

VERTICAL AND HORIZONTAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY ALASKA BOOK NO. 4 PAGE 45 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT Huskey DATE 11 BY 4 MO 73 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184









LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ○	STATION	VERTICAL							HORIZONTAL		REMARKS	
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		LR OR DR		RIGHT TURNED HORIZONTAL ANGLE
			SLOPE	HORIZ					INST	ROD			
1												1	
2	Δ	1670	T 14.50	550	91 11 39	+15.0	+11.5	+26.5	2653.5			2	
3	Δ		B 9.00	550	268 47 49	+15.0	+11.5	+26.5				3	
4		1672	330		92 34 40	-4.0	-14.8	-18.8	2634.7			4	
5		1674	110		93 56 12	-2.0	-7.6	-9.6	2643.9			5	
6	π	E.O.L PIPE INSTALLED 1675	0		90 00 00	-4.9	-	-4.9	2648.6			6	E.O.L PIPE LN 638 VP 1675 GRAY-B-281
7	o	B.M. 79379	2643.5		91 47 09	-6.0	-88.6	-94.6	2555.8		REFERENCE: B.A.S SURVEY	7	SOUTH END OF LINE
8	o		TELLURIMETER DISTANCE		268 12 05	-6.0	-89.2	-95.2	2558.6			8	
9									+2.8	MISCLOSURE		9	TAIL SPREAD
10												10	
11												11	
12												12	
13												13	
14												14	
15												15	
16												16	
17												17	




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SYMBOLS Δ = BACKSIGHT π = INSTRUMENT SET-UP SS = SIDESHOT ○ = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HANNAK PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 44 OF 2
 LINE/LOOP NO. 638 TYPE SURVEY _____ CLIENT Husky DATE 11 4 79 YR
 SURVEYOR J. Anderson INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

LINE	  	STATION	VERTICAL							ELEVATION		L/R OR D/I	RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD					
															
1										2589.0			1		
2		1640	660		91 12 23	-4.0	-13.9	-17.9		2571.1			2		
3		1642	440		-								3		
4		1644	220		91 39 57	2.0	-6.4	-8.4		2580.6			4		
5	X	1646	0		90 00 00	2.9	-	-4.9		2584.1			5		
6		1648	220		89 42 34	-4.0	+1.1	-2.9		2586.1			6		
7		1650	440		-								7		
8		1652	660		89 20 40	-5.2	+7.6	+2.4		2591.4			8		
9		1654	880		-								9		
10		1656	1100		89 37 47	-5.2	+7.1	+1.9		2590.9			10		
11		1658	1320		-								11		
12		1660	1540		89 35 38	-5.2	+10.9	+5.7		2594.7			12		
13		1662	1760		-								13		
14		1664	1980		89 25 03	-4.0	+20.1	+16.1		2605.1			14		
15		1666	2200		-								15		
16		1668	2420		89 16 50	-5.2	+34.6	+29.4		2618.4			16		
17	0	1670	T 14.30 1830		88 51 21	-15.0	+53.1	+38.1		2627.0			17		

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SYMBOLS  = BACKSIGHT  = INSTRUMENT SET-UP **SS** = SIDESHOT  = FORESIGHT

VERTICAL AND HORIZONTAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. 4 PAGE 43 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT Husky DATE 11 DY 4 MO 29 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184







LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	STATION	VERTICAL							HORIZONTAL		REMARKS	
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		L/R OR DJ		RIGHT TURNED HORIZONTAL ANGLE
			SLOPE	HORIZ					INST	ROD			
1									2465.6			1	
2		1618	2200									2	
3		1620	2420	88 57 33	2.0	+44.0	+42.0		2507.6			3	
4	⊙	1622	714.40 1340	88 58 16	1.0	+63.7	+62.7		2521.9			4	
5	⊙		C 1.00 2680	271 20 42	1.0	+62.9	+61.9					5	
6												6	
7												7	
8	Δ	1622	2640 ✓	90 57 35	15.0	+45.8	+60.8	2589.0				8	
9	Δ			268 59 45	15.0	+46.3	+61.3					9	
10		1624	2420	91 12 34	4.0	-51.1	-55.1	2533.9				10	
11		1626	2200									11	
12		1628	1980	91 13 58	4.0	-42.6	-46.6	2542.4				12	
13		1630	1760									13	
14		1632	1540	91 10 26	4.0	-31.5	-35.5	2553.5				14	
15		1634	1320									15	
16		1636	1100	91 12 10	4.0	-23.1	-27.1	2561.9				16	
17		1638	880									17	

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SYMBOLS Δ = BACKSIGHT ⊕ = INSTRUMENT SET-UP SS = SIDESHOT ⊙ = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 42 OF 4
 LINE/LOOP NO. 638 TYPE SURVEY _____ CLIENT HVZET DATE 11 DY 4 MO 72 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

LINE	   	STATION	VERTICAL							HORIZONTAL		REMARKS		
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		LR OR DI		RIGHT TURNED HORIZONTAL ANGLE	LINE
				SLOPE 					HORIZ 	INST				
1									2465.6			1		
2		1586	1320									2		
3		1588	1100	91 06 38	-2.0	-21.3	-23.3		2442.3			3		
4		1590	880									4		
5		1592	660	91 02 52	-4.0	-12.0	-16.0		2449.6			5		
6		1594	440									6		
7		1596	220	91 46 51	-2.0	-6.8	-8.8		2456.8			7		
8	K	1598	0	90 00 00	+4.2	-	-4.2		2460.7			8		
9		1600	220	87 13 21	+4.0	+3.0	-1.0		2464.6			9		
10		1602	440									10		
11		1604	660	87 18 40	-2.0	+7.9	+5.9		2471.5			11		
12		1606	880									12		
13		1608	1100	89 06 15	-4.0	+17.2	+13.2		2478.8			13		
14		1610	1320									14		
15		1612	1540	87 12 44	-2.0	+21.2	+17.2		2484.8			15		
16		1614	1760									16		
17		1616	1980	89 01 13	-4.0	+23.9	+29.9		2495.5			17		

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HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 41 OF
 LINE LOG NO. 638 TYPE SURVEY CLIENT HUSKY DATE 11 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO.

