

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 an (8) foot of live overhead high voltage lines. Contractors and owners are legally responsible for safety of construction workers under this law. This law requires both overhead and still location. To arrange for these to be turned off or moved, call H.E.S. at 288-7400.

FLOOD PLAIN NOTE:
THIS TRACT IS IN ZONE "X" AS PER FEMA FLOOD INSURANCE RATE MAP PANEL NO. 4801000000, HARRIS COUNTY, TX REVISED SEPT. 20, 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

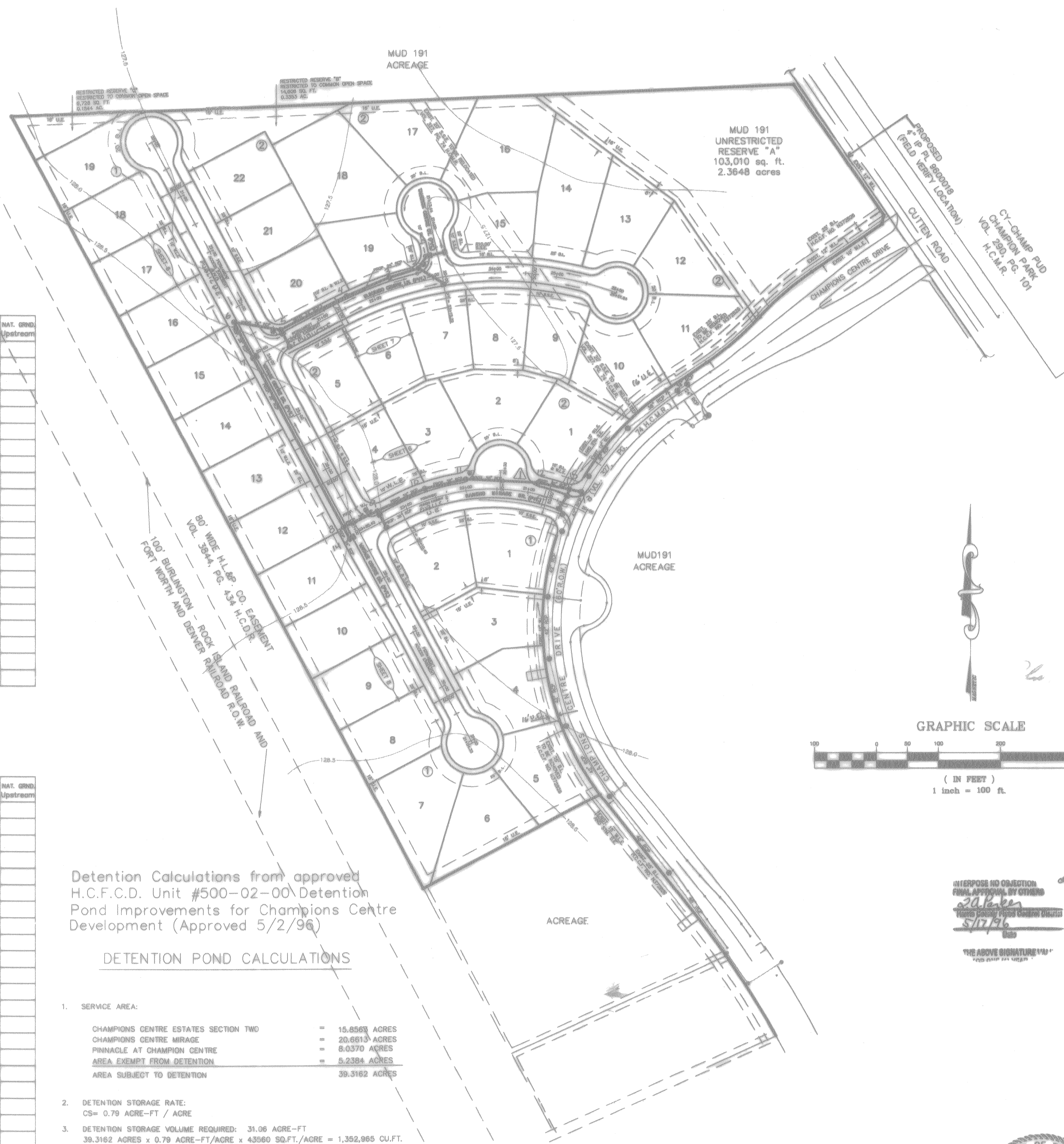
LINE	TO MH	FROM MH	AREA AC	TOTAL AREA AC	t	CI	Q CFS	REACH FT	LINE SIZE IN	SLOPE %	DESIGN Q CFS	FALL FT	OTHER LOSSES FT	FLOWLINE UP-DOWN-STREAM	ACT. V FPM	SLOPE TO GRADE %	Δ H FT	ELEV. HYD. GRAD. UP-STREAM	DOWN-STREAM	TO ELEV. Upstream	NAT. GROUND
1	Inlet	1	4.10	4.10	12.0	1.10	4.07	0	24	0.24	11	3.0	0.01	121.75	121.74	1.4	0.04	0.01	123.05	123.04	125.24
2	1	2	0	4.10	12.0	1.10	4.07	21	24	0.24	11	3.0	0.05	121.74	121.69	1.4	0.04	0.01	123.04	123.03	125.24
3	Inlet	2	1.80	6.00	12.0	1.10	6.88	0	24	0.24	11	3.0	0.06	121.69	121.74	1.8	0.07	0.04	123.03	123.03	125.24
4	2	3	0	6.00	12.0	1.10	6.88	50	24	0.24	11	3.0	0.17	121.74	121.57	1.8	0.07	0.04	123.03	122.99	126.03
5	3	4	0	6.00	12.0	1.10	6.88	70	24	0.24	11	3.0	0.18	121.57	121.39	1.8	0.07	0.05	122.99	122.94	126.03
6	4	5	0	6.00	12.0	1.10	6.88	120	24	0.24	11	3.0	0.24	121.39	121.10	1.8	0.07	0.08	122.94	122.86	126.25
7	Inlet	5	2.20	8.20	13.0	1.00	8.99	0	24	0.24	11	3.0	0.01	121.10	121.10	2.8	0.15	0.01	122.87	122.86	125.81
8	5	6	0	8.20	13.0	1.00	8.99	27	24	0.24	11	3.0	0.18	121.10	120.92	2.8	0.15	0.12	122.86	122.74	125.81
9	6	7	7.84	16.04	14.0	1.07	17.22	0	30	0.15	20	3.0	0.16	120.92	120.76	2.8	0.085	0.04	122.74	122.70	126.15
10	Inlet	7	2.60	18.77	15.0	1.08	19.80	0	30	0.15	20	3.0	0.10	120.76	120.76	2.8	0.09	0.01	122.70	122.70	125.89
