

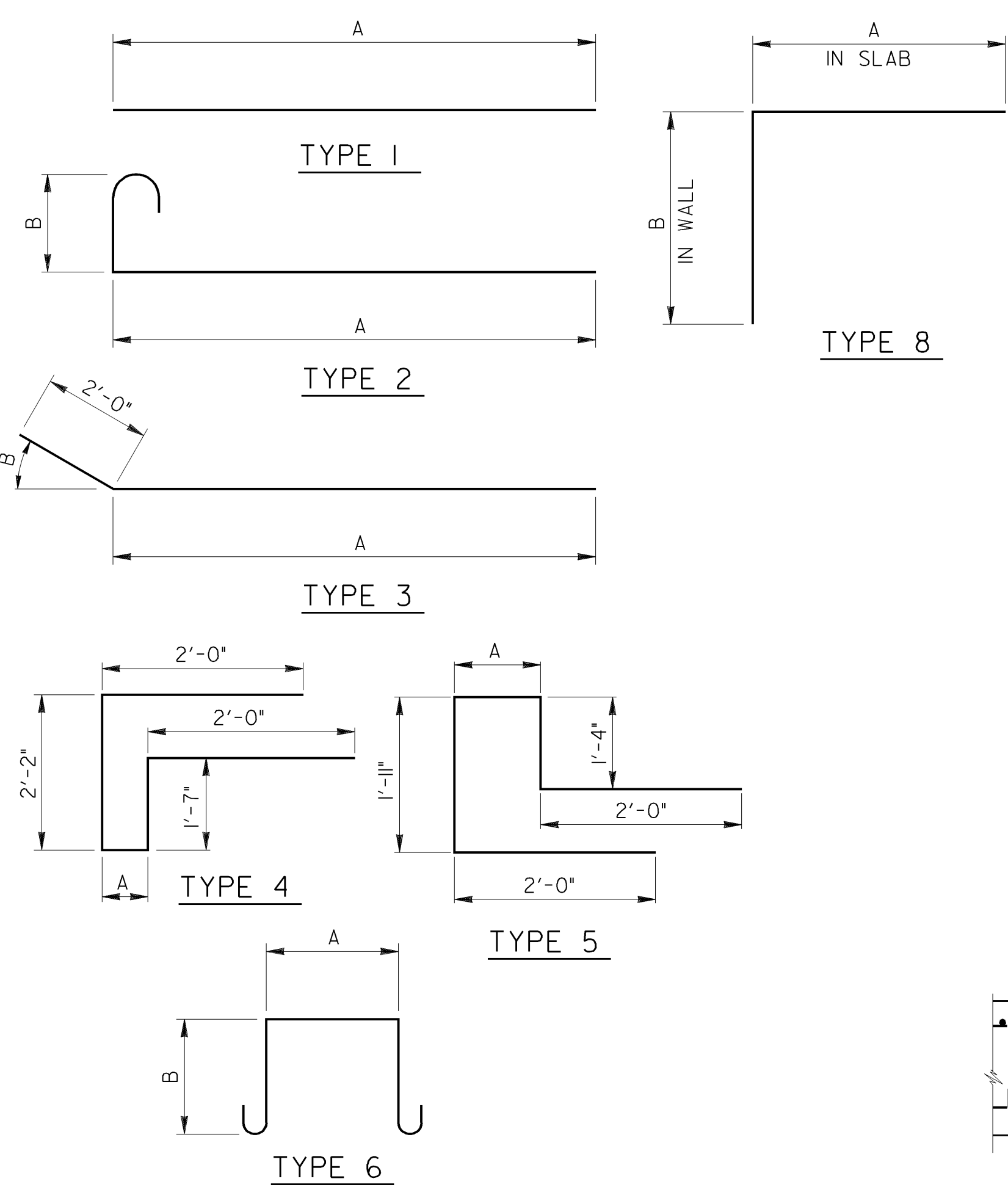
BARREL REINFORCEMENT, DIMENSIONS AND QUANTITIES															
SIZE	DOUBLE IO X 8					DOUBLE IO X 9					DOUBLE IO X 10				
DESIGN	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
BAR BA	601 AT 12	701 AT 12	802 AT 12	803 AT 12	902 AT 12	601 AT 12	703 AT 12	805 AT 12	704 AT 12	806 AT 12	601 AT 12	807 AT 12	808 AT 12	809 AT 12	903 AT 12
BAR BB	401 AT 12	501 AT 12	503 AT 12	602 AT 12	603 AT 12	501 AT 12	501 AT 12	503 AT 12	603 AT 12	705 AT 12	401 AT 12	401 AT 12	515 AT 12	603 AT 12	705 AT 12
BAR BC	402 AT 12	502 AT 12	2-408 BETWEEN	2-504 BETWEEN	2-506 BETWEEN	508 AT 12	604 AT 12	2-504 BETWEEN	2-605 BETWEEN	2-606 BETWEEN	609 AT 12	513 AT 11	2-516 BETWEEN	2-610 BETWEEN	2-706 BETWEEN
BAR BD	801 AT 12	901 AT 12	2-702 BETWEEN	2-804 BETWEEN	2-801 BETWEEN	801 AT 12	901 AT 12	2-702 BETWEEN	2-801 BETWEEN	2-801 BETWEEN	801 AT 12	608 AT 12	2-702 BETWEEN	2-801 BETWEEN	2-901 BETWEEN
BAR BE	403 AT 12	406 AT 12	409 AT 12	505 AT 12	507 AT 12	409 AT 12	509 AT 11	510 AT 12	511 AT 10	607 AT 12	424 AT 12	514 AT 12	517 AT 10	611 AT 10	518 AT 10
BAR BF	403 AT 12	406 AT 12	409 AT 12	411 AT 12	413 AT 12	409 AT 12	416 AT 12	418 AT 12	420 AT 12	422 AT 12	424 AT 12	422 AT 12	427 AT 12	429 AT 12	431 AT 12