LINE	△ SS ⊙	STATION	VERTICAL							HORIZONTAL		REMARKS		
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		UR OR DI		RIGHT TURNED HORIZONTAL ANGLE	
			SLOPE	FEET METERS HORIZ					INST	ROD				
1									2444.7			1		
2		1564	440		90 19 16	-5.2	-2.5	-7.7		2437.0			2	MARKER PIPE AT
3		1566	660		-								3	INTERSECTION
4		1568	880		90 31 13	-5.2	-8.0	-13.2		2431.5			4	L-638 VP 1570+53'
5		1570	1100		-								5	L-615 VP 2030+65'
6		1572	1320		90 37 37	-5.2	-14.4	-19.6		2425.1			6	
7	⊙	1574	T 13.75 775		90 14 07	-15.0	-6.4	-21.4		2423.1			7	
8	⊙		C 6.00 1550		269 44 51	-15.0	-6.8	-21.8					8	
9													9	
10													10	
11	△	1574	T 14.20 1320		90 35 18	+15.0	+27.1	+42.1	2465.6				11	
12	△		C 1.00 2640		269 23 37	+15.0	+27.9	+42.9					12	
13		1576	2420		90 54 59	-2.0	-38.7	-40.7		2424.9			13	
14		1578	2200		-								14	
15		1580	1980		90 59 52	-2.0	-34.5	-36.5		2429.1			15	
16		1582	1760		-								16	
17		1584	1540		91 00 05	-4.0	-26.7	-30.9		2434.7			17	

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HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 40 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT Husky DATE 11 DY 4 MO 72 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	STATION	VERTICAL							HORIZONTAL		REMARKS	
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		L/R OR DJ		RIGHT TURNED HORIZONTAL ANGLE
				SLOPE					HORIZ	INST			
1									2387.9			1	
2		1542	2200									2	
3		1544	2420			89 08 08	-5.2	+36.5	+31.3		2419.2	3	
4	⊙	1546	T 15.00 1320			89 12 10	-2.0	+36.7	+34.7		2422.2	4	
5	⊙		C 1.80 2470			270 46 43	-2.0	+35.9	+33.9			5	
6												6	
7												7	
8	Δ	1546	1540 ✓			90 31 02	+8.5	+13.9	+22.4		2424.7	8	
9	Δ					269 28 26	+8.5	+14.1	+22.6			9	
10		1548	1320			90 31 12	-7.0	-12.0	-19.0		2425.7	10	
11		1550	1100									11	
12		1552	880			90 33 05	-4.0	-8.5	-12.5		2432.2	12	
13		1554	660									13	
14		1556	440			90 21 52	-2.0	-2.8	-4.8		2439.9	14	
15		1558	220									15	
16	π	1560	0			90 00 00	-4.7	-	-4.7		2439.8	16	
17		1562	220									17	




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VERTICAL AND HORIZONTAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY ALASKA BOOK NO. 4 PAGE 39 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT Husky DATE 11 BY 8 MO 79 YR
 SURVEYOR J. Anderson INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE		STATION	VERTICAL						ELEVATION		L/R OR DI	HORIZONTAL RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD				
			SLOPE 	HORIZ 										
1										2387.9			1	
2		1510	1320										2	
3		1512	1100			90 41 23	4.0	-13.2	-17.2		2370.7		3	
4		1514	880										4	
5		1516	660			90 59 24	2.0	-11.4	-13.4		2374.5		5	
6		1518	440										6	
7		1520	220			91 11 02	4.0	-4.5	-8.5		2379.4		7	
8	⊗	1522	0			90 00 00	4.2	-	-4.2		2383.0		8	
9		1524	220			90 00 48	2.0	-0.1	-2.1		2385.8		9	
10		1526	440										10	
11		1528	660			89 21 59	4.0	+7.3	+3.3		2391.2		11	
12		1530	880										12	
13		1532	1100			89 08 10	2.0	+16.6	+14.6		2402.5		13	
14		1534	1320										14	
15		1536	1540			89 14 58	2.0	+20.2	+18.2		2406.1		15	
16		1538	1760										16	
17		1540	1980			89 11 40	2.0	+27.8	+25.8		2413.7		17	

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VERTICAL AND HORIZONTAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 38 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT Husky DATE 11 DY 4 MO 77 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE		STATION	VERTICAL							HORIZONTAL		REMARKS		
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			L/R OR DI	RIGHT TURNED HORIZONTAL ANGLE
				SLOPE	HORIZ					INST	ROD			
1									2362.3			1		
2		1488	440		92 19 45	-4.0	-17.9	-21.9		2340.4			2	
3		1490	220		-								3	
4	X	1492	0		90 00 00	-4.9	-	-4.9		2357.4			4	
5		1494	220		-								5	
6		1496	440		89 07 13	-4.0	+6.8	+2.8		2365.1			6	
7	o	1498	T 9.60 660 ✓		89 30 50	-3.0	+5.6	+2.6		2364.8			7	
8	o		B 3.00 660		270 27 58	-3.0	+5.4	+2.4					8	
9													9	
10													10	
11	Δ	1498	2640 ✓		90 10 22	+15.0	+8.0	+23.0	2387.9				11	
12	Δ				269 49 17	+15.0	+8.2	+23.2					12	
13		1500	2420		90 26 08	-2.0	-18.4	-20.4		2367.5			13	
14		1502	2200		-								14	
15		1504	1980		90 28 07	-4.0	-16.2	-20.2		2367.7			15	
16		1506	1760		-								16	
17		1508	1540		90 37 35	-2.0	-16.8	-18.8		2369.1			17	












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HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 37 OF
 LINE/POINT NO. 638 TYPE SURVEY CLIENT HURRY DATE 11 BY 4 MO 77 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184









LINE	   	STATION	VERTICAL							ELEVATION		LR OR DI	HORIZONTAL		REMARKS
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD		RIGHT TURNED HORIZONTAL ANGLE	LINE	
				SLOPE 	HORIZ 										
1										2316.5				1	
2		1466	660		90 15 25	2.0	-3.0	-5.0		2311.5				2	
3		1468	440		90 23 25	4.0	-3.0	-7.0		2304.5				3	
4		1470	220		90 13 47	2.0	-0.9	-2.9		2313.6				4	
5		1472	0		90 00 00	4.7	-	-4.7		2311.8				5	
6		1474	220		91 29 11	2.0	-5.7	-7.7		2308.9				6	
7		1476	440		90 46 43	2.0	-6.0	-8.0		2308.5				7	
8		1478	660		90 12 02	2.0	-2.3	-4.3		2312.2				8	
9		1480	10.00 880		90 00 00	3.3	-	-3.3		2313.2				9	
10			6 2.00 880		270 00 00	3.3	-	-3.3						10	
11														11	
12														12	
13		1480	15.00 1320		91 28 27	+15.0	+34.0	+49.0	2362.3					13	
14			8 1.00 1320		268 31 06	+15.0	+34.1	+49.1						14	
15		1482	1100											15	
16		1484	880		92 15 42	2.0	-37.7	-39.7		2322.6				16	
17		1486	660											17	