11	7	8	0	18.77	15.0	1.08	19.80	308	30	0.15	20	3.0	0.17	120.76	120.59	2.8	0.09	0.28	122.70	122.42	125.89
12	Inlet	14	3.00	3.00	11.0	1.13	3.39	0	24	0.24	11	3.0	0.01	121.09	121.07	1.0	0.03	0.01	122.43	122.43	126.64
13	14	8	0	3.00	11.0	1.13	3.39	20	24	0.24	11	3.0	0.05	121.07	120.92	1.0	0.03	0.01	122.43	122.42	126.64
14	8	9	0	21.77	18.0	1.00	22.88	0	30	0.15	20	3.0	0.10	120.92	119.92	3.4	0.12	0.08	122.42	122.31	126.64
15	Inlet	8	4.30	26.10	17.0	1.04	27.20	0	30	0.15	20	3.0	0.01	119.92	119.92	3.8	0.14	0.01	122.35	122.34	126.64
16	9	10	0	26.10	17.0	1.04	27.20	30	30	0.15	20	3.0	0.13	119.92	119.79	3.8	0.14	0.14	122.34	122.20	126.64
17	10	11	0	26.10	17.0	1.04	27.20	60	30	0.15	20	3.0	0.06	119.79	119.69	3.8	0.14	0.14	122.20	122.09	127.00
18	11	12	0	26.10	17.0	1.04	27.20	110	30	0.15	20	3.0	0.10	119.69	119.51	3.8	0.14	0.14	122.09	121.95	127.00
19	12	13	0	26.10	17.0	1.04	27.20	70	30	0.15	20	3.0	0.07	119.51	119.42	3.8	0.14	0.07	121.95	121.88	127.12
20	Inlet	10	1.02	26.10	17.0	1.04	27.20	0	24	0.02	11	3.0	0.02	119.42	119.42	0.8	0.01	0.01	121.89	121.88	127.59
21	15	13	0	26.10	17.0	1.04	27.20	20	30	0.15	20	3.0	0.03	119.42	119.33	3.8	0.16	0.05	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-DOWN-STREAM	ACT. V FPM	SLOPE TO GRADE %	Δ H FT	ELEV. HYD. GRAD. UP-STREAM	DOWN-STREAM	TO ELEV. Upstream	NAT. GROUND
1	1	2	82.61	82.61	19.0	1.03	83.56	180	04	0.15	73	4.0			3.8	0.08	0.14	120.44	120.30		
2	2	3	4.70	87.31	20.0	1.01	87.01	140	06	0.15	73	4.0			3.8	0.085	0.13	120.30	120.17		
3	3	4	1.83	89.07	20.0	1.01	88.88	120	07	0.12	130	5.0			2.2	0.02	0.02	120.17	120.15		
4	4	5	4.60	93.73	20.0	1.01	94.37	200	07	0.12	130	5.0			2.4	0.03	0.08	120.15	120.09		
5	5	6	17.28	111.02	20.0	1.00	111.02	140	07	0.12	130	5.0			3.0	0.04	0.08	120.09	120.03		
