

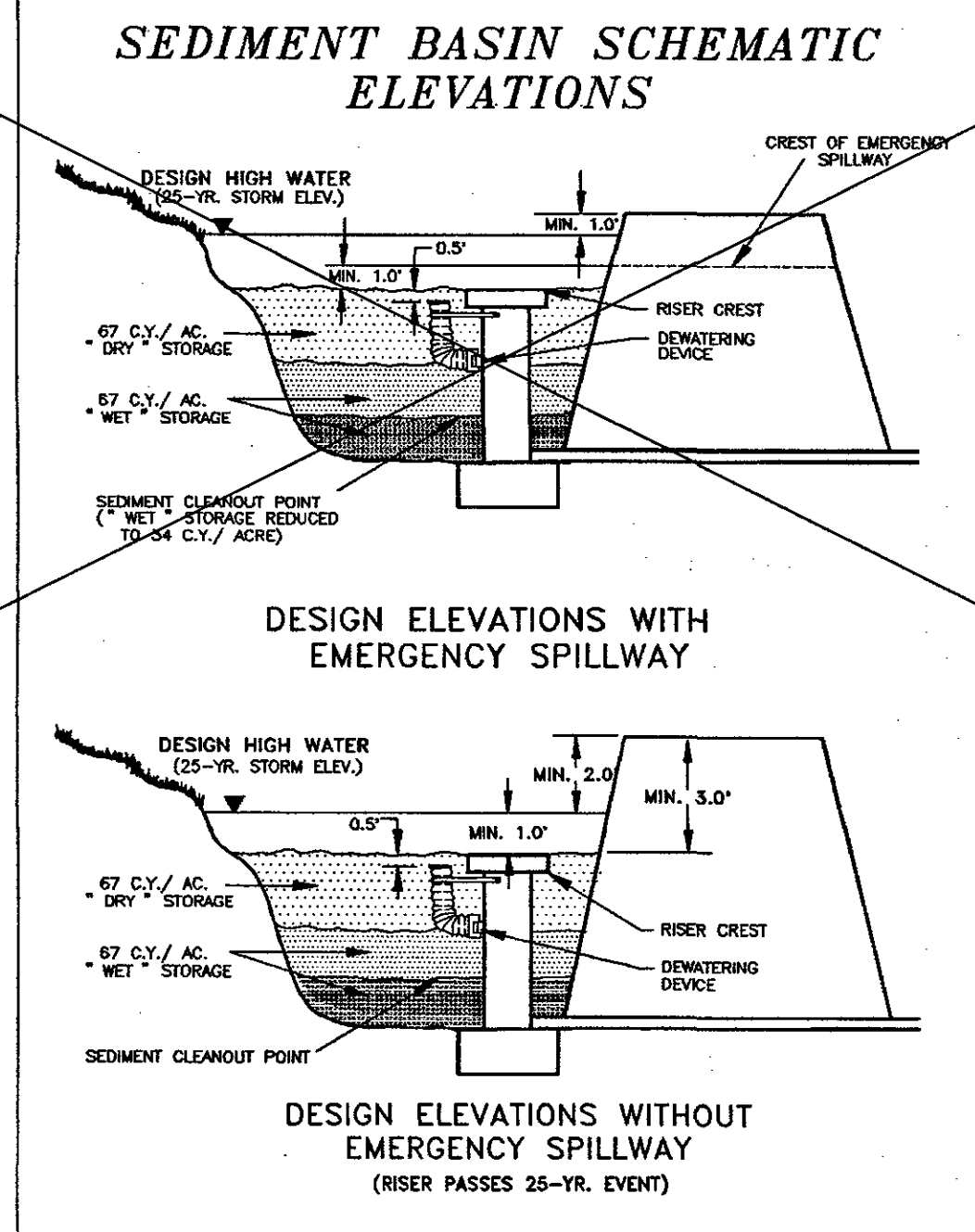


TABLE 3.14-D

CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE DESIGN TABLE

Riser Diam., in.	Cylinder		Height, inches	Minimum Size Support Bar	Minimum Top	
	Diameter, inches	Thickness, gauge			Thickness	Stiffener
12	18	16	6	#6 Rebar or 1 1/4 x 3/16 angle	16 ga. (F&C)	-
15	21	16	7	"	"	"
18	27	16	8	"	"	"
21	30	16	11	"	16 ga.(C), 14 ga.(F)	-
24	36	16	13	"	"	"
27	42	16	15	"	"	"
36	54	14	17	#8 Rebar	14 ga.(C), 12 ga.(F)	-
42	60	16	19	"	"	"
48	72	16	21	1 1/4" pipe or 1 1/4 x 3/16 angle	14 ga.(C), 10 ga.(F)	-
54	78	16	25	"	"	"
60	90	14	29	1 1/4" pipe or 1 1/4 x 3/16 angle	12 ga.(C), 8 ga.(F)	-
66	96	14	33	2" pipe or 2 x 2 x 3/16 angle	12 ga.(C), 8 ga.(F) w/stiffener	2 x 2 x 1/4 angle
72	102	14	36	"	"	2 1/2 x 2 1/4 x 1/4 angle
78	114	14	39	2 1/2" pipe or 2 1/2 x 2 1/4 x 1/4 angle	"	"
84	120	12	42	2 1/2" pipe or 2 1/2 x 2 1/4 x 1/4 angle	"	2 1/2 x 2 1/4 x 5/16 angle

Note: The criterion for sizing the cylinder is that the area between the inside of the cylinder and the outside of the riser is equal to or greater than the area inside the riser. Therefore, the above table is invalid for use with concrete pipe risers.

Note: Corrugation for 12"-36" pipe measures 2 1/8" x 1/8"; for 42"-84" the corrugation measures 5" x 1" or 8" x 1".

Note: C = corrugated; F = flat.

