

BAR LISTS FOR PIPE DIAMETERS 2 700 mm AND 2 740 mm						
DIA	MARK	SIZE	NO.	TYPE	LENGTH (mm)	MASS (kg)
2 700 mm CSP	A 1001	10	14	A	1 480	16
	A 1501	15	6	STR	3 300	31
	C 1501	15	4	STR	12 000	75
	C 1502	15	15	D	2 050	48
	C 1503	15	15	E	900	21
	S 1001	10	30	C	995	19
	S 1002	10	30	B	1 005	24
	S 1501	15	14	STR	5 000	110
					TOTAL	344
2 740 mm SPCSP	A 1001	10	15	A	1 480	17
	A 1501	15	6	STR	3 500	33
	C 1501	15	4	STR	12 000	75
	C 1502	15	15	D	2 050	48
	C 1503	15	15	E	900	21
	S 1001	10	30	C	805	19
	S 1002	10	30	B	1 005	24
	S 1501	15	14	STR	4 800	106
					TOTAL	343
BAR LISTS FOR PIPE DIAMETERS FROM 3 000 mm TO 4 610 mm						
DIA	MARK	SIZE	NO.	TYPE	LENGTH (mm)	MASS (kg)
3 000 mm CSP	A 1001	10	16	A	1 680	21
	A 1501	15	6	STR	4 000	38
	C 1501	15	5	STR	12 000	94
	C 1502	15	16	D	2 250	57
	C 1503	15	16	E	900	23
	S 1001	10	32	C	995	25
	S 1002	10	32	B	1 320	33
	S 1501	15	14	STR	5 200	114
					TOTAL	405
3 050 mm SPCSP	A 1001	10	17	A	1 680	22
	A 1501	15	6	STR	4 300	41
	C 1501	15	6	STR	12 000	113
	C 1502	15	16	D	2 250	57
	C 1503	15	16	E	900	23
	S 1001	10	30	C	995	23
	S 1002	10	30	B	1 320	31
	S 1501	15	14	STR	4 800	106
					TOTAL	416
3 300 mm CSP	A 1001	10	16	A	1 680	21
	A 1501	15	6	STR	4 100	39
	C 1501	15	6	STR	12 000	113
	C 1502	15	17	D	2 250	60
	C 1503	15	17	E	900	24
	S 1001	10	36	C	995	28
	S 1002	10	36	B	1 320	37
	S 1501	15	14	STR	5 900	130
					TOTAL	452
3 360 mm SPCSP	A 1001	10	19	A	1 680	25
	A 1501	15	6	STR	4 900	46
	C 1501	15	6	STR	12 000	113
	C 1502	15	17	D	2 250	60
	C 1503	15	17	E	900	24
	S 1001	10	30	C	995	23
	S 1002	10	30	B	1 320	31
	S 1501	15	14	STR	4 800	106
					TOTAL	428
3 600 mm CSP	A 1001	10	18	A	1 680	24
	A 1501	15	6	STR	4 500	42
	C 1501	15	6	STR	12 000	113
	C 1502	15	18	D	2 250	64
	C 1503	15	18	E	900	25
	S 1001	10	38	C	995	30
	S 1002	10	38	B	1 320	39
	S 1501	15	14	STR	6 200	136
					TOTAL	473
3 670 mm SPCSP	A 1001	10	21	A	1 680	28
	A 1501	15	6	STR	5 400	51
	C 1501	15	7	STR	12 000	132
	C 1502	15	18	D	2 250	64
	C 1503	15	18	E	900	25
	S 1001	10	30	C	995	23
	S 1002	10	30	B	1 320	31
	S 1501	15	14	STR	4 800	106
					TOTAL	460

● BAR DIMENSIONS ARE OUT TO OUT.