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

VERTICAL AND HORIZONTAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. 4 PAGE 36 OF
 PLAT NO. 638 TYPE SURVEY CLIENT Huskey DATE 11 BY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	  	STATION	VERTICAL							HORIZONTAL		REMARKS		
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		LR OR DI		RIGHT TURNED HORIZONTAL ANGLE	
			SLOPE	HORIZ					FEET	METERS				INST
1									2370.0			1		
2		1448	550		97 15 47	-4.0	-69.5	-73.5		2276.5			2	
3		1450	330		-								3	
4		1452	110		97 52 23	-2.0	-15.1	-17.1		2352.9			4	
5		1453	0		90 00 00	-4.9	-	-4.9		2365.1			5	
6		1454	110		86 42 50	2.0	+6.3	+4.3		2374.3			6	
7		1456	330		86 31 00	2.0	+20.1	+18.1		2388.1			7	
8		1457	T 6.145 445		86 21 51	2.0	+28.2	+26.2		2396.2			8	
9			B 2.000 445		273 36 58	2.0	+28.1	+26.1					9	
10													10	
11													11	
12		1457	T 2.37 837		87 15 05	+0.5	-80.3	-79.8	2316.5				12	
13			C 1.00 1674		272 44 17	+0.5	-80.0	-79.5					13	
14		1458	1540		87 30 24	2.0	+67.0	+65.0		2381.5			14	
15		1460	1320		87 44 41	2.0	+51.9	+49.9		2366.4			15	
16		1462	1100		88 21 10	2.0	+31.6	+29.6		2346.1			16	
17		1464	880		89 08 03	4.0	+13.3	+9.3		2325.8			17	

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HORIZONTAL AND VERTICAL SURVEY NOTES


GSI AREA Howard Pass STATE/COUNTY ALASKA BOOK NO. 4 PAGE 35 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT Husky DATE 10 BY 4 MO 72 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> \odot	STATION	VERTICAL							HORIZONTAL		REMARKS	
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		L/R OR DI		RIGHT TURNED HORIZONTAL ANGLE
			SLOPE	FEET METERS HORIZ					INST	ROD			
1									2440.1		ADJUSTED ELEV. T.M. B.M. 72377	1	SEE PAGE 3 LINE 7 THIS BOOK
2	Δ	1431	T 10.80 880	88 10 20	+1.5	-28.1	-26.6	2413.6				2	
3	Δ		C 2.00 880	271 48 52	+1.5	-27.9	-26.4					3	
4		1432	770	88 06 43	2.0	+25.4	+23.4		2437.0			4	
5		1434	550	88 54 58	2.0	+18.1	+16.1		2429.7			5	
6		1436	330	89 52 56	2.0	+0.5	-1.5		2412.1			6	
7		1438	110	90 52 10	2.0	-1.7	-3.7		2409.9			7	
8	\times	1439	0	90 00 00	-4.9	-	-4.9		2408.7			8	
9		1440	110	93 45 28	-2.0	-7.2	-9.2		2404.4			9	
10		1442	330	95 27 46	-4.0	-31.4	-35.4		2378.2			10	
11	\odot	1444	T 14.50 550	94 09 40	-15.0	-39.9	-54.9		2358.6			11	
12	\odot		B 9.00 550	265 49 59	-15.0	-40.0	-55.0					12	
13												13	
14												14	
15	Δ	1444	T 15.80 980	90 00 00	+11.3	-	+11.3	2370.0				15	
16	Δ		C 4.00 980	270 00 00	+11.5	-	+11.5					16	
17		1446	770	92 41 12	-2.0	-36.1	-38.1		2331.9			17	

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VERTICAL AND HORIZONTAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 34 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT HUSKY DATE 10 BY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE		STATION	VERTICAL							HORIZONTAL		REMARKS	
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		L/R OR DI		RIGHT TURNED HORIZONTAL ANGLE
			SLOPE	HORIZ					FEET	METERS			
1									2297.7			1	
2		1422	1870									2	
3		1424	2090		87 26 57	4.0	+93.0	+89.0		2386.7		3	
4		1426	2310									4	
5		1428	2530		87 06 02	2.0	+128.0	+126.0		2423.7		5	
6		1430	2750									6	
7	⊙	1431	2860 ✓		87 04 47	5.0	+145.7	+140.7		2438.3		7	
8	⊙				272 54 54	5.0	+145.4	+140.4				8	
9	Δ		76.85 385	384	85 49 01	7.0	-28.0	-25.0	2413.3			9	
10	Δ		83.00 385		274 16 14	+3.0	-27.9	-24.9				10	
11	⊙	B.M. 79377	711.80 680		91 31 32	-5.0	-18.1	-23.1		2391.9	REFERENCE: B.A.S. SURVEY	11	
12	⊙		851.00 680		268 27 48	-5.0	-18.2	-23.2		2390.1		12	
13										~ 1.8	MIS-CLOSURE	13	
14												14	
15												15	
16												16	
17												17	

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VERTICAL AND HORIZONTAL SURVEY NOTES

13

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 33 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT Huser DATE 10 BY 4 MO 72 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	 	STATION	VERTICAL						ELEVATION		LR OR DI	HORIZONTAL		REMARKS	
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST		ROD	RIGHT TURNED HORIZONTAL ANGLE		LINE
				SLOPE	HORIZ										
1									2297.7			1			
2		1392	1430		88 26 03	-4.0	+32.1	+35.1		2332.8			2		
3		1394	1210										3		
4		1396	990		89 26 37	-2.0	+9.6	+7.6		2305.3			4		
5		1398	770										5		
6		1400	550		93 31 40	-4.0	-81.6	-85.6		2212.1			6		
7		1402	330										7		
8		1404	110		93 51 06	-2.0	-7.4	-9.4		2298.3			8		
9		1405	0		90 00 00	-4.2	-	-2.2		2292.8			9		
10		1406	110										10		
11		1408	330		92 16 55	-4.0	-13.1	-17.1		2280.6			11		
12		1410	550										12		
13		1412	770		91 05 55	-2.0	-14.8	-16.8		2280.9			13		
14		1414	990										14		
15		1416	1210		89 27 37	-4.0	+52.9	+48.9	74	2346.6	2305.1		15		
16		1418	1430										16		
17		1420	1650		88 26 35	-2.0	+44.8	+42.8		2340.5			17		

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SYMBOLS

= BACKSIGHT






= INSTRUMENT SET-UP

SS = SIDESHOT

= FORESIGHT

VERTICAL AND HORIZONTAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 32 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT HUSKY DATE 10 DY 4 MO 72 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE		STATION	VERTICAL							HORIZONTAL		REMARKS			
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		L/R OR DJ		RIGHT TURNED HORIZONTAL ANGLE	LINE	
			SLOPE 	HORIZ 					INST	ROD					
1										2387.4				1	
2		1374	770											2	
3		1376	550			95 09 48	8.0	-49.5	-07.5			2322.9		3	
4		1378	330											4	
5		1380	110			94 50 40	2.0	-9.3	-11.3			2376.1		5	
6	X	1381	0			90 00 00	7.9	-	-4.9			2382.5		6	
7		1382	110			88 40 23	2.0	+2.5	+0.5			2387.9		7	
8		1384	330			88 12 05	7.0	+10.4	+3.4			2390.8		8	
9	o	1385	T 8.48	448		88 20 22	4.0	+13.0	+9.0			2396.4		9	ROD ADC OMITTED RESTORED 4/11/79
10	o		B 4.00	448		271 39 02	4.0	+12.9	+8.9					10	
11														11	
12														12	
13	Δ	1385	T 13.00	1100		87 22 30	2.0	-100.8	-98.8			2297.7		13	
14	Δ		C 2.00	2200		272 37 1F	2.0	-100.6	-78.6					14	
15		1386	2080			87 31 06	2.0	+90.1	+88.1			2385.8		15	
16		1388	1860			87 53 49	2.0	+68.3	+66.3			2364.0		16	
17		1390	1640											17	