Source: Adapted from USDA-SCS and Carl M. Henshaw Drainage Products Information.

SEDIMENT BASIN DESIGN SUMMARY	
BASIN #1	
DRAINAGE AREA (AC)	7.90
WET STORAGE:	
REQUIRED VOLUME (67 CY/AC)	529
PROVIDED VOLUME (CY)	625
DEWATERING ORIFICE INV. ELEV. (FT)	813.00
CLEANOUT VOLUME (33 CY/AC)	436
CLEANOUT ELEVATION (FT)	811.50
DRY STORAGE:	
REQUIRED VOLUME (67 CY/AC)	529
PROVIDED VOLUME (CY)	1,109
RISER CREST ELEVATION (FT)	816.50
DIA. OF DEWATERING ORIFICE (IN)	6.0
DIA. OF FLEXIBLE TUBING (IN)	8.0
BASIN SHAPE:	
L/WE	0.33
BAFFLES REQUIRED (YES/NO)	YES
BAFFLE LENGTH (FT)	115
RUNOFF:	
Q2 (CFS) = 0.35 * 5.01 * A	13.85
Q25 (CFS) = 0.35 * 7.44 * A	20.57
PRINCIPAL SPILLWAY:	
EMERGENCY SPILLWAY (YES/NO)	NO
REQUIRED SPILLWAY CAPACITY (CFS)	20.57
RISER DIAMETER (IN)	60 CONC
ACTUAL HEAD (FT)	1.00
BARREL LENGTH (FT)	66
HEAD ON BARREL (FT)	4.00
BARREL DIAMETER (IN)	36 RCP
TRASH RACK DIAMETER (IN)	90
TRASH RACK HEIGHT (IN)	29
DESIGN HIGH WATER (FT)	817.50
EMERGENCY SPILLWAY DESIGN:	
REQUIRED CAPACITY (Q25-Qp)	N/A
BOTTOM WIDTH (FT)	N/A
FLOW DEPTH (FT)	N/A
EXIT CHANNEL SLOPE (%)	N/A
EXIT CHANNEL LENGTH (FT)	N/A
FINAL DESIGN ELEVATIONS	
TOP OF DAM (FT)	820.00
DESIGN HIGHWATER (FT)	817.50
PRINCIPAL SPILLWAY CREST (FT)	816.50
DEWATERING ORIFICE INVERT (FT)	813.00
CLEAN-OUT ELEVATION (FT)	811.50
BOTTOM ELEVATION (FT)	809.00

