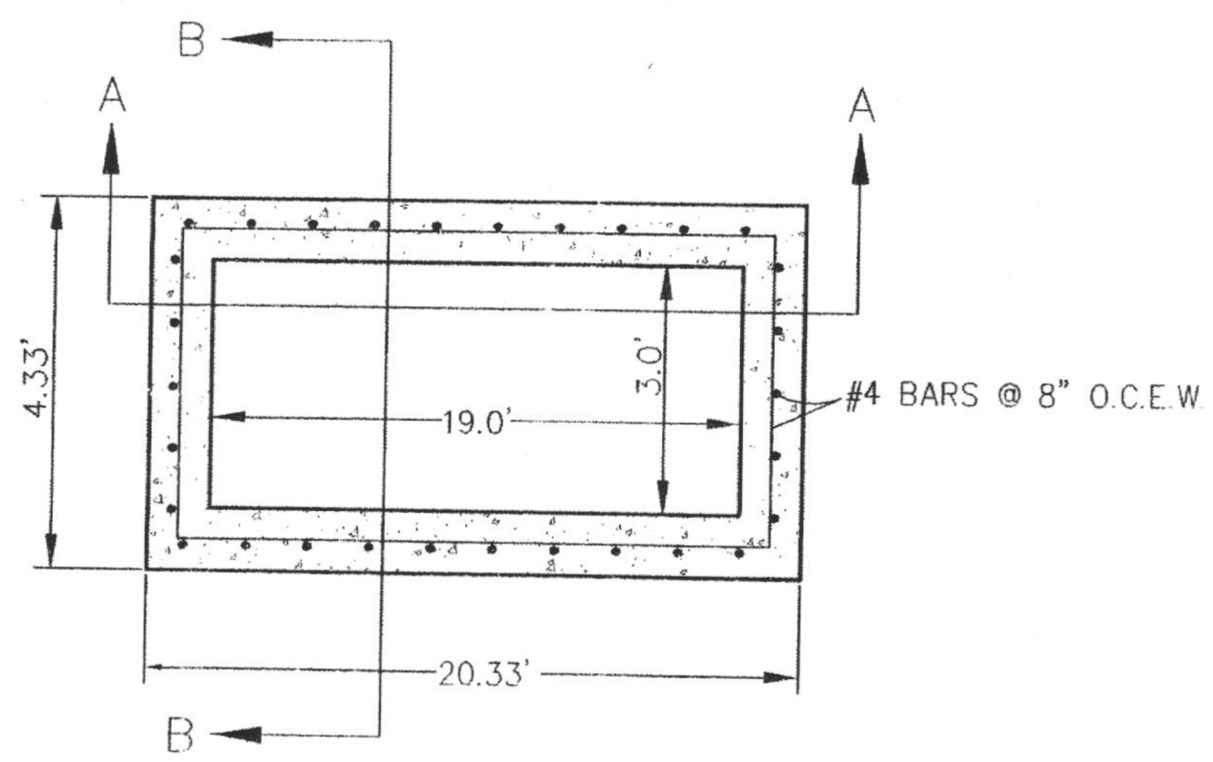
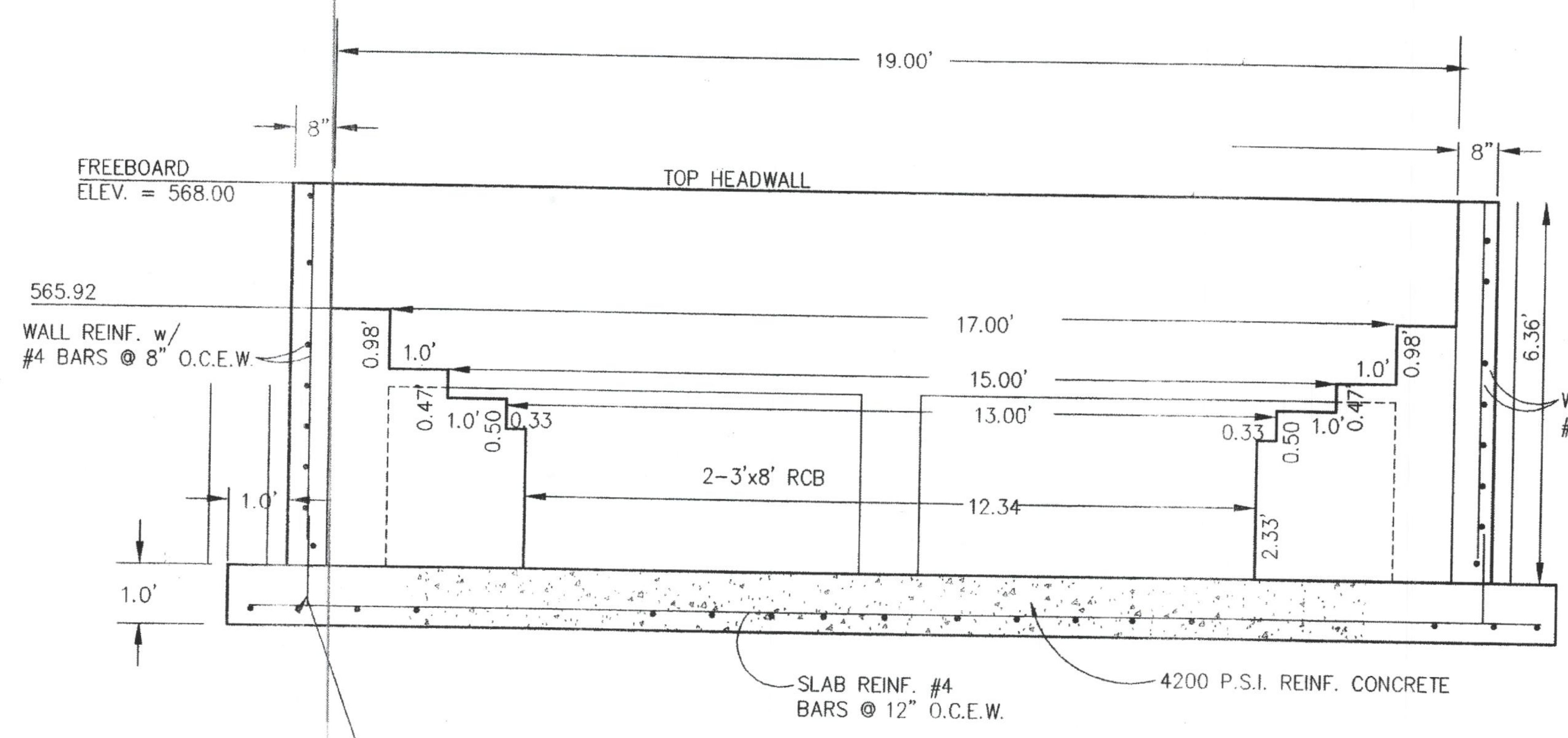
