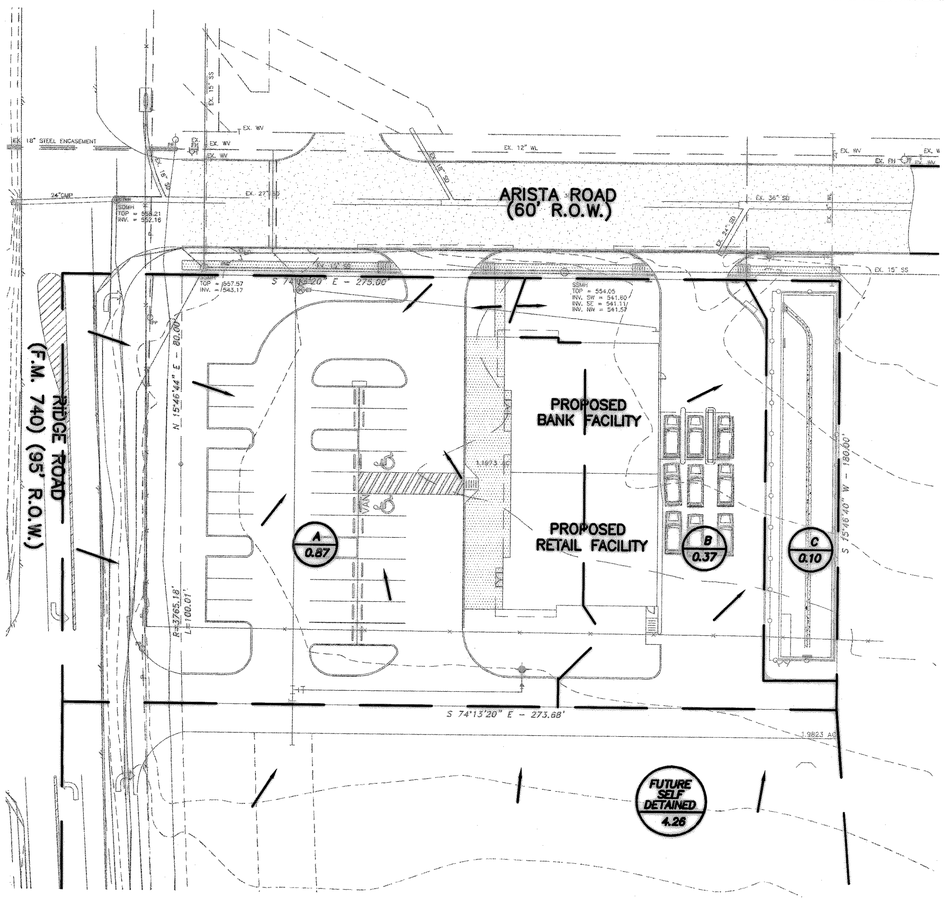


SCALE: 1" = 30'

DRAINAGE AREA CALCULATIONS					
AREA NO.	DRAINAGE AREA(AC)	C	Tc(min.)	I(in/hr)	Q(100)
A	0.87	0.90	10	9.8	7.67
B	0.37	0.90	10	9.8	3.26
C	0.10	0.90	10	9.8	0.88

DRAINAGE CALCULATIONS

PRESENT CONDITIONS

Q=CIA

A(AC.) = 5.6
C = 0.35
Tc(min.) = 20
I100(in/hr) = 8.3
Q100(cfs) = 16.27

FUTURE CONDITIONS (DEVELOPED)

A(AC.) = 1.34
C = 0.90
Tc(min.) = 10
I100(in/hr) = 9.8
Q100(cfs) = 11.82

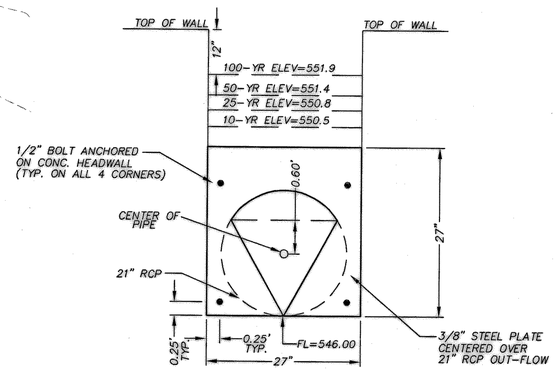
OFF-SITE CONDITIONS (UNDEVELOPED)