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HORIZONTAL AND VERTICAL SURVEY NOTES

15

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. 4 PAGE 31 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT Husky DATE 10 BY 4 MO 29 YR
 SURVEYOR J. Anderson INSTRUMENT DESC/SERIAL NO. CREW NO. 1134

LINE	 	STATION	VERTICAL							ELEVATION		L/R OR DI	HORIZONTAL RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD					
			SLOPE 	HORIZ 											
1										2413.8			1		
2		1352	880		94 43 23	-4.0	-72.8	-76.5		2337.3			2		
3		1354	1100		-								3		
4		1356	1320		94 32 24	-5.2	-104.5	-109.7		2304.1			4		
5		1358	1540		-								5		
6		1360	1760		94 33 08	-5.2	-139.7	-144.7		2269.1			6		
7		1362	1980		-								7		
8		1364	2200		74 28 18	-5.2	-171.5	-176.7		2237.1			8		
9		1366	2420		-								9		
10	o	1368	TI+70 1320		93 05 53	+5.0	+142.5	+157.5		2256.1			10		
11	o		C 1.50 2640	2636.1	266 53 37	+5.0	+142.8	+157.8					11		
12													12		
13													13		
14	Δ	1368	14.15 44.60	785	94 40 44	+15.0	+116.1	+131.1		2367.4			14	FIELD CHECK 11/4/79	
15	Δ		7.00 1430	1425.3	265 19 02	+15.0	+116.2	+131.4					15	X	
16		1370	1210		-								16		
17		1372	990		45 01 14	-11.0	-86.6	-97.6		2289.8			17		

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HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 30 OF
 LINE/LOOP NO. 628 TYPE SURVEY CLIENT HUSKY DATE 10 DY 4 MO 72 YR
 SURVEYOR J ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	△ ↑ SS ◎	STATION	VERTICAL							HORIZONTAL		REMARKS		
			DISTANCE	□ FEET □ METERS		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			L/R OR DI	RIGHT TURNED HORIZONTAL ANGLE
				SLOPE	HORIZ					INST	ROD			
1										2368.2			1	
2		1330	440										2	
3		1332	220			34 54 40	-2.0	-19.0	-21.0		2347.2		3	
4	⊥	1334	6			90 00 00	+7	-	-4.9		2363.3		4	
5		1336	220			86 38 24	-4.0	+12.9	+8.9		2377.1		5	
6		1338	440										6	
7	○	1340	7 3.63	663	661.4	85 59 07	-2.5	+46.3	+43.8		2412.0		7	
8	○		5 3.00	663		274 00 10	2.5	+46.2	+43.7				8	
9													9	
10													10	
11	△	1340	7 13.52	452		89 04 33	+9.0	-7.3	+1.7		2413.8		11	
12	△		8 9.00	452		270 54 41	+9.0	-7.2	+1.8				12	
13		1342	220			89 00 30	-2.0	+3.8	+1.8		2415.6		13	
14	⊥	1344	0			90 00 00	-7.9	-	-4.9		2408.9		14	
15		1346	220										15	
16		1348	440			94 45 35	-2.0	-36.5	-38.5		2375.3		16	
17		1350	660										17	

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HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 29 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT HUGES DATE 10 DY 4 MO 29 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	 SS 	STATION	VERTICAL							HORIZONTAL		REMARKS		
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		LR OR DR		RIGHT TURNED HORIZONTAL ANGLE	
			SLOPE	HORIZ					FEET	METERS				INST
1									2402.5			1		
2		1308	2420		92 37 00	2.0	-110.5	-112.5		2290.0			2	
3		1310	+14.20 1320		92 13 27	15.0	-102.5	-117.5		2284.8			3	
4			c 1.00 2640		267 46 03	15.0	-102.8	-117.8					4	
5													5	
6													6	
7		1310	+14.20 1320		91 28 38	+15.0	+68.1	+83.1		2368.2			7	
8			c 1.00 2640		268 30 32	+15.0	+68.7	+83.7					8	
9		1312	2420		92 02 22	4.0	-86.1	-90.1		2278.1			9	
10		1314	2200										10	
11		1316	1980		92 54 13	2.0	-100.3	-102.3		2265.9			11	
12		1318	1760										12	
13		1320	1540		93 21 38	4.0	-90.3	-94.3		2273.9			13	
14		1322	1320										14	
15		1324	1100		94 21 03	2.0	-83.4	-85.4		2282.8			15	
16		1326	880										16	
17		1328	660		94 35 46	2.0	-52.5	-54.5		2313.7			17	

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HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 28 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT HUSEY DATE 8 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1124

LINE	 	STATION	VERTICAL							HORIZONTAL		REMARKS		
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			LR OR DR	RIGHT TURNED HORIZONTAL ANGLE
				SLOPE 	HORIZ					INST	ROD			
1									2402.5			1		
2		1276	1100		87 17 57	-2.0	+51.8	+49.8		2452.3			2	
3		1278	880		-								3	
4		1280	660		87 25 14	-2.0	+29.7	+27.7		2430.2			4	
5		1282	440		-								5	
6		1284	220		87 38 02	-2.0	+9.1	+7.1		2409.6			6	
7	X	1286	0		90 00 00	-5.0	-	-5.0		2397.5			7	
8		1288	220		92 57 21	-4.0	-11.5	-15.5		2387.0			8	
9		1290	440		-								9	
10		1292	660		93 02 45	-2.0	-35.1	-37.1		2365.4			10	
11		1294	880		-								11	
12		1276	1100		92 48 23	-4.0	-57.9	-57.9		2344.6			12	VP 1296
13		1278	1320		-								13	MARKER PIPE
14		1300	1540		92 48 15	-2.0	-75.3	-77.3		2325.2			14	
15		1302	1760		-								15	
16		1304	1980		92 42 47	-2.0	-93.7	-95.7		2306.8			16	
17		1306	2200		-								17	











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HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 27 OF
 LINE/LOOP NO. 628 TYPE SURVEY CLIENT HUSKY DATE 8 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184











