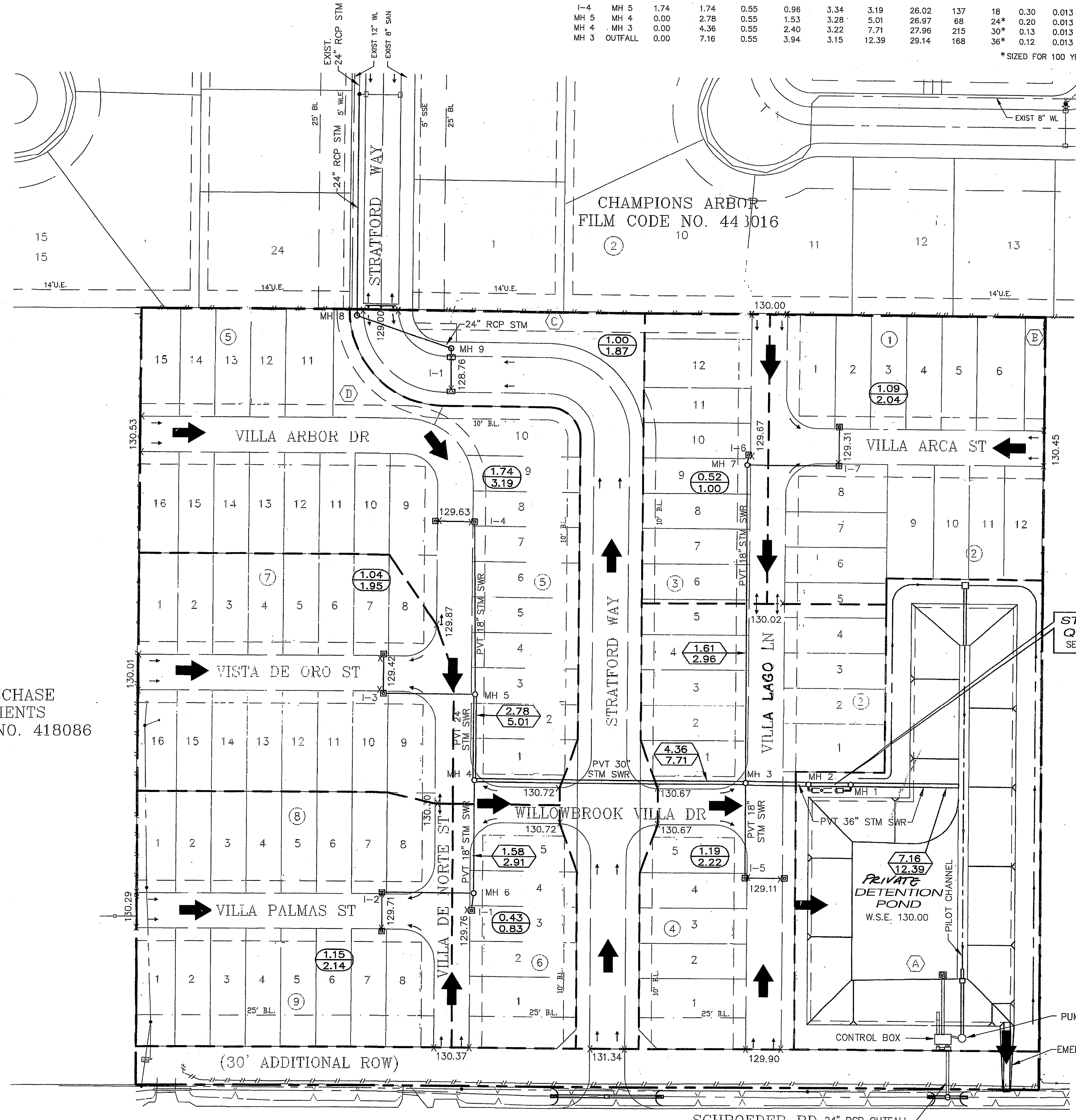


STORM SEWER CALCULATIONS  
CITY OF HOUSTON 2 YEAR RAINFALL

MH/Inlet From	MH/Inlet To	Drainage Area Ac.	Total Area Ac.	Runoff Coefficient C	CFA	2 year Intensity (In/Hr)	Sum of Flows (cfs)	Time of Conc. (minutes)	Reach Length (feet)	Diameter (Inches)	Slope %	Manning's n	Design Capacity (cfs)	Design Velocity (fps)	Flow Line Fall (feet)	Flow Line Upstrm (ft)	Flow Line Dwnstrm (ft)	Actual Velocity (fps)	Hydraulic Gradient (%)	Change in Head (ft)	Hydraulic Gradient Upstrm (ft)	Hydraulic Gradient Dwnstrm (ft)	Gutter El Upstream (ft)	Natural Ground Upstrm (ft)	Natural Ground Dwnstrm (ft)
MH 9	EXIST	1.00	1.00	0.55	0.55	3.41	1.87	25.00	253	24	0.18	0.013	9.6	3.1	0.46	123.71	123.26	2.37	0.01	0.02	125.28	125.26	128.38	131.1	128.0
I-3	MH 5	1.04	1.04	0.55	0.57	3.40	1.95	25.07	73	18	0.30	0.013	5.8	3.3	0.22	122.94	122.72	2.94	0.03	0.03	124.25	124.22	129.04	130.2	130.1
I-2	MH 6	1.15	1.15	0.55	0.63	3.39	2.14	25.25	73	18	0.30	0.013	5.8	3.3	0.22	123.71	123.49	3.02	0.04	0.03	125.02	124.99	129.33	130.5	130.4
MH 6	MH 4	0.43	1.58	0.55	0.87	3.35	2.91	25.84	89	18	0.30	0.013	5.8	3.3	0.27	123.49	123.22	3.27	0.08	0.07	124.79	124.72	129.67	130.4	130.3
I-7	MH 7	1.09	1.09	0.55	0.60	3.40	2.04	25.15	72	18	0.30	0.013	5.8	3.3	0.22	125.11	124.89	2.98	0.04	0.03	126.42	126.39	128.93	129.4	129.9
MH 7	MH 3	0.52	1.61	0.55	0.89	3.35	2.96	25.87	252	18	0.30	0.013	5.8	3.3	0.76	122.98	122.22	3.28	0.08	0.20	123.92	123.72	129.29	129.9	130.9
I-5	MH 3	1.19	1.19	0.55	0.65	3.39	2.22	25.31	75	18	0.30	0.013	5.8	3.3	0.23	123.71	123.48	3.05	0.04	0.03	125.01	124.98	128.73	130.1	130.9
I-4	MH 5	1.74	1.74	0.55	0.96	3.34	3.19	26.02	137	18	0.30	0.013	5.8	3.3	0.41	125.43	125.02	3.34	0.09	0.13	126.65	126.52	129.25	130.1	130.1
MH 5	MH 4	0.00	2.78	0.55	1.53	3.28	5.01	26.97	68	24*	0.20	0.013	10.1	3.2	0.14	122.22	122.08	3.21	0.05	0.03	124.12	124.08	129.66	130.1	130.3
MH 4	MH 3	0.00	4.36	0.55	2.40	3.22	7.71	27.96	215	30*	0.13	0.013	14.8	3.0	0.28	120.52	120.34	3.04	0.04	0.08	122.92	122.84	129.86	130.3	130.9
MH 3	OUTFALL	0.00	7.16	0.55	3.94	3.15	12.39	29.14	168	36*	0.12	0.013	23.1	3.3	0.20	119.84	118.65	3.33	0.03	0.06	122.70	121.65	129.04	130.9	129.8

\* SIZED FOR 100 YR FLOW



DEPTH OF 100 YEAR FLOODING

MH/INLET NO.	TOP OF CURB	WATER SURFACE ELEV	PONDING DEPTH
I-1	129.76	130.30	6.5'
I-2	129.71	130.30	7.1'
I-3	129.42	129.87	5.4"
I-4	129.63	130.00	4.4"
I-5	129.11	130.00	10.7"
I-6	129.67	130.02	4.2"
I-7	129.31	130.02	8.5"
I-8	128.76	129.00	2.9"

