

BILL OF MISCELLANEOUS METAL FOR EXPANSION JOINTS AT SU. 2, SU.3 & SU.4						
MARK	No.	DESCRIPTION	SIZE	UNIT MASS	MASS (kg)	TOTAL MASS
E1a	3	STEEL EDGE ANGLE - COMPLETELY GALVANIZED				466.482
		EACH UNIT TO BE FABRICATED FROM:				
		EDGE ANGLE	1 - L203 X 152 X 13 X 4365 LONG, AS DETAILED		148.847	
		STUDS MK. "A1"	9 - NELSON STUD ANCHORS TYPE H4L, 13 Ø X 150 LONG, AS DETAILED	0.178	1.602	
		STUDS MK. "A2"	5 - NELSON STUD ANCHORS TYPE H4L, 13 Ø X 150 LONG, AS DETAILED	0.178	0.890	
		STUDS MK. "A3"	10 - NELSON STUD ANCHORS TYPE H4L, 13 Ø X 150 LONG, AS DETAILED	0.178	1.780	
		STUDS MK. "A4"	5 - NELSON THREADED STUD TYPE CFL, 19 Ø X 50 LONG, AS DETAILED C/W 5 - COUPLING NUTS	0.097 0.082	0.485 0.410	
		HEX NUTS	14 - HEX NUTS C/W PLASTIC CAP WELDED TO UNDERSIDE OF ANGLE FOR 19Ø HEX SOCKET FLAT HEAD COUNTERSUNK SCREWS	0.135	1.890	
					155.494	
		E1b	3	STEEL EDGE ANGLE - COMPLETELY GALVANIZED		
EACH UNIT TO BE FABRICATED FROM:						
EDGE ANGLE	1 - L203 X 152 X 13 X 4365 LONG, AS DETAILED				148.847	
STUDS MK. "A1"	9 - NELSON STUD ANCHORS TYPE H4L, 13 Ø X 150 LONG, AS DETAILED			0.178	1.602	
STUDS MK. "A2"	5 - NELSON STUD ANCHORS TYPE H4L, 13 Ø X 150 LONG, AS DETAILED			0.178	0.890	
STUDS MK. "A3"	10 - NELSON STUD ANCHORS TYPE H4L, 13 Ø X 150 LONG, AS DETAILED			0.178	1.780	
STUDS MK. "A4"	5 - NELSON THREADED STUD TYPE CFL, 19 Ø X 50 LONG, AS DETAILED C/W 5 - COUPLING NUTS			0.097 0.082	0.485 0.410	
HEX NUTS	14 - HEX NUTS C/W PLASTIC CAP WELDED TO UNDERSIDE OF ANGLE FOR 19Ø HEX SOCKET FLAT HEAD COUNTERSUNK SCREWS			0.135	1.890	
					153.604	
E2a	3			STEEL EDGE ANGLE - COMPLETELY GALVANIZED		
		EACH UNIT TO BE FABRICATED FROM:				
		EDGE ANGLE	1 - L203 X 152 X 13 X 4365 LONG, AS DETAILED		148.847	
		STUDS MK. "A1"	9 - NELSON STUD ANCHORS TYPE H4L, 13 Ø X 150 LONG, AS DETAILED	0.178	1.602	
		STUDS MK. "A2"	5 - NELSON STUD ANCHORS TYPE H4L, 13 Ø X 150 LONG, AS DETAILED	0.178	0.890	
		STUDS MK. "A3"	10 - NELSON STUD ANCHORS TYPE H4L, 13 Ø X 150 LONG, AS DETAILED	0.178	1.780	
		STUDS MK. "A4"	5 - NELSON THREADED STUD TYPE CFL, 19 Ø X 50 LONG, AS DETAILED C/W 5 - COUPLING NUTS	0.097 0.082	0.485 0.410	
		HEX NUTS	14 - HEX NUTS C/W PLASTIC CAP WELDED TO UNDERSIDE OF ANGLE FOR 19Ø HEX SOCKET FLAT HEAD COUNTERSUNK SCREWS	0.135	1.890	
					155.494	
		E2b	3	STEEL EDGE ANGLE - COMPLETELY GALVANIZED		
EACH UNIT TO BE FABRICATED FROM:						
EDGE ANGLE	1 - L203 X 152 X 13 X 4365 LONG, AS DETAILED				148.847	
STUDS MK. "A1"	9 - NELSON STUD ANCHORS TYPE H4L, 13 Ø X 150 LONG, AS DETAILED			0.178	1.602	
STUDS MK. "A2"	5 - NELSON STUD ANCHORS TYPE H4L, 13 Ø X 150 LONG, AS DETAILED			0.178	0.890	
STUDS MK. "A3"	10 - NELSON STUD ANCHORS TYPE H4L, 13 Ø X 150 LONG, AS DETAILED			0.178	1.780	
STUDS MK. "A4"	5 - NELSON THREADED STUD TYPE CFL, 19 Ø X 50 LONG, AS DETAILED C/W 5 - COUPLING NUTS			0.097 0.082	0.485 0.410	
HEX NUTS	14 - HEX NUTS C/W PLASTIC CAP WELDED TO UNDERSIDE OF ANGLE FOR 19Ø HEX SOCKET FLAT HEAD COUNTERSUNK SCREWS			0.135	1.890	
					153.604	
C1	3			STEEL COVER PLATE	400 X 12 X 3969 LONG, AS DETAILED	149.551
C2	3	STEEL COVER PLATE	400 X 12 X 3960 LONG, AS DETAILED	149.213		447.639
C3	3	STEEL COVER PLATE	400 X 10, AS DETAILED	61.513		184.539
C4	3	STEEL COVER PLATE	400 X 10, AS DETAILED	61.513		184.539
	132	SCREWS	19Ø X 40 LG. HEX SOCKET FLAT HEAD COUNTERSUNK SCREWS	0.100		13.200
R1	6	BAR PLATE	40 X 12 X 3876 LONG, AS DETAILED	14.604		87.624
R2	6	BAR PLATE	40 X 12 X 3978 LONG, AS DETAILED	14.989		89.934
R3	12	BAR PLATE	40 X 10, AS DETAILED	6.151		73.812