BAR BG	404 AT 12	404 AT 12	404 AT 12	404 AT 12	404 AT 12	415 AT 12	415 AT 12	415 AT 12	415 AT 12	415 AT 12	512 AT 12	425 AT 12	425 AT 12	425 AT 12	425 AT 12
BAR BH	50-405	50-405	50-405	50-405	50-405	50-405	50-405	50-405	50-405	50-405	53-405	53-405	53-405	53-405	53-405
BAR BJ	-	-	-	2-412 AT 8	2-414 AT 9	-	-	-	2-421 AT 8	2-423 AT 9	-	-	2-428 AT 7	2-430 AT 8	3-432 AT 9
BAR BK	-	2-407 AT 6	3-410 AT 7	4-412 AT 8	4-414 AT 9	-	2-417 AT 6	3-419 AT 7	3-421 AT 8	4-423 AT 9	-	2-426 AT 6	3-428 AT 7	4-430 AT 8	4-432 AT 9
W	22'-10"	22'-10 "	23'-0"	23'-2"	23'-3"	22'-10"	22'-10"	23'-1"	23'-3"	23'-6"	22'-10"	22'-11"	23'-2"	23'-4"	23'-8"
S	9'-10"	10'-5"	10'-10"	11'-2"	11'-5"	10'-10"	11'-4"	11'-9"	12'-1"	12'-5"	11'-10"	12'-4"	12'-8"	13'-0"	13'-4"
T1	11"	14 1/2 "	17"	19"	20 1/2 "	11"	14"	16 1/2 "	18 1/2 "	20 1/2 "	11"	14"	16"	18"	20"
T2	11"	11"	12"	13"	13 1/2 "	11"	11"	12 1/2 "	13 1/2 "	15"	11"	11 1/2 "	13"	14"	16"
CU. YDS. CONCRETE PER FT.	2.4084	2.9017	3.3209	3.6739	3.9236	2.5133	2.9361	3.3973	3.7569	4.1589	2.6182	3.0792	3.4794	3.8456	4.2983
LBS. BAR REINF. STEEL PER FT.	235	322	391	489	533	268	344	422	473	564	276	336	450	535	680
HEIGHT OF FILL OVER TOP	0' TO 10'	TO 20'	TO 30'	TO 40'	TO 50'	0' TO 10'	TO 20'	TO 30'	TO 40'	TO 50'	0' TO 10'	TO 20'	TO 30'	TO 40'	TO 50'

STATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GA.			

BARREL SECTION BAR REINFORCEMENT DETAILS							
MARK	LENGTH	TYPE	A	B	C	D	E
401	22-6	1	22-6				
402	6-6	8	2-9	3-9			
403	9-6	1	9-6				
404	5-9	1	5-9				
405	POUR-4"	1	POUR-4"				
406	10-1	1	10-1				
407	4-1	6	1-1 7/8	0-11/2			
408	7-4	8	2-10	4-6			
409	10-6	1	10-6				
410	4-6	6	1-2	1-2			
411	10-10	1	10-10				
412	4-10	6	1-2	1-4			
413	11-1	1	11-1				
414	5-1	6	1-2 1/8	1-5 1/2			
415	6-9	1	6-9				
416	11-0	1	11-0				
417	4-0	6	1-1 7/8	0-11			
418	11-5	1	11-5				
419	4-5	6	1-2	1-11/2			
420	11-9	1	11-9				
421	4-9	6	1-1 7/8	1-3 1/2			
422	12-1	1	12-1				
423	5-1	6	1-2	1-5 1/2			
424	11-6	1	11-6				
425	7-9	1	7-9				
426	4-0	6	1-2	0-11			
427	12-4	1	12-4				
428	4-4	6	1-2	1-1			
429	12-8	1	12-8				
430	4-8	6	1-2	1-3			
431	13-0	1	13-0				
432	5-0	6	1-2 1/8	1-5			
501	22-6	1	22-6				
502	7-0 1/2	8	2-6	4-6 1/2			
503	22-8	1	22-8				
504	7-1	8	2-8	4-5			
505	10-10	1	10-10				
506	6-11 1/2	8	2-8	4-3 1/2			
507	11-1	1	11-1				
508	7-0	8	2-9	4-3			
509	11-0	1	11-0				
510	11-5	1	11-5				
511	11-9	1	11-9				
512	7-9	1	7-9				
513	7-3 1/2	8	2-9 1/2	4-6			
514	12-0	1	12-0				
515	22-10	1	22-10				
516	7-7	8	2-11	4-8			
517	12-4	1	12-4				
518	13-0	1	13-0				
601	28-0	7	1-0	7-7	3-0	0-7	2-3
602	22-10	1	22-10				
603	22-11	1	22-11				
604	6-6	8	2-6	4-0			
605	7-1	8	2-8 1/2	4-4 1/2			
606	7-7 1/2	8	3-1	4-6 1/2			
607	12-1	1	12-1				
608	7-0	1	7-0				

MARK	LENGTH	TYPE	A	B	C	D	E
609	7-0	8	3-3	3-9			
610	7-4	8	3-0	4-4			
611	12-8	1	12-8				
701	29-1	7	0-9	7-3	3-0	0-10 1/2	2-6 1/2
702	7-0	1	7-0				
703	28-10	7	0-9	7-4	3-0	0-10	2-6
704	30-8	7	0-11 1/2	6-4	3-6	1-2 1/2	2-10 1/2
705	23-2	1	23-2				
706	8-2	8	3-2	5-0			
801	7-0	1	7-0				
802	30-0	7	0-10	6-10	3-0	1-1	2-9
803	30-8	7	0-11	6-3	3-6	1-3	2-11
804	7-6	1	7-6				
805	29-10	7	0-10 1/2	6-11	3-0	1-0 1/2	2-8 1/2
806	31-5	7	1-4	5-9	3-6	1-4 1/2	3-0 1/2
807	28-11	7	1-3 1/2	6-10	3-0	0-10	2-6
808	29-10	7	1-5	6-0	4-0	1-0	2-8
809	30-8	7	1-3	5-11	4-0	1-2	2-10
901	7-0	1	7-0				
902	31-1	7	0-11 1/2	6-3	3-0	1-4 1/2	3-0
903	31-6	7	1-5	6-1	3-0	1-4	3-0

WINGWALL, PARAPET & TOE WALL REINFORCEMENT DIMENSIONS AND QUANTITIES				
MARK	LENGTH	TYPE	A	B
451A	VARIES	1	12-11 TO 2-5 5/8 AT 2-7 5/8	
451B	VARIES	1	14-4 TO 2-6 5/8 AT 2-7 3/4	
451C	VARIES	1	15-9 TO 2-6 AT 2-8	
452A	13-10	1	13-10	
452B	15-4	1	15-4	
452C	16-9	1	16-9	
453A	15-5	1	15-5	
453B	16-10	1	16-10	
453C	18-3	1	18-3	
551A	VARIES	2	4-10 TO 10-1 AT 4 1/2	2-1
551B	VARIES	2	5-4 TO 10-2 1/2 AT 4 1/2	2-1
551C	VARIES	2	5-10 TO 10-4 AT 4 1/2	2-1
552	6-2	2	3-6	2-1
553	3-0	3	1-0	45°-00"
554A	VARIES	1	3-8 TO 6-2 5/8 AT 2 3/16	
554B	VARIES	1	3-8 TO 5-10 AT 2	
554C	VARIES	1	3-8 TO 5-5 3/4 AT 113/16	
555A	18-1	3	16-1	45°-00"
555B	19-6	3	17-6	45°-00"
555C	20-11	3	18-11	45°-00"
651B	VARIES	2	10-7 TO 10-11 1/2 AT 4 1/2	2-1
651C	VARIES	2	10-8 1/2 TO 11-10 AT 4 1/2	2-1
652	7-9	2	5-0	2-1
653A	VARIES	1	5-4 3/4 TO 6- 3 11/16 AT 2 13/16	
653B	VARIES	1	4-11 TO 5-11 AT 2	
653C	VARIES	1	4-7 3/4 TO 5-6 5/16 AT 113/16	
654	VARIES	1	6-0 TO 4-6 AT 6	
751B	VARIES	1	6-0 TO 6-2 AT 1	
751C	VARIES	1	5-7 9/16 TO 6-1 AT 29/32	
752	VARIES	1	6-0 TO 4-6 AT 6	
454	7-11	5	0-8	
455	8-1	4	0-4	
951	22-10	1	22-10	
952	22-6	1	22-6	
953	17-0	1	17-0	



FIRST DIGIT OF THREE DIGIT BAR NUMBERS DENOTES SIZE.
ALL DIMENSIONS ARE OUT TO OUT OF BARS.

