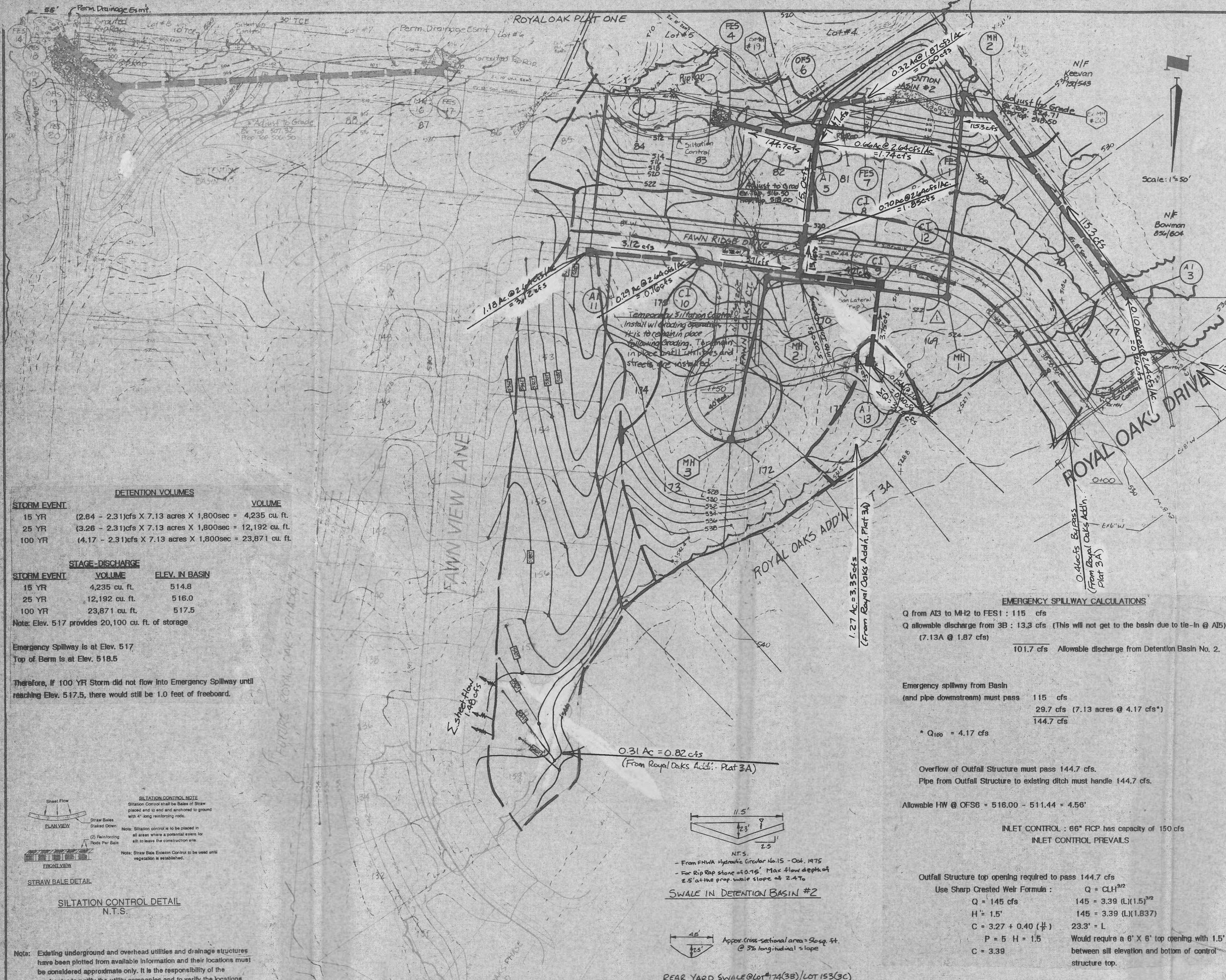


Curve Data Δ
 R = 150.00'
 Δ = 47°46'00"
 L = 125.053'
 T = 66.419'
 PC = 1463.77
 PT = 2+88.83

Remove existing Flared End Section
 Construct Area Inlet

DRAINAGE AREAS



DETENTION VOLUMES

STORM EVENT	VOLUME
15 YR (2.64 - 2.31)cfs X 7.13 acres X 1,800sec =	4,235 cu. ft.
25 YR (3.26 - 2.31)cfs X 7.13 acres X 1,800sec =	12,192 cu. ft.
100 YR (4.17 - 2.31)cfs X 7.13 acres X 1,800sec =	23,871 cu. ft.

STAGE-DISCHARGE

STORM EVENT	VOLUME	ELEV. IN BASIN
15 YR	4,235 cu. ft.	514.8
25 YR	12,192 cu. ft.	516.0
100 YR	23,871 cu. ft.	517.5

Note: Elev. 517 provides 20,100 cu. ft. of storage

Emergency Spillway is at Elev. 517
 Top of Berm is at Elev. 518.5

Therefore, if 100 YR Storm did not flow into Emergency Spillway until reaching Elev. 517.5, there would still be 1.0 feet of freeboard.

