

BILL OF MATERIAL					BILL OF MATERIAL					BILL OF MATERIAL				
MARK	QTY	SIZE	DESCRIPTION	LENGTH	MARK	QTY	SIZE	DESCRIPTION	LENGTH	MARK	QTY	SIZE	DESCRIPTION	LENGTH
1	1	3/4"	PIPE, API 5L, XH, GRADE B, SMLS, DRL, PE	10'-11"	44	4	5/8"	(4) STUD BOLTS FOR 2" 150LB FLANGES, ASTM A-193, GR. B7 W/TWO (2) ASTM A-194, GR. 2H, HEAVY HEX NUTS EACH	4"	73	1	2"x3/4"	SWAGE, CONC., ASTM A-105, FNPT, SCH. 160, WPB	
2	1	1"	PIPE, API 5L, XH, GRADE B, SMLS, DRL, PE	12'-2"						74	1	3/4"	TEE, ASTM A-106, FNPT, 3000#, GRADE B	
3	1	1"	PIPE, COPPER	18'-5"						75	2	1"	TEE, ASTM A-106, FNPT, 3000#, GRADE B	
4	1	2"	PIPE, API 5L, XH, GRADE B, SMLS, DRL, PE	34'-7"						76	4	2"	TEE, ASTM A-106, FNPT, 3000#, GRADE B	
5	1	2"	PIPE, API 5L, XH, GRADE B, SMLS, DRL, PE, FBE COATED 14-16 MILS	247'-4"						77	2	3/4"x1/2"	TEE, RED. ASTM A-106, FNPT, 3000#, GRADE B	
6	1	4"	PIPE, API 5L, STD, GRADE B, SMLS, DRL, PE	61'-1"	46	7	5/8"	(8) STUD BOLTS FOR 4" 150LB FLANGES, ASTM A-193, GR. B7 W/TWO (2) ASTM A-194, GR. 2H, HEAVY HEX NUTS EACH	4"	78	2	1"x3/4"	TEE, RED. ASTM A-106, FNPT, 3000#, GRADE B	
7	1	4"	PIPE, API 5L, STD, GRADE B, SMLS, DRL, PE, FBE COATED 14-16 MILS	59'-4"						79	2	1/2"x1/4"	BUSHING, THRD 3000LB, HEXAGON HEAD (LADISH PART NO. 600),(LGT,THD,(LE)&THD,(SE) PER ASME B16.11-2001)	
8	1	8"	PIPE, API 5L, STD, GRADE B, SMLS, DRL, PE	5'-4"	47	1	7/8"	(8) STUD BOLTS FOR 4" 600LB FLANGES, ASTM A-193, GR. B7 W/TWO (2) ASTM A-194, GR. 2H, HEAVY HEX NUTS EACH	6"	80	1	3/4"x1/2"	BUSHING, RED. THRD 3000LB, ASTM A-105	
9	1	10"	PIPE, API 5L, STD, GRADE B, ERW, DRL, PE	65'-10"						81	3	10"x2"	THRED-O-LET, ASTM A-105, FNPT, 3000#, GRADE B	
10	1	10"	PIPE, API 5L, STD, GRADE B, ERW, DRL, PE, FBE COATED 14-16 MILS	156'-0"						82	8	3/4"	ELL, 90°, FNPT, 3000#, ASTM A-105, GRADE B	
11	1	12"	PIPE, API 5L, STD, GRADE B, ERW, DRL, PE	42'-6"	48	1	3/4"	(8) STUD BOLTS FOR 6" 150LB FLANGES, ASTM A-193, GR. B7 W/TWO (2) ASTM A-194, GR. 2H, HEAVY HEX NUTS EACH	4"	83	12	1"	ELL, 90°, FNPT, 3000#, ASTM A-105, GRADE B	
12	1	12"	PIPE, API 5L, STD, GRADE B, ERW, DRL, PE, FBE COATED 14-16 MILS	229'-0"						84	15	2"	ELL, 90°, FNPT, 3000#, ASTM A-105, GRADE B	