Privately owned utilities within private properties shall be reviewed and released by the County Engineer's Office.

"SWQMP Permit Requirements"

"Upon completion of construction the permanent storm water quality feature will be cleaned of all sediment and debris that may have accumulated. Additionally all disturbed areas related to this project will be completely stabilized. This will be done prior to submitting an "As-Built Certificate" and calling for final inspection. Harris County Engineering will not pass the Final Inspection or issue the Certificate of Compliance until the required final cleanup and stabilization have been completed. The development is not approved for operation until a Certificate of Compliance has been issued."

LEGEND

- 1.00 DRAINAGE AREA IN ACRES
- 1.87 DRAINAGE AREA IN CFS
- 10.00 AREA CONTRIBUTING TO LINE IN ACRES
- 17.03 AREA CONTRIBUTING TO LINE IN CFS
- DRAINAGE AREA DIVIDE
- ← DIRECTION OF 100 YEAR EXTREME EVENT
- X 130.00 TOP OF CURB ELEVATION

STEEPLECHASE APARTMENTS  
FILM CODE NO. 418086

- RESTRICTED RESERVE "A" COMPENSATING OPEN SPACE AND DETENTION/DRAINAGE 63,962 S.F. - 0.14684 AC.
- RESTRICTED RESERVE "B" OPEN SPACE 1,448 S.F. - 0.0332 AC.
- RESTRICTED RESERVE "C" OPEN SPACE 7,412 S.F. - 0.1702 AC.
- RESTRICTED RESERVE "D" OPEN SPACE 3,065 S.F. - 0.0704 AC.

BENCH MARK  
BENCHMARK: NATIONAL GEODETIC SURVEY MARKER  
Y1216, 1973 ADJ., ELEV = 125.994  
Y1216, 1978 ADJ., ELEV = 125.406  
Y1216, 1988 ADJ., ELEV = 123.94  
ELEVATIONS ARE BASED ON 1973 ADJUSTMENT

FLOOD PLAIN STATEMENT:  
No portion of this tract lies within a "100 year flood hazard area" as designated on The National Flood Insurance Program - Flood Insurance Rate Map issued by the Federal Emergency Management Agency under Community Panel Number 480287 0435 J for Harris County, Texas dated November 6, 1986.

PROVIDENT CONSULTING, INC.  
1405 ALLESTON ST.  
HOUSTON, TEXAS 77008  
(713)802-1019

BOBBY K. WILSON  
25963  
PROFESSIONAL ENGINEER  
09-01-05

PCI  
PROVIDENT CONSULTING, INC.

PRIVATE UTILITY LINES SHOWN  
CENTERPOINT ENERGY, ENTEX  
SBC VALID FOR ONE YEAR  
APPROVED ONLY FOR UNDERGROUND CONDUIT FACILITIES  
CENTERPOINT ENERGY  
APPROVED ONLY FOR CROSSING UNDERGROUND DUCTILES  
UNLESS NOTED VALID AT TIME OF REVIEW ONLY

VILLAS AT WILLOWBROOK  
HARRIS COUNTY MUD 191  
HARRIS COUNTY, TEXAS  
DRAINAGE AREA MAP  
& STORM WATER  
QUALITY PLAN

FILE NO:  
DRAWING SCALE:  
1" = 50'  
VERT: HORZ:  
SHEET No: 4 OF 24

40820