

PROPOSED DRAINAGE CONDITIONS

BASED ON CITY OF MANVEL 5-YEAR STORM.
 $A=1.67$ AC, $b=71.6$, $d=11.08$, $e=0.7704$
 $C=0.80$
 $TC=200/2/60 + 80/3/60 + 10 = 12.11$ MIN.
 $i(5)=71.6/(11.08+12.11)^{0.7704}=6.35$ IN/HR

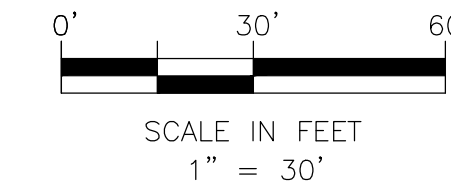
Storm Sewer Calculation Table													
AREA No.	FROM	TO	AREA	TOTAL AREA	C	TC	I	FLOW CFS	PIPE SIZE	GRADE %	MANNINGS n'	ELOCIT ft/s	APACIT Q
1	1	2	0.3169	0.3169	0.80	12.11	6.350	1.61	12	0.31	0.011	2.99	2.35
2	2	4	0.1043	0.4212	0.80	12.11	6.350	2.14	12	0.31	0.011	2.99	2.35
3	3	4	0.0221	0.0221	0.80	12.11	6.350	0.11	8	0.53	0.011	2.99	1.04
4	4	5	0.1333	0.5766	0.80	12.11	6.350	2.93	15	0.23	0.011	2.99	3.67
5	5	6	0.2029	0.7795	0.80	12.11	6.350	3.96	18	0.18	0.011	2.99	5.28
6	6	11	0.1490	0.9285	0.80	12.11	6.350	4.72	18	0.18	0.011	2.99	5.28
7	7	8	0.3844	0.3844	0.80	12.11	6.350	1.95	12	0.31	0.011	2.99	2.35
8	8	9	0.0330	0.4174	0.80	12.11	6.350	2.12	12	0.31	0.011	2.99	2.35
9	9	10	0.1596	0.5770	0.80	12.11	6.350	2.93	15	0.23	0.011	2.99	3.67
10	10	11	0.1106	0.6876	0.80	12.11	6.350	3.49	15	0.23	0.011	2.99	3.67
11	11	12	0.0774	1.6935	0.80	12.11	6.350	8.60	24	0.13	0.011	3.08	9.67

BENCHMARK

MONUMENT NAME 10 GPS MONU 1995 IS A BRASS CAP SET IN CONCRETE STAMPED "CITY OF PEARLAND 10 GPS MONU, 1995" LOCATED ON THE SOUTH BOUND HIGHWAY 288 APPROXIMATELY 2,400 FEET SOUTH OF F.M. 518 AND 21 FEET WEST FROM THE WEST EDGE OF ASPHALT.
 ELEV.=59.29' (NGVD 1929, 1987 ADJUSTMENT).

TBM A: BOX CUT ON H2-INLET LOCATED ON THE NORTH SIDE OF COUNTY ROAD 101 SOUTH OF THE SOUTHWEST CORNER OF THE PROPERTY, AS SHOWN. ELEVATION = 64.44'

TBM B: BOX CUT ON RCP LOCATED ON THE EAST SIDE OF COUNTY ROAD 94 NEAR THE EAST PORTION OF THE PROPERTY, AS SHOWN. ELEVATION = 61.48'



LEGEND

- EXISTING STORM SEWER BY OTHERS
- EXISTING INLET BY OTHERS
- EXISTING SPOT GRADE
- PROPOSED STORM SEWER
- PROPOSED STORM INLET/JUNCTION BOX RE: SHT C7
- DIRECTION OF FLOW OR SWALE
- DRAINAGE AREA BOUNDARY
- AREA (AC) $\frac{A}{Q}$ CUMULATIVE AREA (AC)
- RUNOFF (CFS) $\frac{A_r}{Q_r}$ CUMULATIVE RUNOFF (CFS)
- ← DIRECTION OF EXTREME EVENT FLOW