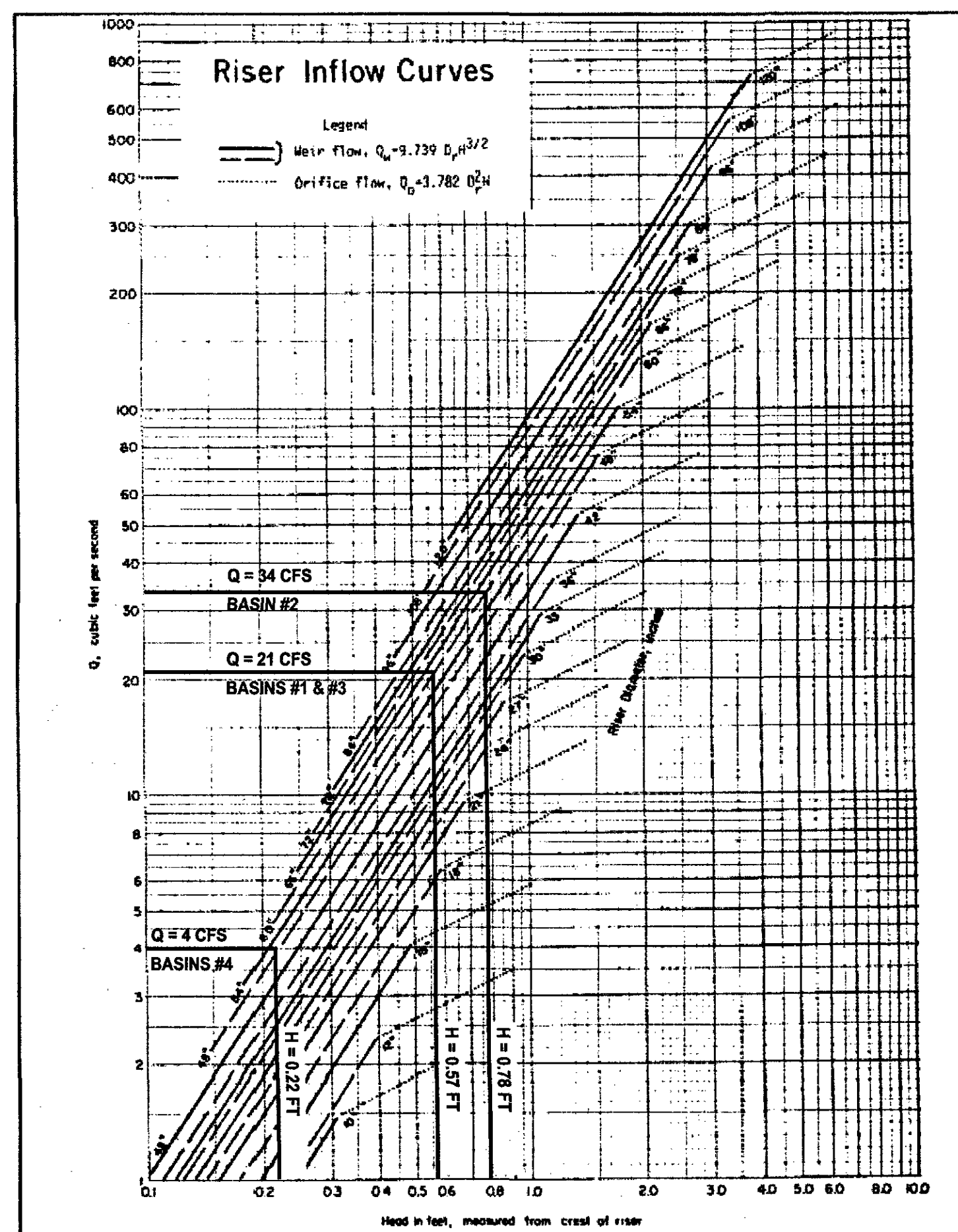
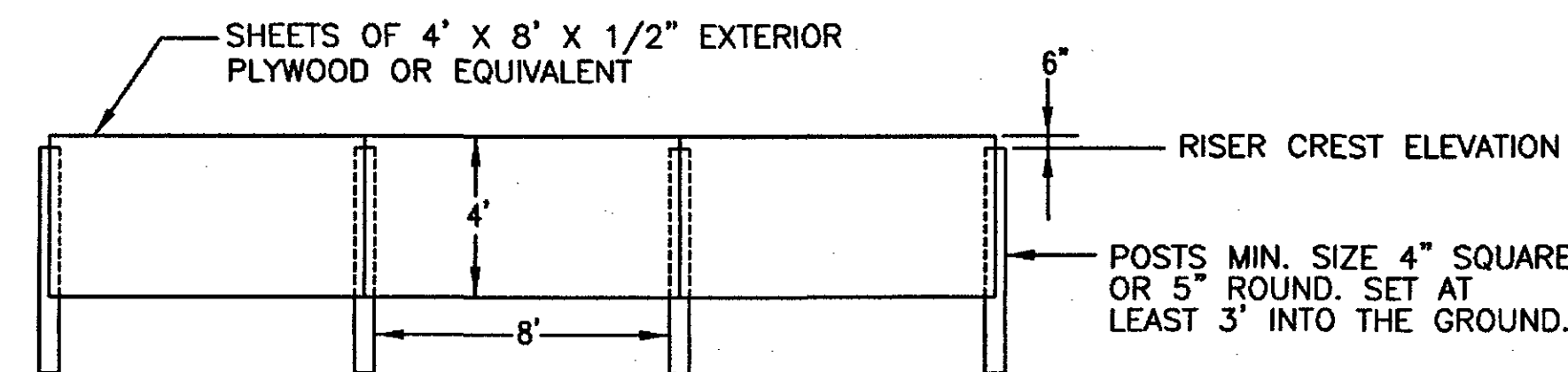
SEDIMENT BASIN DESIGN SUMMARY	
BASIN #2	
DRAINAGE AREA (AC)	12.99
WET STORAGE:	
REQUIRED VOLUME (67 CY/AC)	870
PROVIDED VOLUME (CY)	880
DEWATERING ORIFICE INV. ELEV. (FT)	823.00
CLEANOUT VOLUME (33 CY/AC)	440
CLEANOUT ELEVATION (FT)	820.50
DRY STORAGE:	
REQUIRED VOLUME (67 CY/AC)	870
PROVIDED VOLUME (CY)	917
RISER CREST ELEVATION (FT)	826.50
DIA. OF DEWATERING ORIFICE (IN)	8.0
DIA. OF FLEXIBLE TUBING (IN)	10.0
BASIN SHAPE:	
L/WE	0.80
BAFFLES REQUIRED (YES/NO)	YES
BAFFLE LENGTH (FT)	75
RUNOFF:	
Q2 (CFS) = 0.35 * 5.01 * A	22.78
Q25 (CFS) = 0.35 * 7.44 * A	33.83
PRINCIPAL SPILLWAY:	
EMERGENCY SPILLWAY (YES/NO)	NO
REQUIRED SPILLWAY CAPACITY (CFS)	33.83
RISER DIAMETER (IN)	60 CONC
ACTUAL HEAD (FT)	1.00
BARREL LENGTH (FT)	75
HEAD ON BARREL (FT)	6.00
BARREL DIAMETER (IN)	36 RCP
TRASH RACK DIAMETER (IN)	90
TRASH RACK HEIGHT (IN)	29
DESIGN HIGH WATER (FT)	827.50
EMERGENCY SPILLWAY DESIGN:	
REQUIRED CAPACITY (Q25-Qp)	N/A
BOTTOM WIDTH (FT)	N/A
FLOW DEPTH (FT)	N/A
EXIT CHANNEL SLOPE (%)	N/A
EXIT CHANNEL LENGTH (FT)	N/A
FINAL DESIGN ELEVATIONS	
TOP OF DAM (FT)	830.00
DESIGN HIGHWATER (FT)	827.50
PRINCIPAL SPILLWAY CREST (FT)	826.50
DEWATERING ORIFICE INVERT (FT)	823.00
CLEAN-OUT ELEVATION (FT)	820.50
BOTTOM ELEVATION (FT)	817.00