LINE	  	STATION	VERTICAL							HORIZONTAL		REMARKS		
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			LR OR DI	RIGHT TURNED HORIZONTAL ANGLE
				SLOPE 	HORIZ						INST			
1									2616.7			1		
2		1254	220									2		
3		1256	0		90 00 00	5.0	-	-5.0		2611.7			3	
4		1258	220		92 28 27	2.0	-9.5	-11.5		2605.2			4	
5		1260	440		92 44 31	2.0	-21.0	-23.0		2593.7			5	
6		1262	TM.60	660	90 55 42	-15.0	10.7	-25.7		2590.9			6	
7			B 8.00	660	267 03 32	-15.0	10.8	-25.8					7	
8													8	
9													9	
10		1262	TM.70	1320	85 50 55	+2.0	-190.6	-188.6	240.255				10	
11			C 1.50	2640	2633.1	274 08 21	+2.0	-190.6	-188.6				11	
12		1264	2420		86 23 50	-2.0	+152.1	+150.1		2652.6			12	
13		1266	2200										13	
14		1268	1980		87 15 27	-2.0	+94.7	+92.7		2495.2			14	
15		1270	1760										15	
16		1272	1540		87 13 03	-4.0	+74.7	+70.7		2473.2			16	
17		1274	1320										17	

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HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 26 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT MUSKY DATE 8 BY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	   	STATION	VERTICAL							ELEVATION		L/R OR DI	HORIZONTAL RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD				
				SLOPE 	HORIZ 										
1										2115.2				1	
2		1232	1280	1976.9	86 17 30	-2.0	+110.6	+108.6		2223.8				2	
3		1234	2200											3	
4		1236	2420	2415.0	86 17 58	-2.0	+156.2	+154.2		2269.4				4	
5		1238	2640											5	
6		1240	2860	2852.2	85 46 40	-7.0	+210.0	+206.0		2321.2				6	
7		1242	3085.0	3051.3	84 34 35	-2.0	+288.4	+286.4		2401.6				7	
8		1244	3275.0	3251.7	83 09 20	-2.0	+387.5	+385.5		2500.7				8	
9		1246	3492.1	3464.3	82 46 15	-7.5	+435.9	+428.4		2543.6				9	
10			TELLURIMETRE DISTANCE		277 13 38	-7.5	+435.8	+428.3						10	
11														11	
12														12	
13		1246	714.10	1110	92 59 42	+15.0	+58.0	+73.0	2616.7					13	
14			83.00	1110	266 59 36	+15.0	+58.2	+73.2						14	
15		1248	880		73 34 05	-2.0	-54.8	-58.8		2557.9				15	
16		1250	660											16	
17		1252	440		73 43 34	-2.0	-28.6	-30.6		2586.1				17	

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VERTICAL AND HORIZONTAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 25 OF
 LINE/LOOP NO. 630 TYPE SURVEY CLIENT Husky DATE 9 DY 4 MO 72 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184


LINE	 	STATION	VERTICAL						ELEVATION		LR OR DI	RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD				
1									2115.2			1		
2		1200	1540'			90 15 33	2.0	-7.0	-9.0		2106.2		2	
3		1202	1320										3	
4		1204	1100			91 00 30	2.0	-19.4	-21.4		2093.8		4	
5		1206	880										5	
6		1208	660			93 11 00	4.0	-36.7	-40.7		2074.5		6	
7		1210	440										7	
8		1212	220			93 55 13	2.0	-15.0	-17.0		2098.2		8	
9	X	1214	0			96 00 00	5.0	-	5.0		2093.2		9	
10		1216	220			87 43 47	2.0	+8.7	+4.7		2119.9		10	
11		1218	440										11	
12		1220	660			87 22 47	2.0	+30.2	+28.2		2143.4		12	
13		1222	880										13	
14		1224	1100			87 09 00	2.0	+54.7	+52.7		2167.9		14	
15		1226	1320										15	
16		1228	1540			86 59 20	2.0	+80.9	+78.9		2194.1		16	
17		1230	1760										17	

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 = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 24 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT Husky DATE 2 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE		STATION	VERTICAL							HORIZONTAL		REMARKS	
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		L/R OR DJI		RIGHT TURNED HORIZONTAL ANGLE
			SLOPE	FEET METERS HORIZ					INST	ROD			
1									2095.5			1	
2	/	1178	1540		87 18 37	-5.2	+72.3	+67.1		2162.6		2	
3		1180	1760									3	
4		1182	1980		87 17 36	-5.0	+92.4	+77.4		2172.9		4	
5	o	1184 + 60'	1130		87 28 18	-6.0	+99.7	+93.7		2183.2		5	
6	o		2260		272 31 34	-6.0	+99.6	+93.6				6	
7												7	
8												8	
9	Δ	1184 + 60'	3240		88 39 07	-2.0	-76.2	-74.2		2115.2		9	
10	Δ				271 20 25	+2.0	-75.8	-73.8				10	
11		1186	3080		88 53 31	-2.0	+59.2	+57.6		2172.8		11	
12		1188	2860		89 08 09	-2.0	+43.3	+41.3		2156.5		12	
13		1190	2640									13	
14		1192	2420		89 24 40	-2.0	+24.9	+22.9		2138.1		14	
15		1194	2200									15	
16		1196	1980		89 43 34	-2.0	+9.5	+7.5		2122.7		16	
17		1198	1760									17	

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HORIZONTAL AND VERTICAL SURVEY NOTES

23

GSI AREA HAWAIRD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 23 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT HUSKEY DATE 9 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	 	STATION	VERTICAL						ELEVATION		L/R OR DI	RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD				
				SLOPE										
1									2095.5			1		
2		1146	1780									2		
3		1148	1760	92 24 01	2.0	-73.7	-75.7		2019.8			3		
4		1150	1540									4		
5		1152	1320	92 32 22	4.0	-58.5	-62.5		2033.0			5		
6		1154	1100									6		
7		1156	880	92 33 22	2.0	-39.2	-41.2		2054.3			7		
8		1158	660									8		
9		1160	440	92 53 12	4.0	-22.2	-26.2		2069.3			9		
10		1162	220									10		
11	X	1164	0	90 00 00	5.0	-	-5.0		2090.5			11		
12		1166	220									12		
13		1168	440	89 37 41	4.0	+2.9	-1.1		2094.4			13		
14		1170	660									14		
15		1172	880	88 21 25	2.0	+22.7	+20.7		2116.2			15		
16		1174	1100									16		
17		1176	1320	87 39 56	4.0	+53.8	+49.8		2145.3			17		






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HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. 4 PAGE 22 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT Husky DATE 2 DY 4 MO 72 YR
 SURVEYOR J. Anderson INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	   	STATION	VERTICAL						ELEVATION		L/R OR DI	RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD				
				SLOPE 										
1														
2		1124	380		92 00 05	-4.0	-31.5	-35.5		2036.1				
3		1126	660		-									
4		1128	440		92 08 42	-4.0	-16.5	-20.5						
5		1130	220		-									
6	X	1132	0		90 00 00	-5.0	-	-5.0						
7		1134	220		-									
8		1136	440		89 37 35	-5.2	+2.6	-2.6						
9		1138	660		-									
10		1140	880		90 11 00	-4.0	-2.8	-9.8						
11	o	1142	T 14.50 550		90 00 00	-13.6	-	-13.6						
12	o		C 9.00 1100		270 00 00	-13.8	-	-13.8						
13														
14														
15	Δ	1142	T 14.10 1210		91 22 25	+15.0	+58.0	+73.0		2035.5				
16	Δ		C 2.00 2420		268 37 20	+15.0	+58.2	+73.2						
17		1144	2200		91 54 23	-2.0	-73.2	-75.2						

