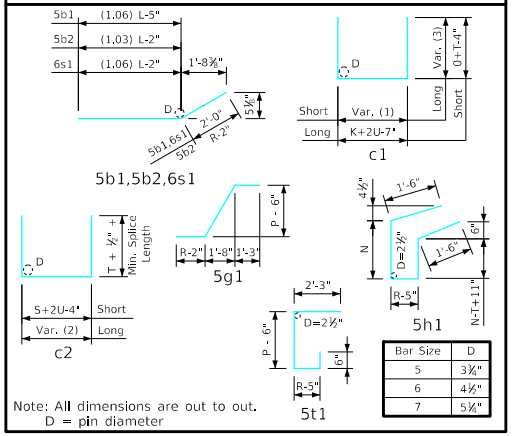
Estimate of Quantities - Flume Basin

Bill of Reinforcing Steel			10' x 4'				10' x 5'				10' x 6'				10' x 7'				10' x 8'			
Bar	Location	Shape	Size	No.	Length	Weight	Size	No.	Length	Weight	Size	No.	Length	Weight	Size	No.	Length	Weight	Size	No.	Length	Weight
5a1	Walls - Vert. - F.F.		5	30	2'-7";6'-1"	136	5	32	3'-4";7'-1"	174	5	34	4'-2";8'-1"	217	5	36	4'-11";9'-2"	264	5	38	5'-8";10'-2"	314
5b1	Walls - Longit.- F.F. & B.F.		5	12	16'-5"	205	5	16	17'-6"	292	5	16	18'-7"	310	5	20	19'-7"	409	5	24	20'-8"	517
5b2	Walls - Longit.- F.F. & B.F.		5	4	15'-1"	63	5	4	16'-1"	67	5	8	17'-5"	145	5	8	18'-5"	154	5	8	19'-5"	162
c1	Walls - Vert. - B.F.		5	28	23'-1";23'-4"	678	5	22	25'-1";25'-5"	579	5	15	27'-3";27'-6"	428	5	9	29'-3";29'-6"	276	5	3	31'-5";31'-8"	99
c2	Walls - Vert. - B.F.		5	1	17'-5"	18	5	9	17'-5";19'-5"	173	5	18	17'-5";21'-8"	367	5	26	17'-5";23'-8"	557	5	34	17'-7";25'-10"	770
c3	Walls - Vert. - B.F.		5	2	5'-0"	10	5	18	5'-0";6'-0"	103	5	36	4'-11";7'-0"	224	5	52	4'-11";8'-1"	353	5	68	4'-11";9'-1"	496
6f1	Floor - Longit.- Top		6	18	14'-8"	397	6	19	15'-8"	447	6	19	16'-11"	483	6	20	17'-11"	538	6	20	18'-11"	568
5f2	Floor - Longit.- Bott.		5	18	14'-8"	275	5	19	15'-8"	310	5	19	16'-11"	335	5	20	17'-11"	374	5	20	18'-11"	395
5g1	Curtain Bracket - Vert.		5	4	5'-6"	23	5	4	5'-6"	23	5	4	5'-9"	24	5	4	6'-0"	25	5	4	6'-3"	26
5h1	Basin Backwall - Vert.		5	12	7'-11"	99	5	12	8'-5"	105	5	12	9'-2"	115	5	12	9'-8"	121	5	12	10'-2"	127
6m1	Floor Trans. - Top		6	15	11'-8";18'-5"	339	6	16	11'-8";18'-11"	367	6	17	11'-8";19'-5"	397	6	18	11'-8";19'-11"	427	6	19	11'-10";20'-7"	463
6p1	Curtain - Trans.		6	2	18'-4",18'-6"	55	6	2	18'-10",19'-0"	57	6	2	19'-3",19'-6"	58	6	2	19'-9",20'-0"	60	6	2	20'-5",20'-8"	62
6s1	Wall - Top Slope		6	4	16'-8"	100	6	4	17'-9"	107	6	4	18'-10"	113	6	4	19'-10"	119	6	4	20'-11"	126
5t1	Curtain - Vert.		5	15	6'-4"	99	5	15	6'-4"	99	5	15	6'-7"	103	5	16	6'-10"	114	5	16	7'-1"	118
Total Weight (LB)						2497				2903				3319				3791				4243
Concrete (CY)	Footing		11.9				12.7				14.2				15.4				16.8			
	Walls		2.6				3.6				4.7				5.7				7.9			
	Total		14.5				16.3				18.9				21.1				24.7			