SEDIMENT BASIN DESIGN SUMMARY	
BASIN #3	
DRAINAGE AREA (AC)	8.03
WET STORAGE:	
REQUIRED VOLUME (67 CY/AC)	538
PROVIDED VOLUME (CY)	576
DEWATERING ORIFICE INV. ELEV. (FT)	838.25
CLEANOUT VOLUME (33 CY/AC)	269
CLEANOUT ELEVATION (FT)	837.13
DRY STORAGE:	
REQUIRED VOLUME (67 CY/AC)	538
PROVIDED VOLUME (CY)	600
RISER CREST ELEVATION (FT)	840.00
DIA. OF DEWATERING ORIFICE (IN)	6.0
DIA. OF FLEXIBLE TUBING (IN)	8.0
BASIN SHAPE:	
L/WE	0.45
BAFFLES REQUIRED (YES/NO)	YES
BAFFLE LENGTH (FT)	60
RUNOFF:	
Q2 (CFS) = 0.35 * 5.01 * A	14.08
Q25 (CFS) = 0.35 * 7.44 * A	20.91
PRINCIPAL SPILLWAY:	
EMERGENCY SPILLWAY (YES/NO)	NO
REQUIRED SPILLWAY CAPACITY (CFS)	20.91
RISER DIAMETER (IN)	60 CONC
ACTUAL HEAD (FT)	1.00
BARREL LENGTH (FT)	126
HEAD ON BARREL (FT)	4.25
BARREL DIAMETER (IN)	36 RCP
TRASH RACK DIAMETER (IN)	90
TRASH RACK HEIGHT (IN)	29
DESIGN HIGH WATER (FT)	839.75
EMERGENCY SPILLWAY DESIGN:	
REQUIRED CAPACITY (Q25-Qp)	N/A
BOTTOM WIDTH (FT)	N/A
FLOW DEPTH (FT)	N/A
EXIT CHANNEL SLOPE (%)	N/A
EXIT CHANNEL LENGTH (FT)	N/A
FINAL DESIGN ELEVATIONS	
TOP OF DAM (FT)	842.00
DESIGN HIGHWATER (FT)	839.75
PRINCIPAL SPILLWAY CREST (FT)	840.00
DEWATERING ORIFICE INVERT (FT)	838.25
CLEAN-OUT ELEVATION (FT)	837.13
BOTTOM ELEVATION (FT)	834.00