13	4	12"	BEND, 30°, 6D, 2'-0" TANGENT, STD, X-42, ERW, DRL, PE	7'-2"	49	1	1 3/8"	(12) STUD BOLTS FOR 8" 900LB FLANGES, ASTM A-193, GR. B7 W/TWO (2) ASTM A-194, GR. 2H, HEAVY HEX NUTS EACH	9"	85	8	10"x2"	WELD-O-LET, ASTM A-105, BUTT WELD, 3000#, GRADE B	
14	2	12"	BEND, 85°, 6D, 2'-0" TANGENT, STD, X-42, ERW, DRL, PE	13'-0"						86	3	8"x3/4"	THRED-O-LET, ASTM A-105, FNPT, 3000#, GRADE B	
15	2	12"	BEND, 90°, 6D, 2'-0" TANGENT, STD, X-42, ERW, DRL, PE	13'-5"	50	12	1 1/4"	(16) STUD BOLTS FOR 10" 600LB FLANGES, ASTM A-193, GR. B7 W/TWO (2) ASTM A-194, GR. 2H, HEAVY HEX NUTS EACH	9"	87	7	10"x3/4"	THRED-O-LET, ASTM A-105, FNPT, 3000#, GRADE B	
16	2	4"	FLEX HOSE, BRAIDED	19"						88	4	12"x3/4"	THRED-O-LET, ASTM A-105, FNPT, 3000#, GRADE B	
17	2	1"	ELL, 45°, COPPER, SWEAT FITTING							89	4	2"	THRED-O-RING	
18	11	1"	ELL, 90°, COPPER, SWEAT FITTING		51	1	1 3/8"	(16) STUD BOLTS FOR 10" 900LB FLANGES, ASTM A-193, GR. B7 W/TWO (2) ASTM A-194, GR. 2H, HEAVY HEX NUTS EACH	10"	90	4	10"x2"	ELBOW-LET, FNPT, ASTM A-105, 6000LB	
19	27	2"	ELL, 90° LR, ASTM A-234, BUTT WELD, STD WALL, WPB							91	1	3/4"	COUPLING, THRD 3000# FNPT, ASTM A-105	
20	5	4"	ELL, 90° LR, ASTM A-234, BUTT WELD, STD WALL, WPB							92	3	2"x1"	COUPLING RED, THRD, ASTM A-105	
21	18	10"	ELL, 90° LR, ASTM A-234, BUTT WELD, STD WALL, WPB		52	2	1 1/4"	(16) STUD BOLTS FOR 10" 600LB FLANGES WITH SPECTACLE BLIND, ASTM A-193, GR. B7 W/TWO (2) ASTM A-194, GR. 2H, HEAVY HEX NUTS EACH	11"	93	2	12"x2"	THRED-O-LET, ASTM A-105, FNPT, 3000#, GRADE B	
22	5	2"	TEE, ASTM A-234, BUTT WELD, STD WALL, WPB							94	4	1"	UNION, FNPT, 3000#, ASTM A-105, GRADE B	
23	4	10"	TEE, ASTM A-234, BUTT WELD, STD WALL, WPB							95	9	2"	UNION, FNPT, 3000#, ASTM A-105, GRADE B	
24	5	4"x2"	TEE, REDUCING, ASTM A-234, BUTT WELD, STD WALL, WPB		53	6	1 1/4"	(20) STUD BOLTS FOR 12" 600LB FLANGES, ASTM A-193, GR. B7 W/TWO (2) ASTM A-194, GR. 2H, HEAVY HEX NUTS EACH	9"	96	2	3/4"	UNION, FNPT, 3000#, ASTM A-105, GRADE B	
25	2	12"x10"	TEE, REDUCING, BARRED, ASTM A-234, BUTT WELD, STD WALL, WPB							97	6	3/4"	PLUG, ASTM A-106, MNPT, SCH. 160, GRADE B	
26	3	2"	FLG, ANSI 150 RFWN, ASTM A-105, XH, WPB		54	4	2"	GASKET, ANSI 150, FLEXITALLIC SPIRAL WOUND, TYPE "CGI", 316 SS WINDINGS, FLEXITALLIC CGI CENTERING RING		98	2	1/2"	BALL VALVE, SERIES 800 WOG 3000#, FNPT, REDUCED PORT, 316 SS BALL AND TRIM, SS BODY, PTFE SEATS, API 6D OR ASME B16.34, FIRE SAFE DESIGN	1"
