

### Estimate of Quantities - Flume Bell Joints

Junction Bell Joint		16' x 4'			16' x 5'			16' x 6'			16' x 7'			16' x 8'			16' x 9'			16' x 10'			16' x 11'			16' x 12'			16' x 13'			16' x 14'			
Bar	Location	Shape	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight			
6w1	Walls & Floor		4	29'-9"	179	4	29'-9"	179	4	29'-9"	179	4	29'-9"	179	4	29'-11"	180	4	29'-11"	180	4	29'-11"	180	4	30'-1"	181	4	30'-3"	182	4	30'-5"	182	4	30'-7"	184
6w3	Walls Vert.		8	4'-4"	52	8	5'-4"	64	8	6'-4"	76	8	7'-4"	88	8	8'-4"	100	8	9'-4"	112	8	10'-4"	124	8	11'-4"	136	8	12'-4"	148	8	13'-4"	160	8	14'-4"	172
6y1	Walls Horiz.		12	7'-8"	138	14	7'-8"	161	16	7'-8"	184	18	7'-8"	207	20	7'-10"	235	22	7'-10"	259	24	7'-10"	282	26	7'-11"	309	28	8'-1"	340	30	8'-1"	364	32	8'-2"	393
6y2	Floor Vert.		18	9'-2"	248	18	9'-2"	248	18	9'-2"	248	18	9'-2"	248	18	9'-2"	248	18	9'-2"	248	18	9'-2"	248	18	9'-2"	248	18	9'-2"	248	18	9'-2"	248	18	9'-2"	248
6z1	Floor Vert.		18	4'-3"	115	18	4'-3"	115	18	4'-3"	115	18	4'-3"	115	18	4'-3"	115	18	4'-3"	115	18	4'-3"	115	18	4'-3"	115	18	4'-3"	115	18	4'-3"	115	18	4'-3"	115
Total Weight (LB)			732			767			802			837			878			914			949			989			1033			1069			1112		
Concrete (CY)		Footing	4.0			4.0			4.0			4.0			4.0			4.0			4.0			4.1			4.1			4.1			4.1		
		Walls	1.3			1.6			1.9			2.1			2.4			2.7			3.0			3.3			3.6			3.9			4.1		
		Total	5.3			5.6			5.9			6.1			6.4			6.7			7.0			7.3			7.7			8.0			8.2		
Chute Bell Joint		16' x 4'			16' x 5'			16' x 6'			16' x 7'			16' x 8'			16' x 9'			16' x 10'			16' x 11'			16' x 12'			16' x 13'			16' x 14'			
Bar	Location	Shape	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight			
6w2	Walls & Floor		4	29'-10"	179	4	31'-4"	188	4	29'-9"	179	4	29'-9"	179	4	29'-11"	180	4	29'-11"	180	4	29'-11"	180	4	30'-1"	181	4	30'-3"	182	4	30'-5"	182	4	30'-7"	184
6w4	Walls Vert.		--	--	--	--	--	--	8	4'-0"	48	8	4'-9"	57	8	5'-6"	66	8	6'-3"	75	8	7'-0"	84	8	7'-9"	93	8	8'-6"	102	8	9'-3"	111	8	10'-0"	120
6y3	Walls Horiz.		8	7'-8"	92	10	7'-8"	115	12	7'-8"	138	12	7'-8"	138	14	7'-10"	165	16	7'-10"	188	18	7'-10"	212	18	7'-11"	214	20	8'-1"	243	22	8'-1"	267	24	8'-2"	294
6y4	Floor Vert.		18	9'-1"	246	18	9'-1"	246	18	9'-1"	246	18	9'-1"	246	18	9'-1"	246	18	9'-1"	246	18	9'-1"	246	18	9'-1"	246	18	9'-1"	246	18	9'-1"	246	18	9'-1"	246
6z1	Floor Vert.		18	4'-3"	115	18	4'-3"	115	18	4'-3"	115	18	4'-3"	115	18	4'-3"	115	18	4'-3"	115	18	4'-3"	115	18	4'-3"	115	18	4'-3"	115	18	4'-3"	115	18	4'-3"	115
Total Weight (LB)			632			664			726			735			772			804			837			849			888			921			959		
Concrete (CY)		Footing	3.8			3.8			3.8			3.8			3.9			3.9			3.9			3.9			3.9			3.9			4.0		
		Walls	0.8			1.0			1.2			1.4			1.6			1.8			2.0			2.3			2.5			2.7			2.9		
		Total	4.6			4.8			5.0			5.2			5.5			5.7			5.9			6.2			6.4			6.6			6.9		

#### Barrel & Chute Dimensions

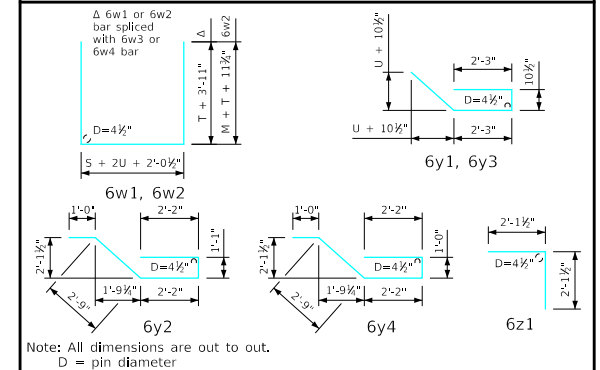
S x H	M	T	U	BT	BU
16' x 4'	3'-0"	1'-2"	9"	1'-1"	9"
16' x 5'	3'-9"	1'-2"	9"	1'-1"	9"
16' x 6'	4'-6"	1'-2"	9"	1'-1"	9"
16' x 7'	5'-3"	1'-2"	9"	1'-1"	9"
16' x 8'	6'-0"	1'-2"	10"	1'-1"	9"
16' x 9'	6'-9"	1'-2"	10"	1'-1"	9"
16' x 10'	7'-6"	1'-2"	10"	1'-1"	10"
16' x 11'	8'-3"	1'-2"	11"	1'-1"	11"
16' x 12'	9'-0"	1'-2"	1'-0"	1'-1"	1'-0"
16' x 13'	9'-9"	1'-2"	1'-0"	1'-1"	1'-1"
16' x 14'	10'-6"	1'-3"	1'-1"	1'-2"	1'-2"

S = Culvert Span  
H = Culvert Height

#### Notes:

- Dimensions and quantities shown based on "U" flume walls, "BU" barrel walls, "T" flume floor and "BT" barrel floor thicknesses.
- Change lengths of bars 6w1 and adjust reinforcing steel and concrete quantities accordingly for wall and floor thicknesses other than shown.
- Floor bars m1 are to be shortened 6" at bell joints.
- See Sheet RCF 01-20 for general information.

#### Bent Bar Details



Note:  
See Sheet FBI 09-20 for flume bell joint details.

LATEST REVISION DATE	 APPROVED BY BRIDGE ENGINEER	 Standard Design <b>Single Reinforced Concrete Box Culverts</b> December, 2020	
		<b>Flume Bell Joint Details</b> 16'-0" Span	<b>FBJ 08-20</b>