TYPE "A" TYPE "B" TYPE "C" TYPE "D" TYPE "E"

DIA	MARK	SIZE	NO.	TYPE	LENGTH (mm)	MASS (kg)
3 980 mm SPCSP	A 1001	10	23	A	1 680	30
	A 1501	15	6	STR	5 900	56
	C 1501	15	8	STR	12 000	151
	C 1502	15	19	D	2 250	67
	C 1503	15	19	E	900	27
	S 1001	10	30	C	995	23
	S 1002	10	30	B	1 320	31
	S 1501	15	14	STR	4 800	106
				TOTAL		491
4 300 mm SPCSP	A 1001	10	25	A	1 680	33
	A 1501	15	6	STR	6 400	60
	C 1501	15	9	STR	12 000	170
	C 1502	15	20	D	2 250	71
	C 1503	15	20	E	900	28
	S 1001	10	30	C	995	23
	S 1002	10	30	B	1 320	31
	S 1501	15	14	STR	4 800	106
				TOTAL		522
4 610 mm SPCSP	A 1001	10	27	A	1 680	36
	A 1501	15	6	STR	6 900	65
	C 1501	15	10	STR	12 000	188
	C 1502	15	21	D	2 250	74
	C 1503	15	21	E	900	30
	S 1001	10	30	C	995	23
	S 1002	10	30	B	1 320	31
	S 1501	15	14	STR	4 800	106
				TOTAL		553
BAR LISTS FOR PIPE DIAMETERS FROM 4 920 mm TO 6 160 mm						
DIA	MARK	SIZE	NO.	TYPE	LENGTH (mm)	MASS (kg)
4 920 mm SPCSP	A 1001	10	25	A	1 880	37
	A 1501	15	8	STR	6 400	80
	C 1501	15	12	STR	12 000	226
	C 1502	15	24	D	2 950	111
	C 1503	15	24	E	1 000	38
	S 1001	10	48	C	1 195	45
	S 1002	10	48	B	1 940	73
	S 1501	15	14	STR	7 500	165
				TOTAL		775
5 230 mm SPCSP	A 1001	10	27	A	1 880	40
	A 1501	15	8	STR	6 900	87
	C 1501	15	13	STR	12 000	245
	C 1502	15	25	D	2 950	116
	C 1503	15	25	E	1 000	39
	S 1001	10	48	C	1 195	45
	S 1002	10	48	B	1 940	73
	S 1501	15	14	STR	7 500	165
				TOTAL		810
5 540 mm SPCSP	A 1001	10	29	A	1 880	43
	A 1501	15	8	STR	7 400	93
	C 1501	15	14	STR	12 000	264
	C 1502	15	26	D	2 950	120
	C 1503	15	26	E	1 000	41
	S 1001	10	48	C	1 195	45
	S 1002	10	48	B	1 940	73
	S 1501	15	14	STR	7 500	165
				TOTAL		844
5 850 mm SPCSP	A 1001	10	28	A	1 880	41
	A 1501	15	8	STR	7 200	90
	C 1501	15	14	STR	12 000	264
	C 1502	15	27	D	2 950	125
	C 1503	15	27	E	1 000	42
	S 1001	10	56	C	1 195	53
	S 1002	10	56	B	1 940	85
	S 1501	15	14	STR	9 000	198
				TOTAL		898
6 160 mm SPCSP	A 1001	10	30	A	1 880	44
	A 1501	15				

ALL DIMENSIONS ARE OUT TO OUT.

TYPE "A" TYPE "B" TYPE "C" TYPE "D" TYPE "E"