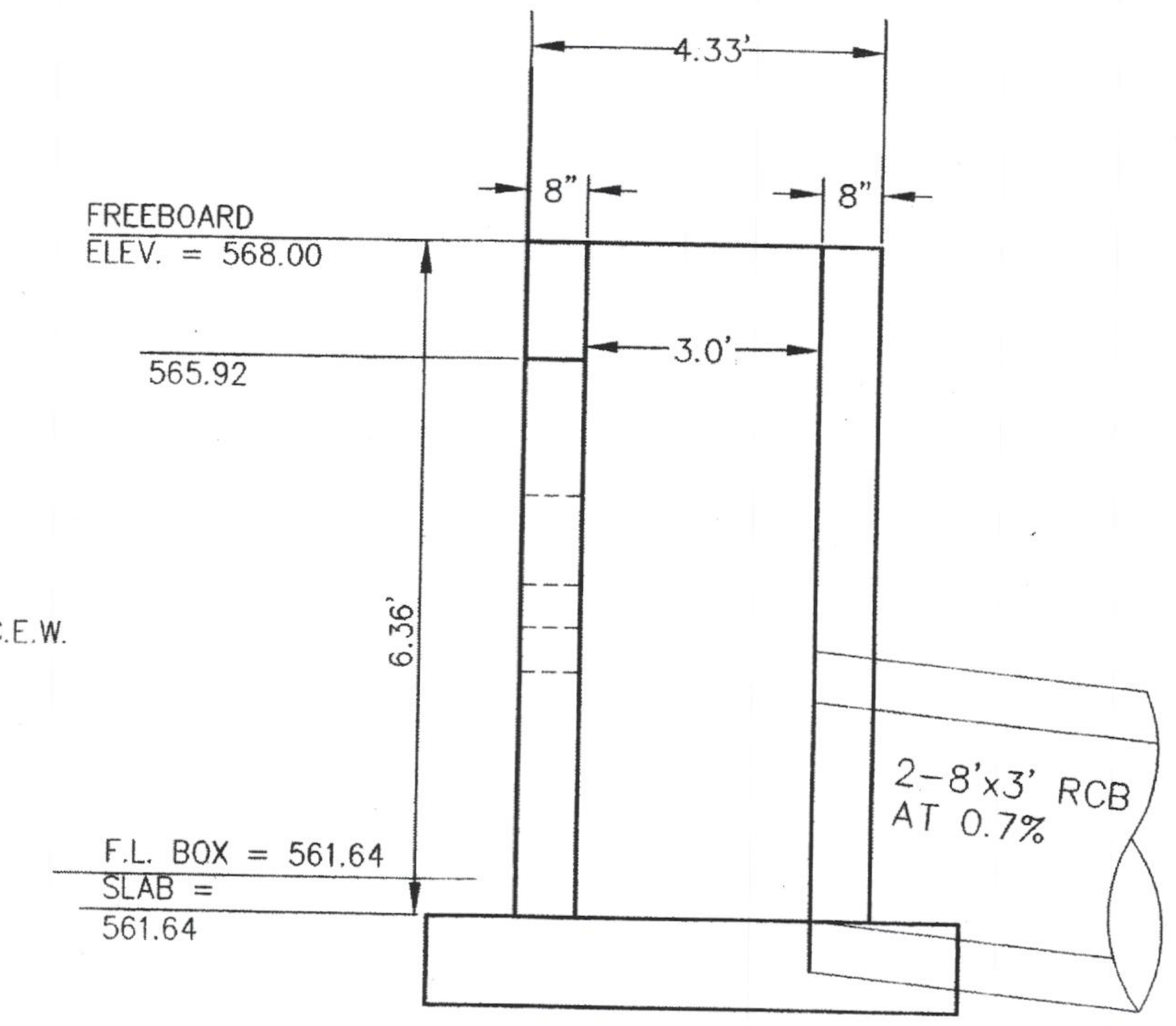


