



- NOTES**
- 25MPa CONCRETE TO BE USED EXCEPT AS NOTED.
 - MAXIMUM SIZE OF COARSE AGGREGATE TO BE 20mm
 - COVER TO MAIN REINFORCING TO BE 50mm OR AS INDICATED.
 - ALL BAR DIMENSIONS ARE OUT TO OUT.
 - BARs TO BE BENT COLD, MINIMUM INSIDE RADIUS TO 4 DIAMETERS.
 - ALL CROSSING BARS TO BE WELL WIRED.
 - ALL REINFORCING STEEL TO BE DEFORMED BILLET-STEEL BARS GRADE 350, CONFORMING TO C.S.A. STANDARD C308.12M
 - ALL LAPS IN REINFORCING STEEL TO BE AT LEAST 30 DIAMETERS IN LENGTH OR AS SHOWN, AND TO BE STAGGERED.
 - REINFORCING TO BE OF HIGH QUALITY HARD SEWER BRICK, LAD IN FULL MORTAR BED AND JOINTS, PARGED INSIDE AND OUTSIDE.
 - WATERSTOP (P.V.C.) TO BE PROVIDED AT ALL CONSTRUCTION JOINTS.
 - WHERE NECESSARY ADJUST REINFORCING STEEL TO SUIT WATERSTOPS AND OPENINGS.
 - PROTECT SLUMP PIT WITH GRATING AND SLORE FLOOR TO SLUMP (DOWN) THE DRAIN OUTLET TO BE LOCATED AT NEAREST POINT TO EXISTING SEWER.
 - DRAIN CONNECTION TO SEWER TO BE MADE BY CONTRACTOR UNLESS OTHERWISE NOTED IN THE GENERAL SPECIFICATIONS.
 - LADDERS, GRATINGS AND RAILS TO BE ALUMINUM AND OF REMOVABLE TYPE WITH STAINLESS STEEL BOLTS.
 - TOP TWO STEPS AND ANY ADDITIONAL STEPS IN THE CHIMNEY TO BE OF THE REMOVABLE TYPE.
 - CHAMBERS DEEPER THAN 1200mm FROM SURFACE ELEVATION TO TOP OF VALVE OPERATING SPINDLE SHALL HAVE EXTENSION SPINDLE AND GUIDE BRACKET.
 - ALL ALUMINUM SURFACES CONTACTING CONCRETE TO RECEIVE ONE COAT OF BITUMINOUS PAINT.
 - *" SPENDS ON HEIGHT OF CHIMNEY (DIM 'X') AND BARS SHALL BE COUNTED TO ENSURE THAT THE BOTTOM BAR IS LESS THAN 150mm ABOVE THE CHAMBER ROOF.

BENDING SCHEDULE

BAR No.	SHA	TOTAL LENGTH	DIMENSIONS				SHAPE	O.C.	No. REQS.
			a	b	c	d			
10M1	15	800	220	220	220		AS SHOWN	8	
10M2	710	120	230	120			AS SHOWN	8	
10M3	1640	530	230	530	230		AS SHOWN	20	
10M4	1240	300	220	300	220		AS SHOWN	8	
10M5	3500						AS SHOWN	9	
10M6	900						AS SHOWN	24	
10M7	1260						AS SHOWN	11	
10M8	2400						AS SHOWN	4	
10M9	1800						AS SHOWN	8	
10M10	1050	H=100					AS SHOWN	10	
10M11	H=600						AS SHOWN	6	
10M12	814						AS SHOWN	4	
10M13	1050						AS SHOWN	6	
10M14	1500						AS SHOWN	7	
10M15	1050						AS SHOWN	8	
10M16	1850	1270	600				AS SHOWN	10	
10M17	H=530	H=200	450				AS SHOWN	8	
10M18	H=180	H=100	200				AS SHOWN	3	
10M19	H=434	H=100	614				AS SHOWN	3	
10M20	2520	2040	600				AS SHOWN	6	
10M21	2520	400	1050	600			AS SHOWN	2	
10M22	4260	600	3100	600			AS SHOWN	2	
15M1	15	1840	1800				AS SHOWN	8	
15M2	2400	2100					AS SHOWN	7	
15M3	2400	2040					AS SHOWN	7	
15M4	1630	1270					AS SHOWN	7	
15M5	3000						AS SHOWN	11	
15M6	2200						AS SHOWN	14	
15M7	2400						AS SHOWN	4	
15M8	1600						AS SHOWN	11	
20M1	30	3600					AS SHOWN	9	
20M2	3100						AS SHOWN	12	
20M3	3100						AS SHOWN	11	
20M4	2000						AS SHOWN	24	
20M5	3600						AS SHOWN	22	
20M6	3100						AS SHOWN	7	
20M7	2850						AS SHOWN	7	
20M8	1370	1050	300				AS SHOWN	42	
20M9	2900	1050	1050				AS SHOWN	48	
20M10	3710	3150	600				AS SHOWN	10	
20M11	6120	1850	3100	1850			AS SHOWN	24	
25M1	25	4460	3600				AS SHOWN	8	
20M1	30	O.D.=600					AS SHOWN	8	