	DIAMETER mm		2 700 CSP	2 740 SPCSP	3 000 CSP	3 050 SPCSP	3 300 CSP	3 360 SPCSP	3 600 CSP	3 670 SPCSP	3 990 SPCSP	4 300 SPCSP	4 610 SPCSP	4 920 SPCSP	5 230 SPCSP	5 540 SPCSP	5 850 SPCSP	6 160 SPCSP
	DATA																	
CUT-OFF	WIDTH	A	4 200	4 240	4 500	4 550	4 800	4 860	5 100	5 170	5 490	5 800	6 110	6 920	7 230	7 540	7 850	8 160
	DEPTH - MIN.	B	600	600	700	700	700	700	700	700	700	700	700	1 000	1 000	1 000	1 000	1 000
	DEPTH - MAX.	C	1 250	1 305	1 500	1 610	1 500	1 765	1 600	1 920	2 080	2 235	2 390	2 336	2 491	2 646	2 496	2 651
	THICKNESS	D	350	350	350	350	350	350	350	350	350	350	350	350	450	450	450	450
SHOULDER	WIDTH	E	500	500	600	600	600	600	600	600	600	600	600	800	800	800	800	800
	DEPTH	F	500	500	600	600	600	600	600	600	600	600	600	800	800	800	800	800
		G	250	250	300	300	300	300	300	300	300	300	300	300	400	400	400	400
ARCH	WIDTH	J	400	400	500	500	500	500	500	500	500	500	500	500	500	500	500	500
	DEPTH	K	400	400	400	400	400	400	400	400	400	400	400	500	500	500	500	500
	RADIUS	L	1 750	1 770	1 900	1 925	2 050	2 080	2 200	2 235	2 395	2 550	2 705	2 960	3 115	3 270	3 435	3 580
BEVEL	LENGTH	H	3 800	3 658	4 000	3 658	4 600	3 658	4 800	3 658	3 658	3 658	3 658	6 096	6 096	6 096	7 315	7 315
	CENTRE	V	1 900	1 830	2 000	1 830	2 300	1 830	2 400	1 830	1 830	1 830	1 830	3 048	3 048	3 048	3 658	3 658
	TOP & BOTTOM	Y	400	455	500	610	500	765	600	920	1 080	1 235	1 390	936	1 091	1 246	1 096	1 251
CONCRETE	CUT-OFF WALL (m³)		1.6	1.6	2.0	2.0	2.2	2.2	2.4	2.4	2.7	3.0	3.3	5.5	5.9	6.3	6.4	6.9
	SHOULDER (m³)		1.8	1.6	2.6	2.2	2.8	2.2	3.0	2.2	2.2	2.2	2.2	6.6	6.6	6.6	8.0	8.0
	ARCH (m³)		0.6	0.7	0.8	0.9	0.9	1.0	0.9	1.1	1.2	1.3	1.4	1.6	1.7	1.8	1.9	2.0
	TOTAL (m³)		4.0	3.9	5.4	5.1	5.9	5.4	6.3	5.7	6.1	6.5	6.9	13.7	14.2	14.7	16.3	16.9
BOLTS	NUMBER OF ANCHOR BOLTS (c/w 2 NUTS)		46	46	50	50	54	54	58	58	62	66	70	80	84	88	94	98