OUTFLOW STRUCTURE PLAN VIEW
NTS



SECTION "A-A"
NTS



SECTION "B-B"
NTS

Q'S FOR WIER RELEASE

UPSTREAM + OFFSITE - DOWNSTREAM = Qrel

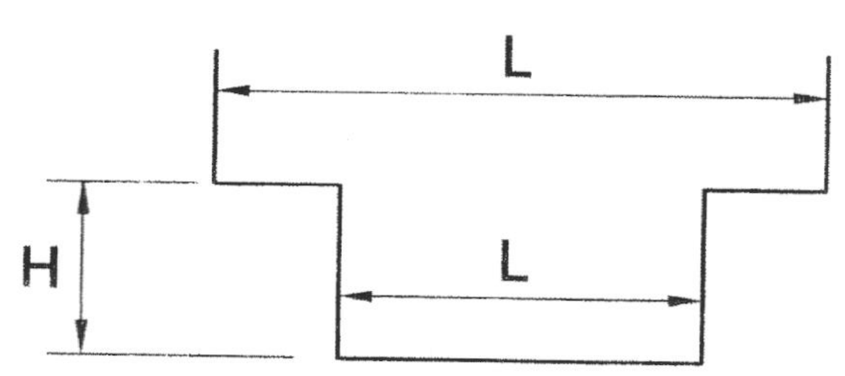
10 YR. STORM = 24.02 + 134.68 - 6.10 = 152.6 cfs

25 YR. STORM = 27.57 + 148.09 - 7.00 = 168.66 cfs

50 YR. STORM = 30.40 + 162.72 - 7.72 = 185.40 cfs

100 YR. STORM = 54.12 + 199.08 - 10.47 = 242.73 cfs

FLOW (cfs)	INTENSITY (in/hr)	L (ft)	H (ft)	Q_{100} (cfs)
Q_{10}	5.01	6.62	3	152.6
Q_{25}	5.75	7.76	0.45	168.66
Q_{50}	6.34	8.46	1	185.40
Q_{100}	9.8	9.54	0.6	242.73