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HORIZONTAL AND VERTICAL SURVEY NOTES

25

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 21 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT Husky DATE 9 DY 4 MO 73 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1124

LINE	 	STATION	VERTICAL						ELEVATION		L/R OR DI	HORIZONTAL RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD				
				SLOPE 										
1									1933.0			1		
2		1103	0		20 00 00	-5.0	-	-5.0		1928.0		2		
3		1104	110		88 24 05	-2.0	+3.1	+1.1		1934.0		3		
4		1106	330		-	-						4		
5		1108	550		88 14 27	-2.0	+16.9	+14.9		1947.9		5		
6		1110	770		-	-						6		
7		1112	990		87 58 43	-4.0	+34.9	+30.9		1963.9		7		
8		1114	\uparrow 12.10 810		88 05 42	-6.0	+40.6	+34.6		1967.5		8		
9			\downarrow 6.00 1220		271 53 51	-6.0	+40.4	+34.4				9		
10												10		
11												11		
12		1114	\uparrow 14.90 990		91 32 53	+15.0	+53.5	+68.5	2036.1			12		
13			\downarrow 6.00 1980		268 24 43	+15.0	+53.7	+68.7				13		
14		1116	1760		91 50 33	-4.0	-56.6	-60.6		1975.5		14		
15		1118	1540		-	-						15		
16		1120	1320		92 01 59	-4.0	-46.8	-50.8		1985.3		16		
17		1122	1100		-	-						17		








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VERTICAL AND HORIZONTAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 20 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT Husky DATE 9 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	  	STATION	VERTICAL							HORIZONTAL		REMARKS			
			DISTANCE		<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			L/R OR DI	RIGHT TURNED HORIZONTAL ANGLE	LINE
			SLOPE	HORIZ				INST		ROD					
1													1		
2		1082 + 60	T 3.00 800	1595.7	85 46 14	-1.0	+117.7	+116.7		1935.7			2		
3			C 1.00 1600		274 12 42	-1.0	+117.5	+116.2					3		
4													4		
5													5		
6		1082 + 60	T 12.30 1150		89 54 12	+1.0	-3.8	-2.8	1932.0				6		
7			L 1.00 2260		270 05 21	+1.0	-3.5	-2.5					7		
8		1084	1990		90 33 20	-2.0	-19.3	-21.3		1911.7			8		
9		1086	1870										9		
10		1088	1650		91 15 41	-4.0	-36.3	-40.3		1892.7			10		
11		1090	1430										11		
12		1092	1210		91 42 01	-2.0	-35.9	-37.9		1895.1			12		
13		1094	790										13		
14		1076	710		92 02 42	-4.0	-27.5	-31.5		1901.5			14		
15		1098	550										15		
16		1100	330		95 53 59	-4.0	-33.9	-37.9		1895.1			16		
17		1102	110		96 09 14	-2.0	-11.8	-13.8		1919.2			17		

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HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 19 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT HUSKY DATE 9 DY 4 MO 77 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	△ ↕ SS ○	STATION	VERTICAL						HORIZONTAL			REMARKS		
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		LR OR DI		RIGHT TURNED HORIZONTAL ANGLE	LINE
			SLOPE	HORIZ					INST	ROD				
1												1		
2	△	1054	1170	770	90 00 00	+11.95	-	+11.95	1819.2				2	
3	△		400	1540	270 00 00	+12.2	-	+12.20					3	
4		1056	1320		90 13 35	-4.0	-5.2	-9.2			1810.0		4	
5		1058	1100		-	-	-	-					5	
6		1060	880		90 12 28	-4.0	-3.2	-7.2			1812.0		6	
7		1062	660		-	-	-	-					7	
8		1064	440		90 03 05	-4.0	-0.4	-4.4			1814.8		8	
9		1066	220		-	-	-	-					9	
10	π	1068	0		90 00 00	-5.0	-	-5.0			1814.2		10	
11		1070	220		-	-	-	-					11	
12		1072	440		87 33 05	-4.0	+3.4	-0.6			1818.6		12	
13		1074	660		-	-	-	-					13	
14		1076	880		89 07 47	-2.0	+13.4	+11.4			1830.6		14	
15		1078	1100		-	-	-	-					15	
16		1080	1320		87 27 43	-2.0	+67.3	+65.3	SS.1		1884.5	874.9	16	
17		1082	1540		-	-	-	-					17	

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HORIZONTAL AND VERTICAL SURVEY NOTES

28

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 18 OF
 LINE/LOOP NO. 628 TYPE SURVEY CLIENT HUSKY DATE 2 DY 4 MO 72 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	 	STATION	VERTICAL							HORIZONTAL		REMARKS	
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		L/R OR DI		RIGHT TURNED HORIZONTAL ANGLE
			SLOPE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS					INST	ROD			
1									1766.3			1	
2		1024	650		90 47 05	-7.0	-9.4	-11.4		1745.2		2	
3		1026	440		-							3	
4		1028	220		90 49 05	-2.0	-3.1	-5.1		1761.2		4	
5	X	1030	0		90 00 00	-5.0	-	-5.0		1761.3		5	
6		1032	220		90 40 52	-2.0	-2.6	-4.6		1761.7		6	
7		1034	420		-							7	
8		1036	660		89 03 15	-5.2	+10.9	+5.7		1772.0		8	
9		1038	880		-							9	
10		1040	1100		88 33 35	-5.2	+21.3	+16.1		1782.4		10	
11		1042	1320		-							11	
12		1044	1540		88 52 47	-5.2	+30.1	+24.9		1791.2		12	
13		1046	1760		-							13	
14		1048	1980		88 58 47	-5.2	+35.3	+30.1		1796.4		14	
15		1050	2200		-							15	
16		1052	2420		88 58 30	-5.2	+42.3	+38.1		1804.4		16	
17	o	1054	2640 ✓		89 00 14	-5.0	+45.9	+40.7		1807.1		17	

o
270 59 30
-5.0
+45.7
+40.7










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VERTICAL AND HORIZONTAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY ALASKA BOOK NO. 4 PAGE 17 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT Husky DATE 9 DY 4 MO 77 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	   	STATION	VERTICAL						ELEVATION		L/R OR DI	RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD				
				SLOPE 										
1									1881.7				1	
2		1002	1630											2
3		1004	1870											3
4		1006	+13.40 1040		93 04 18	-2.0	-100.2	-102.2				1729.5		4
5			C. 3.00 2080		92 24 18	-5.0	-87.3	-102.3				1729.2		5
6					267 35 00	-5.0	-87.7	-102.7						6
7														7
8		1006	2640 ✓		90 28 30	+15.0	+21.9	+36.9				1766.3		8
9					269 30 59	+15.0	+22.3	+37.3						9
10		1008	2420											10
11		1010	2200		90 45 18	-4.0	-29.0	-33.0				1733.3		11
12		1012	1980											12
13		1014	1760		90 49 39	-4.0	-25.4	-29.4				1736.9		13
14		1016	1540		90 50 15	-4.0	-22.5	-26.5				1739.8		14
15		1018	1320											15
16		1020	1100		90 49 05	-7.0	-15.7	-22.7				1743.6		16
17		1022	880											17