NOTES:

1. ALL HDPE STORM SEWERS SHALL BE DOUBLE WALL WITH SMOOTH INTERIOR WALLS, WITH BELL AND SOCKET JOINTS WITH RUBBER GASKETS THAT MEET ASTM F477 (ADS N-12 STIB PIPE OR APPROVED EQUIVALENT).
2. ALL STORM SEWERS ARE HDPE PIPES.
3. COEFFICIENT OF FRICTION VALUES FOR RCP=0.013, HDPE=0.011 AND PVC=0.010
4. PLAYGROUND EQUIPMENT, AND SHADE PYRAMID INSTALLERS MUST DESIGN POSITIVE DRAINAGE SYSTEM TO DIRECT STORM SHEET FLOW AWAY FROM BUILDING, AND PADS OF STRUCTURES. INSTALLERS MUST INSTALL UNDER DRAINS AND CONNECT TO NEARBY STORM DRAIN LINES.
5. INLETS 1, 2, 3, 7 & 8 SHALL BE PARK USA MODEL CB18 OR APPROVED EQUIVALENT. INLETS 4, 5, 6, 9, & 10 SHALL BE PARK USA MODEL CB24 OR APPROVED EQUIVALENT. INLET 11 & 12 SHALL BE PARK USA MODEL CB30 OR APPROVED EQUIVALENT. RE: SHT C8.
6. STORM SEWER WILL BE CONSTRUCTED FROM INLET #12 TO EXISTING STORM SEWER AT SOUTHWEST CORNER OF CR 94 AND CR 101 INTERSECTION BY OTHERS.

PLAN KEY NOTES:

- ① PROVIDE AND INSTALL SPEE-D CHANNEL DRAIN WITH BOTTOM OUTLET.
- ② CONNECT TO OUTLET WITH WATER TIGHT CONNECTION AND CONSTRUCT 4" LATERAL @ 2.00% MIN. SLOPE TO ADJACENT INLET OR STORM SEWER.
- ③ CONNECT TO 6" ROOF DRAIN BELOW GRADE WITH WATER TIGHT CONNECTION. CONSTRUCT 6" PVC STORM @ 1.00% MIN. SLOPE AND CONNECT TO ADJACENT STORM WITH WYE CONNECTION AND 45° BEND
- ④ CONSTRUCT CLEANOUT.
- ⑤ CONNECT TO 8"x8" DOWNSPOUT BELOW GRADE WITH WATER TIGHT CONNECTION. CONSTRUCT 8" PVC LATERAL @ 0.5% MIN. SLOPE AND CONNECT TO ADJACENT STORM WITH WYE CONNECTION AND 45° BEND.
- ⑥ PROVIDE AND INSTALL 4" LATERAL WITH WYE CONNECTION AND 45° BEND AND 4" CAP. SEE NOTE 5 THIS SHT.
- ⑦ CONNECT TO 6" ROOF DRAIN BELOW GRADE WITH WATER TIGHT CONNECTION. CONSTRUCT 6" PVC STORM @ 1.00% MIN. SLOPE AND CONNECT TO ADJACENT STORM WITH WYE CONNECTION AND 45° BEND
- ⑧ 1½" P-TRAP FLOOR DRAIN WITH BRONZE COVER. CONSTRUCT LATERAL PIPE @ 2% SLOPE AND CONNECT TO 12" STM. DRAIN. TYPICAL OF 3

REVISIONS AND ISSUANCE		
NO.	DATE	DESCRIPTION
1	8/13/18	PRICING

IVY KIDS EARLY LEARNING CENTER
 4434 CR 94
 MANVEL, TEXAS 77578

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interim review only
 not for permit or
 construction

YIFENG ZHUANG
 TX #87950

08/13/2018

DRAWING TITLE

DRAINAGE PLAN

DRAWN BY KN CHECKED BY EL

DATE 08/13/2018 JOB NO. 1806251

DRAWING NO.

C3