Bar	Location	10' x 9' Size	No.	Length	Weight	10' x 10' Size	No.	Length	Weight	10' x 11' Size	No.	Length	Weight	10' x 12' Size	No.	Length	Weight
5a1	Walls - Vert. - F.F.	5	40	6'-5";11'-2"	367	5	42	7'-3";12'-2"	425	5	44	8'-0";13'-3"	488	5	46	8'-9";14'-3"	552
5b1	Walls - Longit.- F.F. & B.F.	5	28	21'-9"	635	5	32	22'-9"	759	5	32	23'-10"	795	5	36	24'-11"	936
5b2	Walls - Longit.- F.F. & B.F.	5	8	20'-6"	171	5	8	21'-6"	179	5	12	22'-7"	283	5	12	23'-7"	295
c1	Walls - Vert. - B.F.	–	--	--	--	--	--	--	–	--	--	--	--	--	--	–	--
c2	Walls - Vert. - B.F.	5	39	17'-7";27'-1"	908	6	41	18'-5";28'-5"	1442	7	43	19'-5";29'-11"	2168	7	45	19'-7";30'-7"	2307
c3	Walls - Vert. - B.F.	5	78	5'-4";10'-1"	627	6	82	6'-2";11'-1"	1062	7	86	6'-11";12'-2"	1677	7	90	7'-8";13'-2"	1916
6f1	Floor - Longit.- Top	6	21	19'-11"	628	6	21	20'-11"	660	6	22	21'-11"	724	6	22	22'-11"	757
5f2	Floor - Longit.- Bott.	5	21	19'-11"	436	5	21	20'-11"	458	5	22	21'-11"	503	5	22	22'-11"	526
5g1	Curtain Bracket - Vert.	5	4	6'-5"	27	5	4	6'-8"	28	5	4	6'-11"	29	5	4	7'-2"	30
5h1	Basin Backwall - Vert.	5	12	10'-8"	134	5	12	11'-2"	140	5	12	11'-8"	146	5	13	12'-2"	165
6m1	Floor Trans. - Top	6	20	11'-10";21'-1"	494	6	21	11'-10";21'-7"	527	6	22	12'-0";22'-3"	566	6	23	12'-2";22'-11"	606
6p1	Curtain - Trans.	6	2	20'-11",21'-2"	63	6	2	21'-5",21'-8"	65	6	2	22'-1",22'-4"	67	6	2	22'-9",23'-0"	69
6s1	Wall - Top Slope	6	4	22'-0"	132	6	4	23'-0"	138	6	4	24'-1"	145	6	4	25'-2"	151
5t1	Curtain - Vert.	5	17	7'-4"	130	5	17	7'-7"	134	5	18	7'-10"	147	5	18	8'-1"	152
Total Weight (LB)					4752				6017				7738				8462
Concrete (CY)	Footing	18.0				19.3				20.8				22.4			
	Walls	9.4				11.0				14.1				17.6			
	Total	27.4				30.3				34.9				40.0			

Bent Bar Details



Note: All dimensions are out to out.
D = pin diameter

Variable Dimensions

Variable (1)	$K+2U-4"-\frac{(K-S)\ (No.\ of\ c1-1)}{No.\ of\ c1+c2-1}$
Variable (2)	$S+2U-4"+\frac{(K-S)\ (No.\ of\ c2-1)}{No.\ of\ c1+c2-1}$
Variable (3)	$O+T-4"\pm\frac{(N+V-O)\ (No.\ of\ c1-1)}{No.\ of\ c1+c2-1}$

Table of Flume Basin Dimensions

S x H	K	L	M	N	O	P	R	T	U	V
10' x 4'	17'-0"	14'-0"	3'-0"	2'-3"	1'-10"	3'-6"	1'-0"	1'-1"	9"	3'-1⅛"
10' x 5'	17'-6"	15'-0"	3'-9"	2'-6"	2'-7"	3'-6"	1'-0"	1'-1"	9"	3'-10⅜"
10' x 6'	18'-0"	16'-0"	4'-6"	2'-9"	3'-5"	3'-6"	1'-3"	1'-1"	9"	4'-7⅞"
10' x 7'	18'-6"	17'-0"	5'-3"	3'-0"	4'-2"	3'-9"	1'-3"	1'-1"	9"	5'-5"
10' x 8'	19'-0"	18'-0"	6'-0"	3'-3"	4'-11"	4'-0"	1'-3"	1'-1"	10"	6'-2¼"
10' x 9'	19'-6"	19'-0"	6'-9"	3'-6"	5'-8"	4'-3"	1'-3"	1'-1"	10"	6'-11½"
10' x 10'	20'-0"	20'-0"	7'-6"	3'-9"	6'-6"	4'-6"	1'-3"	1'-1"	10"	7'-8¾"
10' x 11'	20'-6"	21'-0"	8'-3"	4'-0"	7'-3"	4'-9"	1'-3"	1'-1"	11"	8'-6"
10' x 12'	21'-0"	22'-0"	9'-0"	4'-3"	8'-0"	5'-0"	1'-3"	1'-1"	1'-0"	9'-3⅜"

S = Culvert Span
H = Culvert Height

Note:
See Sheet RCFB 05-20 for flume basin details and notes.

LATEST REVISION DATE

APPROVED BY BRIDGE ENGINEER

IOWADOT Highway Division

Standard Design
Single Reinforced Concrete Box Culverts
December, 2020

Flume Basin Details
10'-0" Span

RCFB 04-20

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