BILL OF MISCELLANEOUS METAL FOR EXPANSION JOINTS AT SU. 2, SU.3 & SU.4						
MARK	No.	DESCRIPTION	SIZE	UNIT MASS	MASS (kg)	TOTAL MASS
B1a	3	STEEL BOTTOM PLATE - COMPLETELY GALVANIZED				18.963
		EACH UNIT TO BE FABRICATED FROM:				
		BOTTOM PLATE	203 X 10, AS DETAILED		4.529	
		STUDS MK. "A1"	4 - NELSON STUD ANCHORS TYPE H4L, 13 Ø X 150 LONG, AS DETAILED	0.178	0.712	
		HEX NUTS	8 - HEX NUTS C/W PLASTIC CAP WELDED TO UNDERSIDE OF ANGLE FOR 19Ø HEX SOCKET FLAT HEAD COUNTERSUNK SCREWS	0.135	1.080	
					6.321	
B1b	3	STEEL BOTTOM PLATE - COMPLETELY GALVANIZED				15.723
		EACH UNIT TO BE FABRICATED FROM:				
		BOTTOM PLATE	203 X 10, AS DETAILED		4.529	
		STUDS MK. "A1"	4 - NELSON STUD ANCHORS TYPE H4L, 13 Ø X 150 LONG, AS DETAILED	0.178	0.712	
			5.241			
B2a	3	STEEL BOTTOM PLATE - COMPLETELY GALVANIZED				18.963
		EACH UNIT TO BE FABRICATED FROM:				
		BOTTOM PLATE	203 X 10, AS DETAILED		4.529	
		STUDS MK. "A1"	4 - NELSON STUD ANCHORS TYPE H4L, 13 Ø X 150 LONG, AS DETAILED	0.178	0.712	
		HEX NUTS	8 - HEX NUTS C/W PLASTIC CAP WELDED TO UNDERSIDE OF ANGLE FOR 19Ø HEX SOCKET FLAT HEAD COUNTERSUNK SCREWS	0.135	1.080	
					6.321	
B2b	3	STEEL BOTTOM PLATE - COMPLETELY GALVANIZED				15.723
		EACH UNIT TO BE FABRICATED FROM:				
		BOTTOM PLATE	203 X 10, AS DETAILED		4.529	
		STUDS MK. "A1"	4 - NELSON STUD ANCHORS TYPE H4L, 13 Ø X 150 LONG, AS DETAILED	0.178	0.712	
			5.241			
N1	6	STEEL END PLATE - COMPLETELY GALVANIZED				206.802
		EACH UNIT TO BE FABRICATED FROM:				
		END PLATE	1397 X 10, AS DETAILED		33.755	
		STUDS MK. "A2"	4 - NELSON STUD ANCHORS TYPE H4L, 13 Ø X 150 LONG, AS DETAILED	0.178	0.712	
			34.467			
N2	6	STEEL END PLATE - COMPLETELY GALVANIZED				206.802
		EACH UNIT TO BE FABRICATED FROM:				
		END PLATE	1397 X 10, AS DETAILED		33.755	
		STUDS MK. "A2"	4 - NELSON STUD ANCHORS TYPE H4L, 13 Ø X 150 LONG, AS DETAILED	0.178	0.712	
			34.467			
S1	12	STOPPER BAR	10 X 10 X 1025 LONG, AS DETAILED		14.612	87.672
TOTAL MASS = 3955.2 kg						
NOTE: ALL MATERIAL IN THE ABOVE BILL OF MISCELLANEOUS METAL SHALL BE NOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 TO A NET RETENTION OF 610 g/m <sup>2</sup> UNLESS NOTED OTHERWISE.						

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NO.	REVISIONS	DATE	BY
0	ISSUED FOR TENDER	17/01/09	RE

DESIGNED BY	RE	CHECKED BY	SSR
DRAWN BY	CGC	APPROVED BY	DBW
HOR. SCALE	AS SHOWN	RELEASED FOR CONSTRUCTION	
VERTICAL	AS SHOWN		

ENGINEER'S SEAL  
  
 CONSULTANT PROJECT NUMBER  
**16-3353**

**THE CITY OF WINNIPEG**  
 PUBLIC WORKS DEPARTMENT  
  
 WAVERLEY STREET UNDERPASS AT CN MILE 3.89 RIVERS SUB  
 CONTRACT 2: UNDERPASS STRUCTURE, RAILWORKS,  
 ROADWORKS, LAND DRAINAGE SEWER, PUMPING STATION  
 AND LANDSCAPING WORKS  
 CITY DRAWING NUMBER  
 U-239-2016-C2-CS-050  
 SHEET **050** OF **085**  
 CONSULTANT DRAWING NUMBER  
**C2-CS-050**