Fox & Cole
CONSULTING ENGINEERS
Planning
Civil Engineering
Surveying
5000 Cedar Plaza Parkway
Suite 301
Saint Louis, Missouri 63128
Telephone (314) 849-6900

HYDRAULIC DATA

Drawn By:	Checked By:	Project Number	Sheet Number
VLB		Village 2 Pheasant Point 84-006	1 of 6
Date: 5-22-85			
Revisions:			

Structure Upper	Structure Lower	LENGTH	AREA ACRES	I.P.	Q.	TOTAL Q.	PIPE SIZE	CONST. GRADE	V.	V_h	Q. V_h	HYD. GRADE	FRICT. LOSS	FLOW LINE UPPER ELEV.	FLOW LINE LOWER ELEV.	TOP OF STRUCTURE UPPER ELEV.	TOP OF STRUCTURE LOWER ELEV.	FREE BOARD	HYDRAULIC ELEVATION UPPER	HYDRAULIC ELEVATION LOWER	REMARKS
17	14	50	0.71	3.0	2.13	2.13	12	.0100	2.71	.11	.24	.0036	.18	496.47	495.97	502.00	502.00	3.48	498.52	498.34	
16	15	34	0.53	3.0	1.59	1.59	15	.0100	1.30	.03	.04	.0006	.02	496.67	496.33	501.68	501.68	3.22	498.46	498.44	
15	14	36	0.21	3.0	0.63	2.22	15	.0100	1.81	.05	.11	.0012	.04	496.33	495.97	501.68	502.00	3.24	498.38	498.34	
14	13	47	-	-	-	4.35	15	.0100	3.54	.20	.85	.0045	.21	495.97	495.50	502.00	503.00	3.66	498.11	497.90	
13	12	100	0.25	3.0	0.75	5.10	15	.0100	4.16	.27	1.37	.0062	.62	495.50	494.50	503.00	—	5.10	497.62	497.00	HW in BA.
10	9	82	0.83	3.0	2.49	2.49	12	.0122	3.17	.16	.39	.0049	.40	496.50	495.50	501.00	501.42	3.50	497.50	496.50	
9	8	53	.25	3.0	*0.75	2.99	12	.0172	3.81	.23	.67	.0070	.37	495.50	493.00	501.42	497.53	4.92	494.37	494.00	
8	7	34	0.71	3.0	2.13	5.12	15	.0631	4.17	.27	1.38	.0063	.21	493.00	490.86	497.53	497.53	3.53	492.32	492.11	
7	6	32	0.86	3.0	2.58	7.70	15	.0631	6.27	.61	4.71	.0142	.45	490.86	488.84	497.53	494.20	5.42	491.18	490.73	
6	5	45	0.06	3.0	*0.18	8.13	18	.0631	4.60	.33	2.67	.0060	.27	488.84	486.00	494.20	491.75	3.47	490.39	490.12	
5	4	51	0.75	3.0	2.25	10.38	18	.0235	5.87	.54	5.56	.0098	.50	486.00	484.80	491.75	490.84	1.63	489.75	489.25	
4	3	34	0.61	3.0	1.83	12.21	18	.0235	6.91	.74	9.05	.0135	.46	484.80	484.00	490.84	490.84	1.59	488.59	488.13	
3	2	133	1.04	3.0	3.12	15.33	18	.0376	8.69	1.17	17.91	.0213	2.83	479.50	474.50	490.84	480.00	2.71	487.06	484.23	
2	1	20	-	-	-	15.33	24	.0100	4.88	.37	5.67	.0046	.09	470.20	470.00	480.00	—	-4.23	483.59	483.50	100 yr Flood Plain
					*.25 cfs By pass to C I 6																

Fox & Cole
Planning
Civil Engineering
Surveying
4579 Chestnut Park Plaza
Saint Louis, Missouri 63129
Telephone (314) 894-3300

HYDRAULIC DATA

VLB

DATE: 5-22-85

REVISIONS:

Village of Pheasant Point
84-006

BEND LOSS = COEFF. X V_h

JUNCTION LOSS = $\frac{Q^{V}h_1 - (Q^{V}h_2 + Q^{V}h_3) \times 1.33}{Q_T}$

	BEND		JUNCTION	TOTAL	
@ 1	N/A		N/A	0	@ 1
2	60°	.55 × 1.17 = .64	0	.64	2
3	35°	.40 × .74 = .30	$\frac{12.91 - 9.05}{15.33} \times 1.33 = .77$	1.07	3
4	55°	.52 × .54 = .28	$\frac{9.05 - 5.56}{12.21} \times 1.33 = .38$	.66	4
5	0°		$\frac{5.56 - 2.62}{10.38} \times 1.33 = .37$	.37	5
6	60°	.55 × .61 = .34	0	.34	6
7	45°	.47 × .27 = .13	$\frac{4.71 - 1.38}{2.70} \times 1.33 = .58$	.71	7
8	30°	.35 × .23 = .08	$\frac{1.38 - .67}{5.12} \times 1.33 = .18$	.26	8
9	90°	.70 × .16 = .11	$\frac{.67 - .39}{2.98} \times 1.33 = .12$	.23	9
10	N/A		0	0	10
12	N/A		N/A	0	12
13	90°	.70 × .20 = .14	$\frac{1.37 - .95}{5.10} \times 1.33 = .14$	.28	13
14	90° (17)	.70 × .11 = .08	$\frac{.85 - (.11 + .24)}{2.35} \times 1.33 = .15$	.23	14
15	70°	.60 × .03 = .02	$\frac{.11 - .04}{2.22} \times 1.33 = .04$	.06	15
16	N/A		N/A	0	16
17	N/A		N/A	0	17

HYDRAULIC DATA

Drawn By:	Checked By:	Project Number	Sheet Number
Date:			3 of 6
Revisions:			

Structure Upper	Structure Lower	LENGTH	AREA ACRES	P.I.	Q.	TOTAL Q.	PIPE SIZE	CONST. GRADE	V.	V_h	Q. V_h	HYD. GRADE	FRICT. LOSS	FLOW LINE UPPER ELEV.	FLOW LINE LOWER ELEV.	TOP OF STRUCTURE UPPER ELEV.	TOP OF STRUCTURE LOWER ELEV.	FREE BOARD	HYDRAULIC ELEVATION UPPER	HYDRAULIC ELEVATION LOWER	REMARKS
28	27	72	.50	3.0	1.50	1.50	12	.0424	1.91	.06	.08	.0018	.13	514.00	511.95	519.50	519.75	4.50	Top Pipe 515.00	Top Pipe 512.95	
27	26	22	-	-	-	1.50	12	.0118	1.91	.06	.09	.0018	.04	511.95	511.69	519.75	519.21	6.80	512.73	512.69	
29	26	34	.43	3.0	*1.29	1.00	12	.0974	1.27	.03	.03	.0008	.03	515.00	511.69	521.01	519.21	5.01	Top Pipe 516.00	512.69	
26	25	34	.35	3.0	1.05	3.55	15	.0156	2.89	.13	.46	.0030	.10	511.69	511.16	519.21	519.21	6.52	512.51	512.41	
25	24	164	.75	3.0	2.25	5.80	15	.0162	4.73	.35	2.01	.0081	1.32	511.16	508.50	519.21	513.07	6.80	512.01	510.69	
24	23	34	.36	3.0	*1.37	7.17	15	.0100	5.84	.53	3.80	.0123	.42	508.50	508.16	513.07	513.07	2.38	510.11	509.69	
23	22	61	1.06	3.0	3.18	10.35	18	.0190	5.86	.53	5.51	.0097	.59	508.16	507.00	513.07	513.65	3.38	509.10	508.51	
22	21	108	.27	3.0	0.81	11.16	18	.0137	6.32	.62	6.91	.0113	1.22	507.00	505.52	513.65	515.13	5.14	508.25	507.02	
21	20	38	.55	3.0	1.65	12.81	18	.0329	7.25	.82	10.45	.0149	.57	505.52	504.27	515.13	515.38	8.11	506.34	505.77	
20	19	31	.18	3.0	0.54	13.35	18	.0358	7.55	.89	11.93	.0162	.50	504.27	503.16	515.38	513.00	9.61	505.16	504.66	
19	18	98	-	-	-	13.35	18	.0118	5.55	.48	6.39	.0071	.20	503.16	502.00	513.00	506.80	8.34	504.45	Top Pipe 503.75	
																		3.05			
					*By Pass .29 cfs to		CI	24													

Fox & Cole
Planning
Civil Engineering
Surveying
4579 Chestnut Park Plaza
Saint Louis, Missouri 63129
Telephone (314) 894-5300

HYDRAULIC DATA

DATE:		4 of 6
REVISIONS:		