SEDIMENT BASIN DESIGN SUMMARY	
BASIN #4	
DRAINAGE AREA (AC)	1.43
WET STORAGE:	
REQUIRED VOLUME (67 CY/AC)	96
PROVIDED VOLUME (CY)	96
DEWATERING ORIFICE INV. ELEV. (FT)	826.94
CLEANOUT VOLUME (33 CY/AC)	48
CLEANOUT ELEVATION (FT)	826.47
DRY STORAGE:	
REQUIRED VOLUME (67 CY/AC)	96
PROVIDED VOLUME (CY)	172
RISER CREST ELEVATION (FT)	828.50
DIA. OF DEWATERING ORIFICE (IN)	4.0
DIA. OF FLEXIBLE TUBING (IN)	6.0
BASIN SHAPE:	
L/WE	0.14
BAFFLES REQUIRED (YES/NO)	NO
BAFFLE LENGTH (FT)	N/A
RUNOFF:	
Q2 (CFS) = 0.35 * 5.01 * A	2.51
Q25 (CFS) = 0.35 * 7.44 * A	3.72
PRINCIPAL SPILLWAY:	
EMERGENCY SPILLWAY (YES/NO)	NO
REQUIRED SPILLWAY CAPACITY (CFS)	3.72
RISER DIAMETER (IN)	60 CONC
ACTUAL HEAD (FT)	0.22
BARREL LENGTH (FT)	126
HEAD ON BARREL (FT)	0.94
BARREL DIAMETER (IN)	18 RCP
TRASH RACK DIAMETER (IN)	90
TRASH RACK HEIGHT (IN)	29
DESIGN HIGH WATER (FT)	828.72
EMERGENCY SPILLWAY DESIGN:	
REQUIRED CAPACITY (Q25-Qp)	N/A
BOTTOM WIDTH (FT)	N/A
FLOW DEPTH (FT)	N/A
EXIT CHANNEL SLOPE (%)	N/A
EXIT CHANNEL LENGTH (FT)	N/A
FINAL DESIGN ELEVATIONS	
TOP OF DAM (FT)	830.50
DESIGN HIGHWATER (FT)	828.72
PRINCIPAL SPILLWAY CREST (FT)	828.50
DEWATERING ORIFICE INVERT (FT)	826.94
CLEAN-OUT ELEVATION (FT)	826.47
BOTTOM ELEVATION (FT)	826.00