EMERGENCY SPILLWAY CALCULATIONS

Q from A13 to MH2 to FES1 : 115 cfs
 Q allowable discharge from 3B : 13.3 cfs (This will not get to the basin due to tie-in @ A15)
 (7.13A @ 1.87 cfs)

101.7 cfs Allowable discharge from Detention Basin No. 2

Emergency spillway from Basin
 (and pipe downstream) must pass

115 cfs
29.7 cfs (7.13 acres @ 4.17 cfs*)
144.7 cfs

* Q₁₀₀ = 4.17 cfs

Overflow of Outfall Structure must pass 144.7 cfs.
 Pipe from Outfall Structure to existing ditch must handle 144.7 cfs.

Allowable HW @ OFS6 = 516.00 - 511.44 = 4.56'
 INLET CONTROL : 66" RCP has capacity of 150 cfs
 INLET CONTROL PREVAILS

Outfall Structure top opening required to pass 144.7 cfs
 Use Sharp Crested Weir Formula : $Q = CLH^{3/2}$

Q = 145 cfs	145 = 3.39 (L)(1.5) ^{3/2}
H = 1.5'	145 = 3.39 (L)(1.837)
C = 3.27 + 0.40 (H/L)	23.3' = L
P = 5 H = 7.5	Would require a 6' X 6' top opening with 1.5' between sill elevation and bottom of control structure top.
C = 3.39	

STORMWATER DETENTION CALCULATIONS

RUNOFF FACTORS PER CITY OF O'FALLON SUBDIVISION ORDINANCE

25yr - 30 min. storm
 Parks/greenpace: 2.31 cfs/acre
 10,000 sq. ft. residential: 3.26 cfs/acre

15yr - 30 min. storm
 Parks/greenpace: 1.87 cfs/acre
 10,000 sq. ft. residential: 2.64 cfs/acre

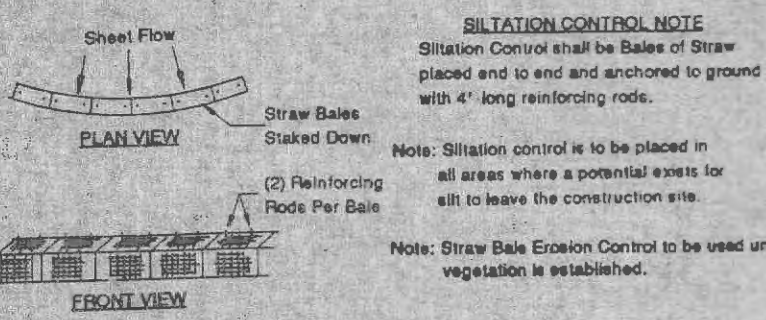
STORAGE VOLUME REQUIRED
 7.13 acres @ (3.26 - 2.31) cfs/acre x 30 min. x 60 sec/min. = 12,192 cu. ft.

SEDIMENT STORAGE REQUIRED
 C = 0.60
 Area = 7.13 acres
 160 cu. ft./acre x 7.13 acres
 Volume req'd. = 1070 cu. ft.

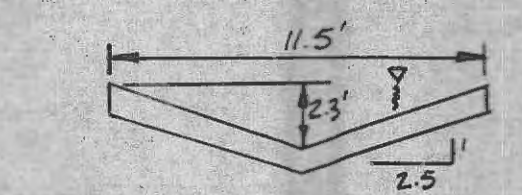
ALLOWABLE RELEASE RATE
 7.13 acres @ 1.87 cfs/acre = 13.3 cfs
 (Prior to development, site is "Parks/Greenpace" @ 1.87 cfs/acre)

SIZING OF LOW FLOW PIPE
 Allowable release rate: Q = 101.7 cfs
 Use orifice formula: $Q = ca\sqrt{2gh}$
 Where: Q = allowable release rate
 c = orifice characteristics coefficient of 0.60
 a = Area of orifice (low flow pipe)
 g = acceleration due to gravity (32.2)
 h = height of detained water above center of orifice (assume 3.25')

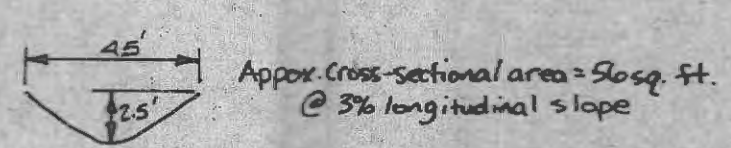
101.7 = 0.60 (a)√(32.2)(3.25)	Actual release rate using
a = 11.716 ft ²	42" low flow pipe
a = πr ²	Q = 0.60 (π)(1.75) ² √(32.2)(3.25)
r = 1.93'	Q = 83.5 cfs
d = 3.86'	83.5 cfs < 101.7 cfs - therefore ok
d = 48.38"	
therefore use 42" low flow pipe	
STORAGE VOLUME PROVIDED	20,100 cu. ft.
STORAGE VOLUME REQUIRED	13,262 cu. ft.
EXCESS VOLUME	6,838 cu. ft.



SILTATION CONTROL DETAIL
 N.T.S.



SWALE IN DETENTION BASIN #2



REAR YARD SWALE @ LOT #174(3B)/LOT 153(3C)
 N.T.S.

Note: Existing underground and overhead utilities and drainage structures have been plotted from available information and their locations must be considered approximate only. It is the responsibility of the contractor to notify the utility companies and to verify the locations of existing utilities before actual construction begins. Any discrepancies noted must be reported to the Engineer immediately.