27	17	2"	FLG, ANSI 600 RFWN, ASTM A-105, XH, WPB							99	13	3/4"	BALL VALVE, SERIES 800 WOG 3000#, FNPT, REDUCED PORT, 316 SS BALL AND TRIM, SS BODY, PTFE SEATS, API 6D OR ASME B16.34, FIRE SAFE DESIGN	2"
28	5	4"	FLG, ANSI 150 RFWN, ASTM A-105, STD WALL, WPB		55	19	2"	GASKET, ANSI 600, FLEXITALLIC SPIRAL WOUND, TYPE "CGI", 316 SS WINDINGS, FLEXITALLIC CGI CENTERING RING		100	2	1"	BALL VALVE, SERIES 800 WOG 3000#, FNPT, REDUCED PORT, 316 SS BALL AND TRIM, SS BODY, PTFE SEATS, API 6D OR ASME B16.34, FIRE SAFE DESIGN	2"
29	1	4"	FLG, ANSI 600 RFWN, ASTM A-105, STD WALL, WPB							101	2	2"	BALL VALVE, ANSI 150, RFFE, FULL PORT, 316 SS BALL AND TRIM, PTFE SEATS, API 6D, FIRE SAFE DESIGN	7"
30	1	8"	FLG, ANSI 900 RFWN, ASTM A-105, STD WALL, WPB		56	7	4"	GASKET, ANSI 150, FLEXITALLIC SPIRAL WOUND, TYPE "CGI", 316 SS WINDINGS, FLEXITALLIC CGI CENTERING RING		102	9	2"	BALL VALVE, ANSI 600, RFFE, FULL PORT, 316 SS BALL AND TRIM, PTFE SEATS, API 6D, FIRE SAFE DESIGN	7"
31	14	10"	FLG, ANSI 600 RFWN, ASTM A-105, STD WALL, WPB							103	1	2"	CHECK VALVE, ANSI 600, RFFE, FULL CONDUIT W/BONNET COVER, API 6D, 13 CR TRIM, SWING TYPE, HF SEAT	1'-0"
32	1	10"	FLG, ANSI 900 RFWN, ASTM A-105, STD WALL, WPHY-42		57	1	4"	GASKET, ANSI 600, FLEXITALLIC SPIRAL WOUND, TYPE "CGI", 316 SS WINDINGS, FLEXITALLIC CGI CENTERING RING		104	2	10"	CHECK VALVE, ANSI 600, RFFE, FULL CONDUIT W/BONNET COVER, API 6D, 13 CR TRIM, SWING TYPE, HF SEAT	2'-7"
33	8	12"	FLG, ANSI 600 RFWN, ASTM A-105, STD WALL, WPB							105	1	12"	CHECK VALVE, ANSI 600, RFFE, FULL CONDUIT W/BONNET COVER, API 6D, 13 CR TRIM, SWING TYPE, HF SEAT	2'-9"
34	1	2"	FLG, RF, FNPT, 600LB		58	1	6"	GASKET, ANSI 150, FLEXITALLIC SPIRAL WOUND, TYPE "CGI", 316 SS WINDINGS, FLEXITALLIC CGI CENTERING RING		106	4	10"	GATE VALVE, ANSI 600, RFFE, FULL CONDUIT, SLAB GATE, FABRICATED STEEL BODY, C.S. ENP GATE, VITON SEATS, API-6D, FIRE SAFE DESIGN	2'-7"
35	2	4"	FLG, FFWN 150LB							107	1	12"	GATE VALVE, ANSI 600, RFFE, FULL CONDUIT, SLAB GATE, FABRICATED STEEL BODY, C.S. ENP GATE, VITON SEATS, API-6D, FIRE SAFE DESIGN	2'-9"