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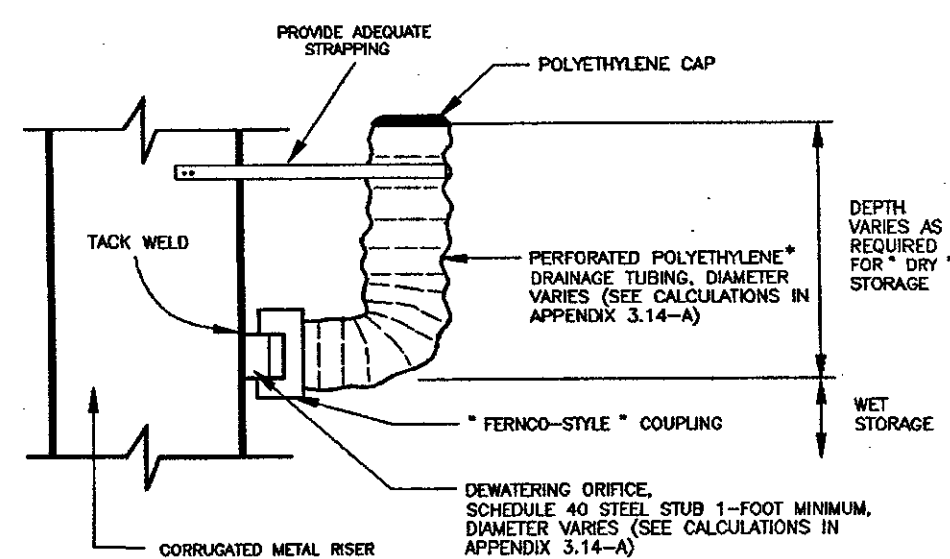
PLYWOOD BAFFLE DETAIL