6	6	9	1.20	112.22	21.0	1.00	112.22	130	04	0.12	200	5.0			2.2	0.02	0.02	120.03	120.01		
7	9	10	4.21	116.43	21.0	1.00	116.43	90	06	0.12	200	5.0			2.3	0.02	0.02	120.01	119.99		
8	10	14	0.50	116.93	22.0	1.01	116.93	100	06	0.15	200	5.0			2.3	0.02	0.02	119.99	119.97		
9	14	15	14.25	131.18	23.0	1.08	131.18	120	06	0.12	200	5.0			2.8	0.03	0.04	119.97	119.83		
10	15	16	0	131.18	23.0	1.08	131.18	170	06	0.12	200	5.0			2.9	0.03	0.05	119.83	119.80		
11	16	17	0	131.18	23.0	1.08	131.18	170	06	0.12	200	5.0			2.9	0.03	0.05	119.80	119.83		
12	17	18	0.34	131.52	24.0	1.11	131.52	180	04	0.12	200	5.0			3.4	0.04	0.08	119.83	119.75		
13	18	19	0	131.52	24.0	1.11	131.52	40	04	0.12	200	5.0			3.4	0.04	0.02	119.75	119.73		
14	19	20	0	131.52	24.0	1.11	131.52	90	06	0.12	200	5.0			3.4	0.04	0.04	119.73	119.69		
15	20	21	0	131.52	24.0	1.11	131.52	80	06	0.12	200	5.0			3.4	0.04	0.04	119.69	119.65		
16	21	22	4.01	135.53	25.0	1.12	135.53	90	06	0.12	200	5.0			3.5	0.045	0.05	119.65	119.60		
17	22	23	0	135.53	25.0	1.12	135.53	70	06	0.12	200	5.0			3.5	0.045	0.04	119.60	119.56		
18	23	24	2.60	138.13	26.0	1.12	138.13	100	04	0.12	200	5.0			3.5	0.045	0.05	119.56	119.51		
19	24	25	2.65	140.78	27.0	1.13	140.78	90	06	0.12	200	5.0			3.8	0.05	0.05	119.51	119.46		
20	25	28	0	140.78	27.0	1.13	140.78	100	04	0.12	200	5.0			3.8	0.05	0.05	119.46	119.41		
21	28	30	0	140.78	27.0	1.13	140.78	40	00	0.12	240	5.0			3.2	0.03	0.01	119.41	119.40		
22	30	31	15.30	156.08	28.0	1.16	156.08	470	00	0.12	240	5.0			3.8	0.045	0.21	119.40	119.19		
23	31	32	5.37	161.45	29.0	1.17	161.45	300	00	0.12	240	5.0			3.8	0.05	0.16	119.19	119.03		
24	32	33	3.88	165.33	29.0	1.17	165.33	010	00	0.12	240	5.0			4.0	0.05	0.28	119.03	118.77		
25	33	34	0	165.33	29.0	1.17	165.33	230	00	0.12	240	5.0			4.0	0.05	0.12	118.77	118.65		
26	34	35	0	165.33	29.0	1.17	165.33	500	00	0.05	270	5.0			3.2	0.03	0.15	118.65	118.50		