BEND LOSS = COEFF. X V_h

JUNCTION LOSS = $\frac{Q^{V}h_1 - (Q^{V}h_2 + Q^{V}h_3) \times 1.33}{Q_1}$

	BEND LOSSES		JUNCTION LOSSES	Total	
@ 18	N/A		N/A	0	@ 18
19	40°	.43 × .48 = .21	N/A	.21	19
20	65°	.57 × .82 = .47	$\frac{11.83-10.45}{13.35} \times 1.33 = .14$	.61	20
21	50°	.50 × .62 = .31	$\frac{10.45-6.91}{12.81} \times 1.33 = .37$	.68	21
22	15°	.18 × .53 = .10	$\frac{6.91-5.51}{11.16} \times 1.33 = .17$	.27	22
23	90°	.70 × .53 = .37	$\frac{5.51-3.80}{10.35} \times 1.33 = .22$	.59	23
24	90°	.70 × .35 = .25	$\frac{3.80-2.01}{7.17} \times 1.33 = .33$	.58	24
25	25°	.30 × .13 = .04	$\frac{2.01-.46}{5.80} \times 1.33 = .36$	.40	25
26	65° (29)	.57 × .03 = .02	$\frac{.46-.03}{3.55} \times 1.33 = .16$	.18	26
27	50°	.50 × .06 = .03	N/A	.03	27
28	N/A		N/A	0	28
29	N/A		N/A	0	29

Cox & Cole

HYDRAULIC DATA

Drawn By:	Checked By:	Project Number	Sheet Number
VLB		Pheasant Point 84-006	5 of 6
Date: 6-10-85			
Revisions:			

Structure Upper	Structure Lower	LENGTH	AREA ACRES	P.I.	Q.	TOTAL Q.	PIPE SIZE	CONST. GRADE	V.	V_h	Q. V_h	HYD. GRADE	FRICT. LOSS	FLOW LINE UPPER ELEV.	FLOW LINE LOWER ELEV.	TOP OF STRUCTURE UPPER ELEV.	TOP OF STRUCTURE LOWER ELEV.	FREE BOARD	HYDRAULIC ELEVATION UPPER	HYDRAULIC ELEVATION LOWER	REMARKS
Ex7	Ex6	~~77~~ ~~74.03~~	.26	3.0	.78	0.78	15	.0600	.64	.01	000	.0001	.01	508.63	504.01	516.00 ~~517.72~~ ATG	511.37	6.12	509.88	505.26	
6A	Ex6	70	.39	3.0	1.17	1.17	12	.0570	1.49	.03	.04	.0011	.08	508.00	504.01	513.00	511.37	4.00	509.00	505.26	
Ex8	Ex6	29 ~~29.20~~	.40	3.0	* 0.50	0.50	15	.0100	.41	00	00	.0001	.00	504.30	504.01	510.94	511.37	5.39	505.55	505.26	
Ex6	Ex5	116 ~~115.90~~	.10	3.0	0.30	2.75	15	.0457	2.24	.08	.21	.0018	.21	504.01	499.71	511.37	507.21	6.11	500.17	499.96	
Ex5	Ex4	34 ~~34.69~~	1.45	3.0	4.35	7.10	15	.0500	5.79	.32	3.69	.0121	.41	498.71	497.01	507.21	507.29	7.25	498.67	498.26	
Ex4	Ex3	101 ~~100.99~~	0.19	3.0	0.57	7.67	18	.0100	4.34	.29	2.24	.0053	.54	497.01	496.00 ~~497.39~~	507.29	–	9.03	498.04	497.50	
					* .70 By pass to CI 30 (village I)																

Fox & Cole

HYDRAULIC DATA

DRAWN BY:	CHECKED BY:	PROJECT NUMBER:	SHEET NUMBER:
VLB		Pheasant Point 84-006	6 of 6
DATE: 6-10-85			
REVISIONS:			

BEND LOSS = COEFF x V_h

JUNCTION LOSS = $\frac{Q^2V_{h1} - (Q^2V_{h2} + Q^2V_{h3}) \times 1.33}{Q1}$

	Bend Loss		Junction Loss	Total	
@ 3	N/A		N/A	0	@ 3
4	10°	.11 x .52 = .06	N/A	.06	4
5	75°	.62 x .08 = .05	$\frac{3.69 - .21}{2.10} \times 1.33 = .65$	.70	5
6	6A) 30° 7) 30° 8) 80°	.70 x .03 = .02 .33 x .01 = 0 .65 x 0 = 0	$\frac{.21 - .04}{2.75} \times 1.33 = .08$	.10	6
6A	N/A		N/A	0	6A
7	N/A		N/A	0	7
8	N/A		N/A	0	8