Source: USDA-SCS

Plate 3.14-B

RECOMMENDED DEWATERING SYSTEM FOR SEDIMENT BASINS



NOTE: WITH CONCRETE RISER, USE PVC SCHEDULE 40 STUB FOR DEWATERING ORIFICE

*DRAINAGE TUBING SHALL COMPLY WITH ASTM F667 AND AASHTO M294

BASIN #1 STAGE STORAGE

Elevation (ft)	Area (ft ²)	Incremental Vol (cu. Yds)	Cumulative Vol(cu. Yds)
809	2,570	0	0
810	3,255	108	108
812	4,981	305	412
814	7,041	445	857
816	9,311	605	1,462
816.5	9,655	175	1,638

BASIN #2 STAGE STORAGE

Elevation (ft)	Area (ft ²)	Incremental Vol (cu. Yds)	Cumulative Vol(cu. Yds)
817	2,700	0	0
818	3,189	109	109
820	3,850	260	369
822	5,355	341	710
824	6,390	435	1,145
826	7,480	513	1,658
826.5	7,618	140	1,797

BASIN #3 STAGE STORAGE

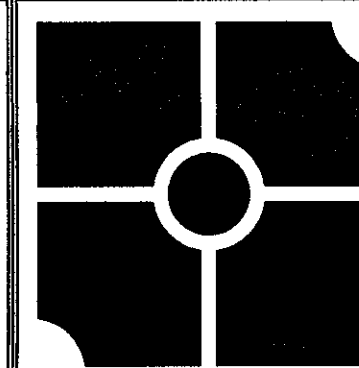
Elevation (ft)	Area (ft ²)	Incremental Vol (cu. Yds)	Cumulative Vol(cu. Yds)
834	3,650	0	0
836	5,799	350	350
838	8,445	527	877
838.75	9,596	250	1,127

BASIN #4 STAGE STORAGE

Elevation (ft)	Area (ft ²)	Incremental Vol (cu. Yds)	Cumulative Vol(cu. Yds)
826	2,100	0	0
828	3,486	207	207
828.5	3,848	68	274

TEMPORARY SEDIMENT TRAP DATA

TEMPORARY SEDIMENT TRAP DATA			(10)			BOTTOM DIMS.											
ST TRAP #	DRAINAGE AREA (ACRES)	DRY/WET STORAGE (CY)		WEIR LENGTH (FT.)	WEIR HEIGHT (FT.)	EMBANKMENT WIDTH (FT.)	BERM HEIGHT (FT.)	TRAP WIDTH (FT.)	TRAP LENGTH (FT.)	TRAP DEPTH (FT.)	BOTTOM TRAP INV. ELEV.	EXCAVATED WET DEPTH	OUTLET STONE BASE ELEV.	CLEANOUT ELEV.	DRY DEPTH	STONE CREST ELEV.	BERM EMBANK. ELEV.
		REQ'D	DESIGN														
		WET/DRY	WET/DRY														
1	1.85	124/124	146/131	12.0'	3.5	4.0'	4.5'	39'	73'	3.0'	822	1.75'	823.75'	822.88'	1.25'	825	826

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08/25/2017
PROFESSIONAL ENGINEERKENNEDY SHORES
SUBDIVISION DEVELOPMENT PLAN
Tax # 0510001500
Franklin County, VirginiaREVISIONS:
 2/10/2017 - 1ST SUB COMMENTS
 3/21/2017 - 2ND SUB COMMENTS
 4/14/2017 - 3RD SUB COMMENTS
 6/23/2017 - FIELD REVISION #1
 11/8/2017 - FIELD REVISION #2
 6/4/2017 - FIELD REVISION #3
 8/9/2017 - FIELD REVISION #4
 8/25/2017 - FIELD REVISION #5DESIGNED BY: JMM/SRB
 DRAWN BY: JMM/JLK
 CHECKED BY: SRBDATE:
6 JANUARY, 2017
 SHEET TITLE:
SEDIMENT BASIN
COMPUTATIONS AND
DETAILS
 SCALE:
AS SHOWN
 SHEET NO.

C24