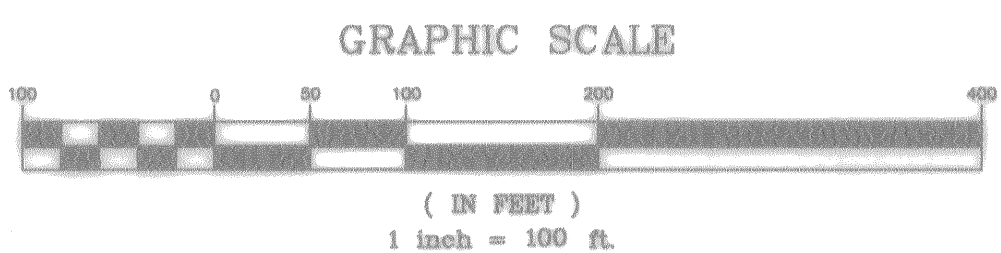
* 25 TR. STORM ELEVATION IN PISO-DD-DD.



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 = 15,856 ACRES
 - CHAMPIONS CENTRE MIRAGE = 20,661 ACRES
 - PINNACLE AT CHAMPION CENTRE = 8,037 ACRES
 - AREA EXEMPT FROM DETENTION = 5,238 ACRES
 - AREA SUBJECT TO DETENTION = 39,312 ACRES
- DETENTION STORAGE RATE:
 - CS = 0.79 ACRE-FT / ACRE
- DETENTION STORAGE VOLUME REQUIRED: 31.06 ACRE-FT
 - 39,312 ACRES x 0.79 ACRE-FT/ACRE x 43560 SQ.FT./ACRE = 1,392,960 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 = 277,488+144,900+138,082+399,872+475,700 = 1,389,042 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



INTERPOSE NO OBJECTION
FINAL APPROVAL BY OTHERS
3/2/96
MUD 191 REVISED DRAINAGE CALCULATION
5/17/96
THE ABOVE SIGNATURE IS THE
TRUE AND CORRECT SIGNATURE OF THE
ENGINEER



BENCH MARK
BENCH MARK: N95 STAMPED 12/16/1975
BRASS DISK AT CENTERLINE OF H.L.P.
TO SUB 1ST TOWER NORTH OF F.M. 1960
ELEVATION 125.99 1975 ADS.

- 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

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

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

SECTION APPROVALS

DESIGNER	DATE	DESIGN
WATER DESIGN	3/2/96	TRAFFIC AND SIGNAL DESIGN
WASTEWATER DESIGN	5/17/96	STREET, BRIDGE AND RIGHT-OF-WAY DESIGN
STORM SEWER DESIGN	5/17/96	CONSTRUCTION

OTHER DEPARTMENTS

DEPARTMENT	DATE
PLANNING AND DEVELOPMENT	5/20/96
CITY ENGINEER	5/17/96
DIRECTOR OF PUBLIC WORKS & ENGINEERING	5/17/96

SUBMITTED: _____ DESIGNED BY: TM
SCALE: 1" = 100' DRAWN BY: TM
DATE: 01-10-98 SHEET NO. 3 OF 16 SHEETS
SURVEY BY: _____ CITY OVERALL DWG
JOB NO: 430-U DWG NO.

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