MODIFIED RATIONAL METHOD DETENTION BASIN DESIGN						
ONE BIG POND						
PRESENT CONDITIONS ON SITE UPSTREAM			The develope conditions of offsite coming from the east =	cia = 29.02*.7*9.8	29.02 acres	199.08 cfs
	existing		developed			
Q = CIA						
AREA =	17.98	acres	17.98	acres		
C =	0.35		0.7			
T =	20	minutes	10	minutes		
I 100 =	8.6	in/hr	9.8	in/hr		
Q100 =	54.12	cfs	123.34	cfs	max. release =	54.12
FUTURE CONDITIONS 17.98 acres						
C =	0.7		C =	0.7		
T =	10		T =	20		
I 100 =	9.8	10 min	I 100 =	8.6	20 min	
Q100 =	123.34		Q100 =	108.24		
C =	0.7		C =	0.7		
T =	30		T =	40		
I 100 =	7.1	30 min	I 100 =	5.9	40 min	
Q100 =	89.36		Q100 =	74.26		
C =	0.7		C =	0.7		
T =	50		T =	60		
I 100 =	5	50 min	I 100 =	4.5	60 min	
Q100 =	62.93		Q100 =	56.64		
C =	0.7		C =	0.7		
T =	70		T =	80		
I 100 =	4	70 min	I 100 =	3.7	80 min	
Q100 =	50.34		Q100 =	46.57		
C =	0.7					
T =	90					
I 100 =	3.4	90 min				
Q100 =	42.79					
EXISTING CONDITIONS ON SITE UPSTREAM						
C =	0.35		C =	0.35		
T =	10		T =	20		
I 100 =	9.8	10 min	I 100 =	8.6	20 min	
Q100 =	61.67		Q100 =	54.12		
C =	0.35		C =	0.35		
T =	30		T =	40		
I 100 =	7.1	30 min	I 100 =	5.9	40 min	
Q100 =	44.68		Q100 =	37.13		
C =	0.35		C =	0.35		
T =	50		T =	60		
I 100 =	5	50 min	I 100 =	4.5	60 min	
Q100 =	31.47		Q100 =	28.32		
C =	0.35		C =	0.35		
T =	70		T =	80		
I 100 =	4	70 min	I 100 =	3.7	80 min	
Q100 =	25.17		Q100 =	23.28		
C =	0.35					
T =	90					
I 100 =	3.4	90 min				
Q100 =	21.40					
	inflow =		T*Q*60			
	outflow=		0.5*(T+Td)*Q*60	Td=DESIGN TIME=10		
			CFS	REQUIRED STORAGE CF		
10 min storm	inflow =		111009	4531		
	outflow=		106478			
20 min storm	inflow =		194831	35115	*	upstream
	outflow=		159716			
30 min storm	inflow =		241274	28319		
	outflow=		212955			
40 min storm	inflow =		267327	1133		
	outflow=		266194			
50 min storm	inflow =		283185	-36248		
	outflow=		319433			
60 min storm	inflow =		305840	-66832		
	outflow=		372671			
70 min storm	inflow =		317167	-108743		
	outflow=		425910			
80 min storm	inflow =		335291	-143858		
	outflow=		479149			
90 min storm	inflow =		346616	-185769		
	outflow=		532388			
developed condition of 29.02 acres OFFSITE						
C =	0.7		C =	0.7		
T =	10		T =	20		
I 100 =	9.8	10 min	I 100 =	8.6	20 min	
Q100 =	199.08		Q100 =	174.70		
C =	0.7		C =	0.7		
T =	30		T =	40		
I 100 =	7.1	30 min	I 100 =	5.9	40 min	
Q100 =	144.23		Q100 =	119.85		
C =	0.7		C =	0.7		
T =	50		T =	60		
I 100 =	5	50 min	I 100 =	4.5	60 min	
Q100 =	101.57		Q100 =	91.41		
C =	0.7		C =	0.7		
T =	70		T =	80		
I 100 =	4	70 min	I 100 =	3.7	80 min	
Q100 =	81.26		Q100 =	75.16		
C =	0.7					
T =	90					
I 100 =	3.4	90 min				
Q100 =	69.07					