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HORIZONTAL AND VERTICAL SURVEY NOTES

30

GSI AREA Howland Pass STATE/COUNTY ALASKA BOOK NO. 4 PAGE 16 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT Husky DATE 9 DY 4 MO 72 YR
 SURVEYOR J. Anderson INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	 	STATION	VERTICAL						ELEVATION		L/R OR D/I	HORIZONTAL RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS	
			DISTANCE		<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST					ROD
			SLOPE 	HORIZ 											
1										1851.3			1		
2		975	+10 	1310 		87 05 38	+1.0	-20.7	-19.7	1830.7			2		
3			100 	1310 		270 53 35	+1.0	-20.4	-19.4				3		
4		976		1210 		89 46 04	2.0	+4.9	+2.9	1834.6			4		
5		978		990 		-	-	-	-				5		
6		980		770 		90 00 00	2.5	-	-3.5	1822.2			6		
7		982		650 		-	-	-	-				7		
8		984		330 		98 08 38	4.0	-46.7	-42.7	1789.0			8		
9		986		110 		-	-	-	-				9		
10		987		0 		90 00 00	5.0	-	-5.0	1826.7			10		
11		988		110 	102.9	110 42 50	2.0	-36.4	-34.4	1797.3			11		
12		990		330 	318.4	105 12 30	2.0	-83.5	-85.5	1746.2			12		
13		992		550 	540.5	100 39 10	2.0	-99.9	-101.9	1729.8			13		
14		994		770 		-	-	-	-				14		
15		996		990 	984.6	95 57 32	2.0	-102.8	-104.8	1726.9			15		
16		998		1210 		-	-	-	-				16		
17		1000		1430 	1426.4	94 03 25	4.0	-100.9	-104.9	1726.8			17		

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HORIZONTAL AND VERTICAL SURVEY NOTES

GS AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 15 OF
 LINE/LOOP NO. 628 TYPE SURVEY CLIENT MUSKY DATE 8 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	 	STATION	VERTICAL						ELEVATION		L/R OR DI	RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD				
				SLOPE										
1									1843.3			1		
2		964	220		88 07 36	2.0	+ 7.2	+ 5.2		1848.5		2		
3		966	440									3		
4		968	T 13.33	333	88 28 04	2.5	+ 17.8	+ 8.3		1851.7		4		
5			B 10.00	646	271 32 38	2.5	+ 17.9	+ 8.4				5		
6												6		
7												7		
8		968	T 14.40	440	90 07 17	2.0	+ 15.0	+ 0.9	+ 15.9	1867.6		8	UP 968 - 10 MILE	
9			B 10.00	440	269 52 56	2.0	+ 15.0	+ 0.9	+ 15.9			9	MARKER PIPE	
10		970	220		96 29 25	2.0	- 24.9	- 26.9		1840.7		10		
11		972	0		90 00 00	5.0	-	- 5.0		1862.6		11		
12		974	220		91 55 00	2.0	- 7.4	- 9.4		1858.2		12		
13		976	T 13.25	325	90 12 47	2.5	- 1.2	- 16.2		1851.3		13		
14			B 10.00	325	269 46 14	2.5	- 1.3	- 16.3				14		
15												15		
16												16		
17												17		

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HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY ALASKA BOOK NO. 4 PAGE 14 OF
 LINE/LOOP NO. 630 TYPE SURVEY CLIENT HUSKY DATE 6 DY 4 MO 79 YR
 SURVEYOR J. Anderson INSTRUMENT DESC/SERIAL NO. CREW NO. 1124

LINE	 	STATION	VERTICAL						HORIZONTAL			REMARKS		
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		L/R OR DI		RIGHT TURNED HORIZONTAL ANGLE	LINE
			SLOPE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS HORIZ					INST	ROD				
1												1		
2	o	942	1320 ✓	87 31 46	12.5	+10.8	-1.7		1824.7			2		
3	o			270 27 52	12.5	+10.7	-1.8					3		
4												4		
5												5		
6	A	942	1120 1100	88 53 30	+1.0	-42.6	+41.6	1843.3				6		
7	A		1100 1200	271 05 52	+1.0	-42.1	-41.1					7		
8		944	1980	89 00 18	-2.0	+12.1	+10.1	1852.4	1815.7			8		
9		946	1760	-								9		
10		948	1540	87 32 53	-2.0	+12.1	+10.1	1852.4				10		
11		950	1320	-								11		
12		952	1100	90 53 48	-2.0	-17.2	-19.2	1824.1				12		
13		954	880	-								13		
14		956	660	95 13 02	-2.0	-60.0	-62.0	1781.3				14		
15		958	440	-								15		
16		960	220	95 17 41	-4.0	-20.4	-24.4	1818.9				16		
17	X	962	0	94 00 00	-5.0	-	-5.0	1838.3				17		

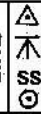


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HORIZONTAL AND VERTICAL SURVEY NOTES

HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 13 OF _____
 GROUP NO. 528 TYPE SURVEY _____ CLIENT Huser DATE 8 BY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

LINE		STATION	VERTICAL						ELEVATION		L/R	ORDN	HORIZONTAL RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS	
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST						ROD
				SLOPE 	HORIZ 											
1																
2	A	912	T 1485	985	92 13 40	+15.0	+76.2	+91.2	1886.5							
3	A		C 500	1960	267 45 A1	+15.0	+26.6	+91.6								
4		914	1760													
5		916	1540		92 22 42	-4.0	-63.9	-67.9	1818.6							
6		918	1320		-											
7		920	1100		92 35 00	-4.0	-49.6	-53.6	1832.9							
8		922	880													
9		924	660		92 25 23	-4.0	-27.9	-31.9	1854.6							
10		926	440													
11		928	220		92 42 10	-2.0	-10.4	-12.4	1874.1							
12	A	930	0		90 00 00	-5.0	-	-5.0	1881.5							
13		932	220		89 57 31	-2.0	+0.2	-1.8	1884.7							
14		934	440													
15		936	660		89 28 00	-2.0	+6.1	+4.1	1890.6							
16		938	880													
17		940	1100		89 23 55	-5.2	+11.5	+6.3	1892.8							






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VERTICAL AND HORIZONTAL SURVEY NOTES