FOR REINFORCING AT DRAIN REFER TO SLUMP AND DRAIN DETAIL DNG.

MATERIAL LIST

MARK	SUPPLIED BY CONTRACTOR	MARK	SUPPLIED BY CONTRACTOR
128	1-1200mm HORIZONTAL BUTTERFLY VALVE	C40	1-1200mm FABRICATED S.S. FL-VCT CONNECTION
C1	1-120mm AD VALVE (FLANGED)	C41	1-1200mm FABRICATED S.S. VCT SPACER
C2	4-120mm BALL VALVES SS BODY/FLYON SEAT	C43	1-1200mm FABRICATED S.S. METALIC CONNECTION
C3	1-120mm BACKWATER CHECK VALVE	C44	2-1200mm VCT COMPENS. STYLE 44 BRIDGEMAN
C4	1-120mm BALL VALVE SS BODY/FLYON SEAT	C45	1-1200mm FABRICATED S.S. FLANGE ASSEMBLY
C5	1-120mm BALL VALVE SS BODY/FLYON SEAT	C50	2-1200mm 1200mm COGNIZING REDUCERS
C6	1-120mm BACKWATER CHECK VALVE	C53	1-CAST IRON SQUARE FRAME WITH CIRCULAR TOP AND BOTTOM FLANGE
C67	1-120mm BALL VALVE SS BODY/FLYON SEAT	C55	1-120mm BALL VALVE SS BODY/FLYON SEAT
C68	1-120mm BALL VALVE SS BODY/FLYON SEAT	C56	8-CHIN ANCHORS WITH M16 S.S. BOLTS & NUTS
C69	1-120mm BALL VALVE SS BODY/FLYON SEAT	C57	80-845 1/2" DIA. 1/2" THICK 304 SS BOLTS AND NUTS
C70	1-120mm BALL VALVE SS BODY/FLYON SEAT	C58	8-845 1/2" DIA. 1/2" THICK 304 SS BOLTS AND NUTS
C71	1-120mm BALL VALVE SS BODY/FLYON SEAT	C59	1-120mm BALL VALVE SS BODY/FLYON SEAT
C72	1-120mm BALL VALVE SS BODY/FLYON SEAT	C60	1-120mm BALL VALVE SS BODY/FLYON SEAT
C73	1-120mm BALL VALVE SS BODY/FLYON SEAT	C61	1-120mm BALL VALVE SS BODY/FLYON SEAT
C74	1-120mm BALL VALVE SS BODY/FLYON SEAT	C62	1-120mm BALL VALVE SS BODY/FLYON SEAT
C75	1-120mm BALL VALVE SS BODY/FLYON SEAT	C63	1-120mm BALL VALVE SS BODY/FLYON SEAT
C76	1-120mm BALL VALVE SS BODY/FLYON SEAT	C64	1-120mm BALL VALVE SS BODY/FLYON SEAT
C77	1-120mm BALL VALVE SS BODY/FLYON SEAT	C65	1-120mm BALL VALVE SS BODY/FLYON SEAT
C78	1-120mm BALL VALVE SS BODY/FLYON SEAT	C66	1-120mm BALL VALVE SS BODY/FLYON SEAT
C79	1-120mm BALL VALVE SS BODY/FLYON SEAT	C67	1-120mm BALL VALVE SS BODY/FLYON SEAT
C80	1-120mm BALL VALVE SS BODY/FLYON SEAT	C68	1-120mm BALL VALVE SS BODY/FLYON SEAT
C81	1-120mm BALL VALVE SS BODY/FLYON SEAT	C69	1-120mm BALL VALVE SS BODY/FLYON SEAT
C82	1-120mm BALL VALVE SS BODY/FLYON SEAT	C70	1-120mm BALL VALVE SS BODY/FLYON SEAT