36	1	2"	FLG, RF BLIND 150LB, ASTM A-105		59	1	8"	GASKET, ANSI 900, FLEXITALLIC SPIRAL WOUND, TYPE "CGI", 316 SS WINDINGS, FLEXITALLIC CGI CENTERING RING		108	2	3/4"x1"	RELIEF VALVE, THRD, 1440 RELIEF PRESSURE	
37	2	2"	FLG, RF BLIND 600LB, ASTM A-105							109	2	10"	BLIND, SPECTACLE, 600LB, ASTM A-105	1"
38	3	10"	FLG, RF BLIND 600LB, ASTM A-105							110	1	2"	INSULATING FLANGE KIT, 600LB	
39	1	4"	FLG, RF BLIND 150LB, ASTM A-105							111	2	10"	INSULATING FLANGE KIT, 600LB	
40	1	4"	FLG, RF BLIND 600LB, ASTM A-105							112	2	12"	INSULATING FLANGE KIT, 600LB	
41	1	6"	FLG, FF BLIND 150LB							113	1	3/4"x1"	RELIEF VALVE, 800LB THRD	
42	1	2"x1"	REDUCER, CONC S/XS, ASTM A-234 GR WPB		62	4	12"	GASKET, ANSI 600, FLEXITALLIC SPIRAL WOUND, TYPE "CGI", 316 SS WINDINGS, FLEXITALLIC CGI CENTERING RING		114	10	2"	PLUG, ASTM A-106, MNPT, SCH. 160, GRADE B	
43	1	10"x8"	REDUCER, ECC., ASTM A-234, BUTT WELD, STD WALL, WPB							115	4	2"	BALL VALVE, SERIES 800 WOG 3000#, FNPT, REDUCED PORT, 316 SS BALL AND TRIM, SS BODY, PTFE SEATS, API 6D OR ASME B16.34, FIRE SAFE DESIGN	3"
					63	2	1/4"	NIPPLE, ASTM A-106, MNPT, SCH. 160, GRADE B TBE	3"					
					64	2	1/2"	NIPPLE, ASTM A-106, MNPT, SCH. 160, GRADE B TBE	5"					
					65	21	3/4"	NIPPLE, ASTM A-106, MNPT, SCH. 160, GRADE B TBE	3"					
					66	1	3/4"	NIPPLE, ASTM A-106, MNPT, SCH. 160, GRADE B TBE	6"					
					66A	3	3/4"	NIPPLE, ASTM A-106, MNPT, SCH. 160, GRADE B TBE	CLOSE					
					67	3	1"	NIPPLE, ASTM A-106, MNPT, SCH. 160, GRADE B TBE	CLOSE					
					68	7	1"	NIPPLE, ASTM A-106, MNPT, SCH. 160, GRADE B TBE	3"					
					69	10	1"	NIPPLE, ASTM A-106, MNPT, SCH. 160, GRADE B TBE	6"					
					70	2	1 1/2"x1"	1 1/2" NPT TO 1" SWEAT						
					71	7	2"	NIPPLE, ASTM A-106, MNPT, SCH. 160, GRADE B TBE	3"					
					72	11	2"	NIPPLE, ASTM A-106, MNPT, SCH. 160, GRADE B TBE	6"					

1	AS-BUILT	2/7/08	EJK	ADJ
0	ISSUED FOR CONSTRUCTION	4/30/07	EJK	ADJ
NO	REVISION	DATE	APPR	BY

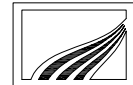
ENBRIDGE PIPELINES (ND)

BLAISDELL STATION

PIPING
MATERIALS

PROJECT: ENBRIDGE ND EXPANSION		
SCALE: NTS	DATE: 12/18/06	DRAWN: ADJ
CHECK:	APPR:	DATE:

DWG. NO. 2431-P-009



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