A(AC.) = 4.26
C = 0.35
Tc(min.) = 10
I100(in/hr) = 9.8
Q100(cfs) = 14.61

Storm Duration	I (in/hr)	Q (cfs)	Inflow (cu.ft.)	Outflow (cu.ft.)	Storage (cu.ft.)
10.0	9.8	26.4	15860.1	9760.8	6099.3
15.0	9.0	24.3	21848.1	12201.0	9647.1
20.0	8.3	22.4	26865.1	14641.2	12223.9
30.0	6.9	18.6	33500.5	19521.6	13978.9
40.0	5.8	15.6	37546.4	24402.0	13144.4
50.0	5.0	13.5	40459.5	29282.4	11177.1
60.0	4.5	12.1	43696.3	34162.8	9533.5
120.0	2.7	7.3	52435.5	63445.2	-11009.7
180.0	2.0	5.4	58261.7	92727.6	-34465.9
360.0	1.3	3.5	75740.2	180574.8	-104834.6

TOTAL STORAGE VOLUME REQUIRED: 13,979 C.F.
TOTAL STORAGE VOLUME PROVIDED:
POND LENGTH: 152 L.F.
POND WIDTH: 21 FT.
AVG. WATER SURFACE DEPTH: 4.4 FT.
TOTAL STORAGE VOLUME PROVIDED: 14,045 C.F.

PER APPROVED PLANS, "HORIZON RIDGE ADDITION" BY LAWRENCE A. CATES & ASSOC., INC.
TOTAL ALLOWABLE FLOW (100-YR) FROM SITE AND FUTURE SELF-DETAINED AREA = 16.27 cfs



ORIFICE CONTROL DETAIL
N.T.S.

ORIFICE EQUATION: $Q=0.62A(2gH)^{1/2}$

10-YR:
Q10(PRE-DEV.)=11.56 cfs
Q10(POST-DEV.)=19.69 cfs
V10(REQ.)=9,436 C.F.
10 YR. WS = 550.5
OUTFALL ELEV. = 546.0
ASSUME 21" DIAMETER W/ ORIFICE CONTROL:
A = 1.18 S.F.
$H = 4.5' - \frac{21"}{24} = 3.62$ FT.
$Q = (0.64)(1.18)(2g \times 3.62)^{1/2} = 11.5$ cfs

25-YR:
Q25(PRE-DEV.)=13.13 cfs
Q25(POST-DEV.)=22.39 cfs
V25(REQ.)=10,945 C.F.
25 YR. WS = 550.8
OUTFALL ELEV. = 546.0
ASSUME 21" DIAMETER W/ ORIFICE CONTROL:
A = 1.18 S.F.
$H = 4.8' - \frac{21"}{24} = 3.92$ FT.
$Q = (0.64)(1.18)(2g \times 3.92)^{1/2} = 12.0$ cfs

50-YR:
Q50(PRE-DEV.)=14.70 cfs
Q50(POST-DEV.)=24.27 cfs
V50(REQ.)=12,455 C.F.
50 YR. WS = 551.4
OUTFALL ELEV. = 546.0
ASSUME 21" DIAMETER W/ ORIFICE CONTROL:
A = 1.18 S.F.
$H = 5.4' - \frac{21"}{24} = 4.52$ FT.
$Q = (0.64)(1.18)(2g \times 4.52)^{1/2} = 12.9$ cfs

100-YR:
Q100(PRE-DEV.)=16.27 cfs
Q100(POST-DEV.)=26.43 cfs
V100(REQ.)=13,979 C.F.
100 YR. WS = 551.9
OUTFALL ELEV. = 546.0
ASSUME 21" DIAMETER W/ ORIFICE CONTROL:
A = 1.18 S.F.
$H = 5.9' - \frac{21"}{24} = 5.02$ FT.
$Q = (0.64)(1.18)(2g \times 5.02)^{1/2} = 13.6$ cfs

RECORD DRAWING
REVISED TO REFLECT KNOWN CHANGES MADE DURING CONSTRUCTION.
DATE 04.MAR.03

NO.	DATE	DESCRIPTION

REF. SHEET C1 FOR GENERAL NOTES

PATE ENGINEERS
8150 BROOKRIVER DRIVE
SUITE S-700
DALLAS, TEXAS, 75247
PH. (214) 357-2981
FAX (214) 357-2985
JOB NO. 001702600

No.	Date	Description

WASHINGTON MUTUAL

ROCKWALL, TEXAS

Yancey-Hausman Development

Philip Ewald Architecture Incorporated
Architecture Interior Design Planning
4203 Yoakum Blvd Suite100 Houston Texas 77006
tel 713.522.1977 fax 713.522.2107

STATE OF TEXAS
EARL A. ESCOBAR
90926
LICENSED
PROFESSIONAL ENGINEER

Drawn: M.T.L.
Checked: J.M.
Proj. No.: 001702600
Date: 12-04-03
Scale: 1"=30'

DRAINAGE AREA MAP & CALCULATIONS

C3

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY EARL A. ESCOBAR P.E. 90926 ON 12/04/03. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION TO THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

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