C83	1-120mm BALL VALVE SS BODY/FLYON SEAT	C71	1-120mm BALL VALVE SS BODY/FLYON SEAT
C84	1-120mm BALL VALVE SS BODY/FLYON SEAT	C72	1-120mm BALL VALVE SS BODY/FLYON SEAT
C85	1-120mm BALL VALVE SS BODY/FLYON SEAT	C73	1-120mm BALL VALVE SS BODY/FLYON SEAT
C86	1-120mm BALL VALVE SS BODY/FLYON SEAT	C74	1-120mm BALL VALVE SS BODY/FLYON SEAT
C87	1-120mm BALL VALVE SS BODY/FLYON SEAT	C75	1-120mm BALL VALVE SS BODY/FLYON SEAT
C88	1-120mm BALL VALVE SS BODY/FLYON SEAT	C76	1-120mm BALL VALVE SS BODY/FLYON SEAT
C89	1-120mm BALL VALVE SS BODY/FLYON SEAT	C77	1-120mm BALL VALVE SS BODY/FLYON SEAT
C90	1-120mm BALL VALVE SS BODY/FLYON SEAT	C78	1-120mm BALL VALVE SS BODY/FLYON SEAT
C91	1-120mm BALL VALVE SS BODY/FLYON SEAT	C79	1-120mm BALL VALVE SS BODY/FLYON SEAT
C92	1-120mm BALL VALVE SS BODY/FLYON SEAT	C80	1-120mm BALL VALVE SS BODY/FLYON SEAT
C93	1-120mm BALL VALVE SS BODY/FLYON SEAT	C81	1-120mm BALL VALVE SS BODY/FLYON SEAT
C94	1-120mm BALL VALVE SS BODY/FLYON SEAT	C82	1-120mm BALL VALVE SS BODY/FLYON SEAT
C95	1-120mm BALL VALVE SS BODY/FLYON SEAT	C83	1-120mm BALL VALVE SS BODY/FLYON SEAT
C96	1-120mm BALL VALVE SS BODY/FLYON SEAT	C84	1-120mm BALL VALVE SS BODY/FLYON SEAT
C97	1-120mm BALL VALVE SS BODY/FLYON SEAT	C85	1-120mm BALL VALVE SS BODY/FLYON SEAT
C98	1-120mm BALL VALVE SS BODY/FLYON SEAT	C86	1-120mm BALL VALVE SS BODY/FLYON SEAT
C99	1-120mm BALL VALVE SS BODY/FLYON SEAT	C87	1-120mm BALL VALVE SS BODY/FLYON SEAT
C100	1-120mm BALL VALVE SS BODY/FLYON SEAT	C88	1-120mm BALL VALVE SS BODY/FLYON SEAT

FOR DETAILS OF C40, C41, C43, C45 AND C81 SEE DNG.

					Title Subtitle1 Subtitle2		
	GENERAL MANAGER, TORONTO WATER				DESIGN AND CONSTRUCTION Linear Underground Infrastructure		
CHIEF ENGINEER AND EXECUTIVE DIRECTOR, Engineering & Construction Services				DESIGNER, Design and Construction Linear Underground Infrastructure			
MANAGER, Design and Construction Linear Underground Infrastructure				1200 mm HORIZONTAL BUTTERFLY VALVE CHAMBER (Position A)			
No. DATE REVISIONS INITIAL SIGNED				DESIGN Design DRAWN Drawn CHECKED Checked CONTRACT No.-X-X			
SCALE DATE				SCALE DATE			
DATE				CHECKING NUMBER T-1110.11-1 SHEET X OF X			