- DIMENSIONS ARE GIVEN IN MILLIMETRES UNLESS NOTED OTHERWISE.
- HOLES IN THE CULVERT PLATE (22 mm DIA) TO BE FIELD DRILLED TO RECEIVE ANCHOR BOLTS (DO NOT BURN).
- AFTER PIPE HAS BEEN COMPLETELY BACKFILLED, CONCRETE END TREATMENT SHALL BE BUILT STARTING WITH THE CUT-OFF WALL, FOLLOWED BY THE SHOULDERS AND THE ARCH. EACH CONCRETE SHOULDER TO BE POURED IN ONE CONTINUOUS POUR BEGINNING FROM THE CUT-OFF WALL.
- ⚠ • REINFORCING STEEL SHALL BE IN ACCORDANCE WITH CAN/CSA-G30.18-M92 "BILLET-STEEL FOR CONCRETE REINFORCEMENT".
- ⚠ • ALL REINFORCING STEEL SHALL BE GRADE 400 UNLESS NOTED OTHERWISE.
- ⚠ • DIAMETERS OF ALL BENDS AND DETAILS OF ALL HOOKS, UNLESS NOTED OTHERWISE SHALL CONFORM TO THE RECOMMENDED SIZES DETAILED IN THE REINFORCING STEEL MANUAL OF STANDARD PRACTICE, FIRST EDITION 1992, PUBLISHED BY THE REINFORCING STEEL INSTITUTE OF CANADA.
- ALL REINFORCING BARS TO HAVE A MINIMUM OF 50 mm COVER UNLESS NOTED OTHERWISE.
- ALL LAP SPICES TO BE A MINIMUM OF 30 TIMES THE DIAMETER OF THE REBAR.
- REINFORCING STEEL TO BE CONTINUOUS BETWEEN EACH SECTION, WELDING OF REINFORCEMENT IS NOT PERMITTED. REFER TO THE CURRENT VERSION OF B352 "REINFORCEMENT" SECTION 5 OF THE BRIDGE CONSTRUCTION SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- REINFORCING STEEL AS NOTED IN THE BAR LIST IS CALLED UP BY THE FOLLOWING CONVENTION :
 - A - CONCRETE ARCH
 - C - CONCRETE CUT-OFF WALL
 - S - CONCRETE SHOULDER
- ALL CONCRETE SHALL BE CLASS "B", STRENGTH REQUIREMENT 25MPa AT 28 DAYS.
- CAST-IN-PLACE CONCRETE SHALL BE IN ACCORDANCE WITH THE CURRENT VERSION OF B351 "CAST-IN-PLACE CONCRETE" SECTION 4 OF THE BRIDGE CONSTRUCTION SPECIFICATIONS.
- CONCRETE SHOULDERS AND CONCRETE ARCH TO BE GIVEN A BROOM FINISH AT RIGHT ANGLES TO THE EDGE OF THE CULVERT; EXPOSED VERTICAL FACES TO BE GIVEN A CLASS 1 FINISH.
- ALL OUTSIDE EDGES TO BE SHAPED WITH A CONCRETE EDGER.
- CONCRETE TO BE COVERED WITH A CURING MEMBRANE UPON COMPLETION OF POUR.
- FORMS ARE TO BE LEFT IN PLACE FOR A MINIMUM OF 24 HOURS FOLLOWING POUR.

**BAR TYPES FOR PIPE DIAMETERS
FROM 4 920 mm TO 6 160 mm**

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• BAR DIMENSIONS ARE OUT TO OUT.

The image shows five technical drawings of bars, labeled TYPE "A" through TYPE "E". Each drawing includes dimensions in millimeters (mm).
- TYPE "A": A square bar with a side length of 400 mm.
- TYPE "B": A Z-shaped bar. The top flange is 680 mm wide and 650 mm high. The stem is 610 mm wide and 345 mm high. The bottom flange is 610 mm wide and 345 mm high.
- TYPE "C": A C-shaped bar. The top flange is 350 mm wide and 500 mm high. The stem is 500 mm wide and 345 mm high. The bottom flange is 500 mm wide and 345 mm high.
- TYPE "D": A U-shaped bar. The top flange is 350 mm wide and 1300 mm high. The stem is 350 mm wide and 350 mm high.
- TYPE "E": A U-shaped bar. The top flange is 350 mm wide and 325 mm high. The stem is 350 mm wide and 350 mm high.

● BAR DIMENSIONS ARE OUT TO OUT.

Technical drawings of five types of reinforcement bars (Type A, B, C, D, E) with their dimensions in millimeters. The drawings show the cross-section and side view of each bar. Type A is a square bar with dimensions 400x400. Type B is a square bar with a 60-degree angle, dimensions 680x680, and a 345x345 square section. Type C is a square bar with a 60-degree angle, dimensions 350x350, and a 345x345 square section. Type D is a U-shaped bar with dimensions 350x350 and a 300x300 square section. Type E is a U-shaped bar with dimensions 350x350 and a 325x325 square section.

Type	Top Width (mm)	Top Depth (mm)	Bottom Width (mm)	Bottom Depth (mm)	Side Height (mm)
TYPE "A"	400	400	400	400	400
TYPE "B"	680	680	345	345	650
TYPE "C"	350	350	345	345	500
TYPE "D"	350	350	350	350	300
TYPE "E"	350	350	350	350	325