BOX CULVERT REQUIREMENTS:

MINIMUM FILL HEIGHT FROM TOP OF CULVERT TO BOTTOM OF BASE WITHIN TRAVELWAY SHALL BE 12 INCHES.

MAXIMUM POUR LENGTH SHALL NOT EXCEED 30 FEET ALONG THE LENGTH OF THE CULVERT.

TRANSVERSE CONSTRUCTION JOINTS SHALL BE PLACED IN THE BARREL, NORMAL TO THE CENTERLINE OF CULVERT, AT THE OUTSIDE SHOULDER BREAK POINTS. LONGITUDINAL BARREL REINFORCING STEEL SHALL NOT BE CONTINUOUS THROUGH THESE JOINTS, PROVIDED THAT THE JOINTS ARE MORE THAN 15 FEET FROM THE BARREL ENDS.
WHEN TRANSVERSE CONSTRUCTION JOINTS OCCUR WITHIN 15 FEET OF THE BARREL ENDS OR WITHIN THE LIMITS OF THE PAVEMENT, THE LONGITUDINAL BARREL REINFORCING SHALL THEN BE CONTINUOUS THROUGH SUCH JOINTS. THE MINIMUM LENGTH OF LAP SPLICE FOR LONGITUDINAL REINFORCING SHALL BE 24 INCHES.

TRANSVERSE CONSTRUCTION JOINTS PLACED AT ANY OTHER LOCATION NOT SPECIFIED ABOVE SHALL BE FORMED WITH NO LONGITUDINAL REINFORCING STEEL PASSING THROUGH THE JOINTS.

WINGWALL, PARAPET & TOE WALL REINFORCEMENT DIMENSIONS AND QUANTITIES			
SIZE	DOUBLE IOX8	DOUBLE IOX9	DOUBLE IOX10
BARS WA	15-551A AT 12	14-551B AT 12	13-551C AT 12
BARS WB	-	2-651B AT 12	4-651C AT 12
BARS WC	6-552 AT 12	7-552 AT 12	7-552 AT 12
BARS WD	-	6-652 AT 12	4-652 AT 12
BARS WE	9-451A AT 12	9-451B AT 12	10-451C AT 12
BARS WF	9-553 AT 12	9-553 AT 12	9-553 AT 12
BARS WG	15-554A AT 12	14-554B AT 12	13-554C AT 12
BARS WH	6-653A AT 12	7-653B AT 12	7-653C AT 12
BARS WJ	-	3-751B AT 6	7-751C AT 6
BARS WK	4-654 AT 12	4-752 AT 6	4-752 AT 6
BARS WL	1-452A	1-452B	1-452C
BARS WM	7-453A	7-453B	7-453C
BARS WN	2-555A	2-555B	2-555C
BARS PA	12-454	12-454	12-454
BARS PB	2-951	2-951	2-951
BARS PC	2-952	2-952	2-952
BARS AA	12-455	12-455	12-455
BARS AB	2-952	2-952	2-952
BARS AC	2-953	2-953	2-953
P	14'-9"	16'-2"	17'-7"
R	4'-2 1/2"	4'-8 1/2"	5'-2 1/2"
X	5'-2 1/2"	5'-8 1/2"	6'-2 1/2"
Y	9'-5"	10'-5"	11'-5"
CU. YDS. CONCRETE	34.88	39.15	43.71
LB. BAR REINFORCEMENT STEEL	4010	4748	5043

THE NUMBER OF BARS SHOWN ABOVE ARE FOR ONE WINGWALL, ONE PARAPET OR TOE WALL. THE QUANTITIES SHOWN ARE FOR FOUR WINGWALLS, TWO PARAPETS AND TWO TOE WALLS. THEY WERE COMPUTED TO BACK OF PARAPET AND INCLUDE ALL WINGWALL FOOTINGS, AND ALL OF BARS WF, WK, WM, PA, AND AA, AND .8333 X QUANTITY OF REINFORCEMENT STEEL FOR 2 FT. OF BARREL.

