

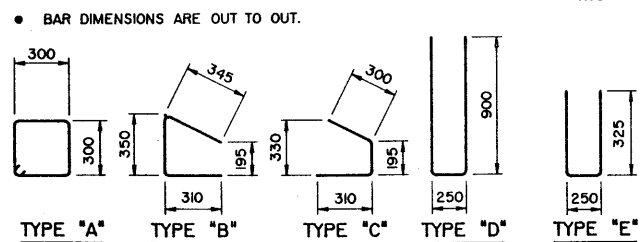
### BAR LISTS FOR PIPE DIAMETERS 2 700 mm AND 2 740 mm

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

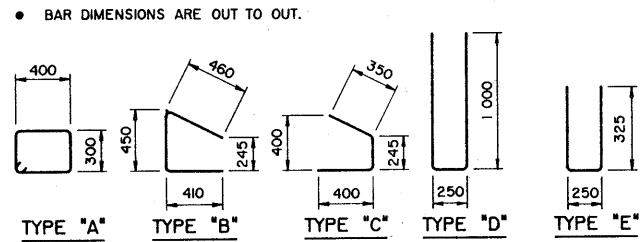
### BAR LISTS FOR PIPE DIAMETERS FROM 3 000 mm TO 4 610 mm

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 TYPES FOR PIPE DIAMETERS 2 700 mm AND 2 740 mm



### BAR TYPES FOR PIPE DIAMETERS FROM 3 000 mm TO 4 610 mm

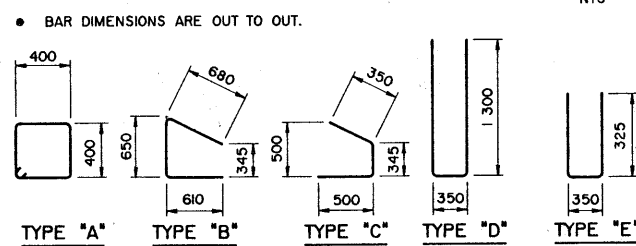


### DATA FOR STANDARD CONCRETE END TREATMENT

DIAMETER DATA		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		
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	1 000	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	450	450	450	450	450	
SHOULDER	WIDTH	E	500	500	600	600	600	600	600	600	600	600	800	800	800	800	800	800	
	DEPTH	F	500	500	600	600	600	600	600	600	600	600	600	800	800	800	800	800	800
		G	250	250	300	300	300	300	300	300	300	300	300	400	400	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	500	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	6 096	6 096	6 096	7 315	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	3 048	3 048	3 048	3 658	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	6.6	6.6	6.6	8.0	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	

NOTE:  
INDIVIDUAL BAR LISTS AND DATA QUANTITIES ARE GIVEN FOR ONE CONCRETE END TREATMENT ONLY.

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



### GENERAL NOTES FOR SPCSP AND CSP CONCRETE END TREATMENT

- 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.
- ALL REINFORCING BARS TO HAVE A MINIMUM OF 50 mm COVER UNLESS NOTED OTHERWISE.
- ALL LAP SPLICES 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 SHOULDER      C - CONCRETE CUT-OFF WALL  
S - CONCRETE ARCH
- 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.

**SUPERSEDED**  
3-1445-93  
rev. 2  
94-06-02

DESIGNED J.O.B. J.A.E.	DRAWN H.W.M.	DATE 93-11-03	CHECKED C.T.C.	DATE 93-11-17	BY	APPROVED <i>Wayne W. House</i> EXECUTIVE DIRECTOR FOR BRIDGE ENGINEERING	DATE Dec 2, 1993
Alberta TRANSPORTATION AND UTILITIES BRIDGE ENGINEERING BRANCH <b>CONCRETE END TREATMENT FOR LARGE STEEL CULVERTS</b> <b>SHEET 2</b>							
REV	DATE	REVISIONS			BY	STREAM	LOCATION
2		DEVELOPED FROM S-1444 REV 2 & S-1445 REV 3			M.E.K.		
						FILE	SHEET
							2 of 2
						DRAWING	S-1445-93