199.08

Allow Total discharge out =
Allow Discharge in =

MODIFIED RATIONAL METHOD DETENTION BASIN DESIGN							
ONE BIG POND							
PRESENT CONDITIONS DOWNSTREAM							
	existing		developed				
Q = CIA							
AREA =	3.48	acres	3.48	acres			
C =	0.35		0.7				
T =	20	minutes	10	minutes			
I 100 =	8.6	in/hr	9.8	in/hr			
Q100 =	10.47	cfs	23.87	cfs	max. release = 10.47		
FUTURE CONDITIONS 3.48 acres							
C =	0.7		C =	0.7			
T =	10		T =	20			
I 100 =	9.8	10 min	I 100 =	8.6	20 min		
Q100 =	23.87		Q100 =	20.95			
C =	0.7		C =	0.7			
T =	30		T =	40			
I 100 =	7.1	30 min	I 100 =	5.9	40 min		
Q100 =	17.30		Q100 =	14.37			
C =	0.7		C =	0.7			
T =	50		T =	60			
I 100 =	5	50 min	I 100 =	4.5	60 min		
Q100 =	12.18		Q100 =	10.96			
C =	0.7		C =	0.7			
T =	70		T =	80			
I 100 =	4	70 min	I 100 =	3.7	80 min		
Q100 =	9.74		Q100 =	9.01			
C =	0.7						
T =	90						
I 100 =	3.4	90 min					
Q100 =	8.28						
EXISTING CONDITIONS							
C =	0.35		C =	0.35			
T =	10		T =	20			
I 100 =	9.8	10 min	I 100 =	8.6	20 min		
Q100 =	11.94		Q100 =	10.47			
C =	0.35		C =	0.35			
T =	30		T =	40			
I 100 =	7.1	30 min	I 100 =	5.9	40 min		
Q100 =	8.65		Q100 =	7.19			
C =	0.35		C =	0.35			
T =	50		T =	60			
I 100 =	5	50 min	I 100 =	4.5	60 min		
Q100 =	6.09		Q100 =	5.48			
C =	0.35		C =	0.35			
T =	70		T =	80			
I 100 =	4	70 min	I 100 =	3.7	80 min		
Q100 =	4.87		Q100 =	4.51			
C =	0.35						
T =	90						
I 100 =	3.4	90 min					
Q100 =	4.14						
	inflow =	T*Q*60					
	outflow=	0.5*(T+Td)*Q*60	Td=DESIGN TIME=10				
		CFS	REQUIRED STORAGE CF				
10 min storm	inflow =	21486	877				
	outflow=	20609					
20 min storm	inflow =	37709	6796	*	UPSTREAM		
	outflow=	30913					
30 min storm	inflow =	46698	5481				
	outflow=	41217					
40 min storm	inflow =	51741	219				
	outflow=	51521					
50 min storm	inflow =	54810	-7016				
	outflow=	61826					
60 min storm	inflow =	59195	-12935				
	outflow=	72130					
70 min storm	inflow =	61387	-21047				
	outflow=	82434					
80 min storm	inflow =	64895	-27843				
	outflow=	92739					
90 min storm	inflow =	67087	-35955				
	outflow=	103043					
					13.7	ac	up stream
					3.48	ac	down stream
					29.02	ac	offsite
storm 10 year	upstream		downstream		offsite		
C =	0.35		0.35		0.7		
T =	20		20		10		
I 100 =	5.01	20 min	5.01	20 min	6.63	10 min	
Q100 =	24.02		6.10		134.68		
storm 25 year	up		down		offsite		
C =	0.35		0.35		0.7		
T =	10		10		10		
I 100 =	5.75	20 min	5.75	20 min	7.29	10 min	
Q100 =	27.57		7.00		148.09		
storm 50year	up		down		offsite		
C =	0.35		0.35		0.7		
T =	10		10		10		
I 100 =	6.34	20 min	6.34	20 min	8.01	10 min	
Q100 =	30.40		7.72		162.72		

Overall
Allowable out of site (partial)
100year = (.46)(66.22)(8.3) =
253.57

IN = 100year
(.59)(66.22)(9.8) =
382.88

Non Detained subtract from allowable out and this is allowable out of pond

	1.08
XI	5.39
VI	21.55
I	1.47
OS-4	45.67
II	4.90
VII	21.17
XIII	3.63
XII	9.31
VIII	3.72
OS-7	3.72
OS-8	6.27
V	
	128.18

out of pond = 125.39
253.57-128.18 = 125.39
INTO pond = 255.70
382.88-128.18 =

Store the diff
IN = 255.70
OUT ALLOW = 125.39

need to develope an avg. C for actual into pond and out of pond to calculate diff. conditions T=10,15,20,25 etc.

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ENGINEERING • PROJECT MANAGEMENT • SURVEYING
2235 RIDGE RD., # 200 ROCKWALL, TEXAS 75087
PHONE: (972)771-9004 FAX: (972)771-9005

OUTFALL STRUCTURE DETAIL

ROCKWALL DISTRIBUTION COMPLEX - PH. I
CITY OF ROCKWALL, ROCKWALL COUNTY, TEXAS

REVISION	
- PER CITY COMMENTS	5/28/02

CHECKED	W.L.D.
DRAWN	A.L.
DATE	04/02
DRAWING	0033POND-DET
PROJECT	0033
	6B