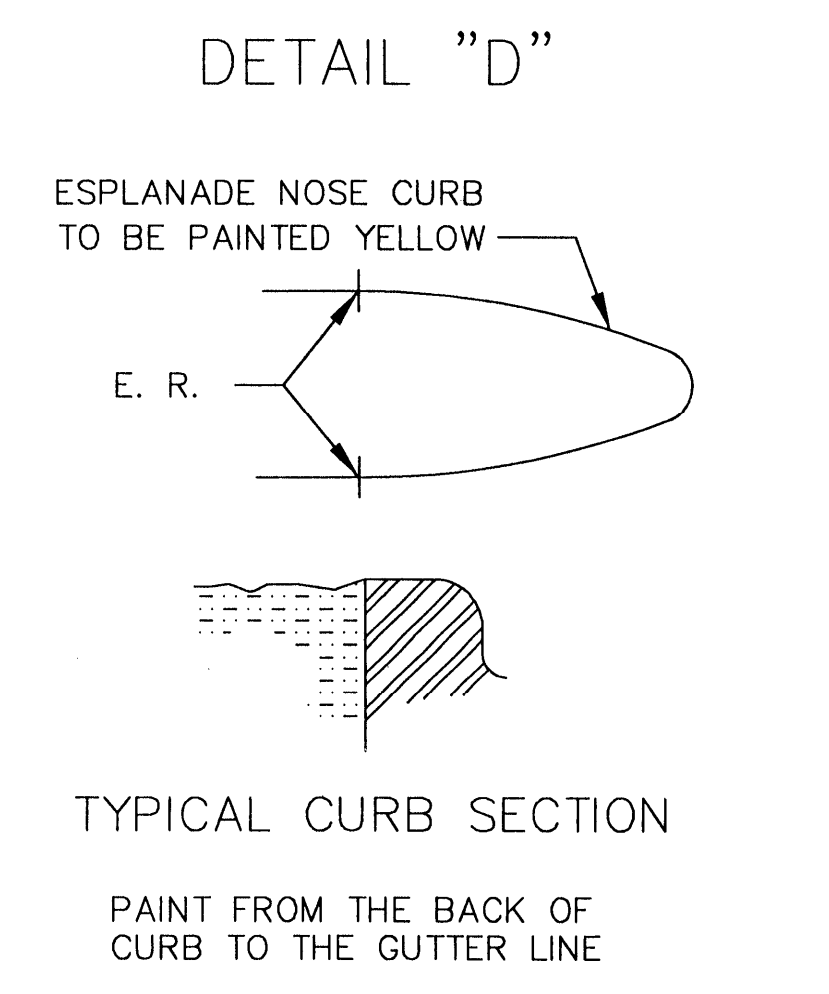
ESPLANADE INTERRUPTION	(1)		
	NO LTB	1 LTB	2LTB
UNDIVIDED STREET < 40' 44'	45'	52.5' 55'	60' 60'
DIVIDED STREET	D+10'	D+10'	D+10'

RADIUS DIMENSIONS

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


NOTES:
(1) LEFT TURN BAY
(2) DISTANCE FROM CENTERLINE OF OPENING TO ESPLANADE NOSE WITH LEFT TURN LANE MUST BE 30'

- NOTES:
1. ALL STRIPING & MARKERS SHALL CONFORM WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.
 2. ALL TRAFFIC BUTTONS AND MARKERS SHALL BE INSTALLED ADJACENT TO STRIPES (APPROX. 2").
 3. LEFT TURN STORAGE BAYS SHALL BE A MIN. OF 100' AT MINOR STREETS AND A MIN. OF 150' AT MAJOR STREETS.
 4. REPEAT ARROWS AT APPROX. 1000' INTERVALS WITHIN TWO-WAY LEFT TURN SECTION.
 5. WITHIN A TANGENT SECTION THE TYPE I-C PAVEMENT MARKERS CAN BE PLACED AT 40' C-C ON ROADWAYS WITHOUT CURB AND GUTTERS.



NO.	REVISIONS	DATE	NAME
1	CHANGED TITLE BLOCK	7/21/99	R.L.S.
2	ADDED CONTINENTAL CROSSWALK	8/3/98	ALP

HARRIS COUNTY
PUBLIC INFRASTRUCTURE DEPARTMENT
ENGINEERING DIVISION



PROJECT TITLE: HIGHLAND TIMBERS SECTION 1		JOB NO: 461U
DRAWN BY: CADDOP	SHEET DESCRIPTION: PAVEMENT MARKING DETAILS	FILE NAME: PMDET1
SCALE: SCALE	DATE: JULY 1999	FILE NO. X/N