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GS AREA Howard Pass STATE/COUNTY ALASKA BOOK NO. 4 PAGE 12 OF
 LINE/LOOP NO. 620 TYPE SURVEY CLIENT Husky DATE 8 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	  	STATION	VERTICAL						ELEVATION		L/R OR DI	HORIZONTAL		REMARKS
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD		RIGHT TURNED HORIZONTAL ANGLE	LINE	
				 SLOPE  HORIZ										
1										1667.5			1	
2		884	1100		90 57 26	-4.0	-19.0	-23.0		1644.5			2	
3		886	880		-								3	
4		888	660		90 51 29	-4.0	-9.9	-13.9		1653.6			4	
5		890	440		-								5	
6		892	220		91 22 50	-2.0	-5.3	-7.3		1660.2			6	
7	X	894	0		90 00 00	-5.0	-	-5.0		1662.5			7	
8		896	220		88 23 00	-4.0	+6.2	+2.2		1669.7			8	
9		898	440		-								9	
10		900	660		88 19 33	-2.0	+19.3	+17.3		1684.8			10	
11		902	880		-								11	
12		904	1100		87 15 43	-4.0	+43.0	+39.0		1706.5			12	
13		906	1320		-								13	
14		908	1540		86 40 37	-2.0	+89.3	+87.3		1754.8			14	
15		910	1760		-								15	
16	O	912	TI 11.90 990		86 14 25	-2.0	+129.8	+127.8		1795.1			16	
17	O		± 2.00 1980		27.3 44 50	-2.0	+129.4	+127.4					17	

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  = SIDESHOT
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HORIZONTAL AND VERTICAL SURVEY NOTES

GS/FARE HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 11 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT HUSKY DATE 8 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	△ ⊥ SS ⊙	STATION	VERTICAL						ELEVATION		L/R OR DI	RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD				
			SLOPE	HORIZ										
1									1602.8			1		
2		862	660									2		
3		864	880	89 31 43	5.2	+ 7.2	+ 2.0		1604.8			3		
4		866	1100									4		
5		868	1320	87 35 36	7.0	+ 9.4	+ 2.4		1605.2			5		
6		870	1540									6		
7		872	1760	89 35 23	5.2	+ 12.6	+ 7.4		1610.2			7		
8		874	1980									8		
9		876	2200	89 24 00	5.2	+ 23.0	+ 17.8		1620.6			9		
10		878	2420									10	11/4/79 FIELD VERIFICATION	
11	⊙	880	2640	88 58 58	75.0	+ 46.9	+ 31.9		1634.7			11	88 57 40	
12	⊙			271 01 06	75.0	+ 46.9	+ 31.9					12	271 01 49	
13												13		
14												14		
15	△	880	1470 / 770	90 39 20	115.0	+ 17.6	+ 32.6		1667.5			15		
16	△		7.00 / 1540	269 20 00	115.0	+ 17.9	+ 32.9					16		
17		882	1320									17		

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HORIZONTAL AND VERTICAL SURVEY NOTES

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STATE/COUNTY Howako Pass ALASKA BOOK NO. 4 PAGE 10 OF
 LINE LOOP/NO. 638 TYPE SURVEY CLIENT HURST DATE 8 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	 	STATION	VERTICAL							HORIZONTAL		REMARKS			
			DISTANCE		<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			LR OR DI	RIGHT TURNED HORIZONTAL ANGLE	
			SLOPE	HORIZ				INST		ROD	LINE				
1													1		
2		832	15.10	1910		90 17 25	75.0	+13.3	+28.3	1602.8				2	
3			2.0	2620		267 41 58	75.0	+13.7	+28.7					3	
4		834	2420			-								4	
5		836	2200			90 31 31	74.0	-13.8	-17.8	1585.0				5	
6		838	1980			-								6	
7		840	1760			90 32 45	74.0	-16.8	-20.8	1582.0				7	
8		842	1540			-								8	
9		844	1320			90 36 03	74.0	-13.8	-17.8	1585.0				9	
10		846	1100			-								10	
11		848	880			90 45 05	74.0	-11.5	-15.5	1587.3				11	
12		850	660			-								12	
13		852	440			91 53.00	2.0	-14.5	-16.5	1586.3				13	
14		854	220			-								14	
15		856	0			90 00 00	5.0	-	-5.0	1597.8				15	
16		858	220			-								16	
17		860	440			89 11 00	5.2	+6.3	+1.1	1603.9				17	

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HORIZONTAL AND VERTICAL SURVEY NOTES

37

HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 2 OF _____
 LOOP NO. 638 TYPE SURVEY _____ CLIENT HUSKY DATE 8 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

LINE	  	STATION	VERTICAL						ELEVATION		L/R OR DI	RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD				
				SLOPE 										
1									1577.0			1		
2		806	220									2		
3		808	0	90 00 00	5.0	-	3.0		1572.0			3		
4		810	220	93 49 05	2.0	-14.6	-16.6		1566.4			4		
5		812	440	92 14 12	2.0	-17.2	-19.2		1557.8			5		
6		814	660									6		
7		816	880	89 54 10	5.2	+1.5	-3.7		1573.3			7		
8		818	1100									8		
9		820	1220	89 56 07	8.0	+1.5	-6.5		1570.5			9		
10		822	1540									10		
11		824	1760	87 59 41	8.0	+0.2	-7.8		1569.2			11		
12		826	1980									12		
13		828	2200	89 56 52	8.0	+2.0	-6.0		1574.0			13		
14		830	2420									14		
15		832	2640 ✓	89 55 31	6.0	+3.4	-2.6		1574.3			15		
16				77 04 20	6.0	+3.3	-2.7					16		
17												17		

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VERTICAL AND HORIZONTAL SURVEY NOTES

38

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. 4 PAGE 8 OF
 LINE/LOOP NO. 628 TYPE SURVEY CLIENT Huak DATE 8 DY 4 MO 79 YR
 SURVEYOR J. Anderson INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	 	STATION	VERTICAL						HORIZONTAL		REMARKS		
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			RIGHT TURNED HORIZONTAL ANGLE	LINE
			SLOPE	HORIZ					INST	ROD			
1									1596.3		1		
2		784	660	89 52 30	-2.0	+ 1.5	-0.5		1595.8		2		
3		786	880	-							3		
4	o	788	T 15.00 1100	89 46 07	-4.0	+ 3.8	-0.2				4		
6	o		B 4.00 1100	270 11 34	-4.0	+ 3.7	-0.3		1596.0		5		
6											6		
7											7		
8	Δ	788	T 12.00 1100	89 29 09	+6.0	-19.7	-18.7	1577.0			8		
9	Δ		B 1.00 2200	270 31 32	+1.0	-20.2	-19.2				9		
10		790	1280	-							10		
11		792	1760	89 24 53	-4.0	+ 18.0	+14.0		1591.0		11		
12		794	1540	-							12		
13		796	1320	89 33 18	-4.0	+ 10.3	+ 6.3		1583.3		13		
14		798	1100	-							14		
15		800	880	90 18 53	-2.0	- 4.8	- 6.8		1576.5		15		
16		802	660	-							16		
17		804	440	90 54 55	-4.0	- 7.0	-11.0		1565.5		17		

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HORIZONTAL AND VERTICAL SURVEY NOTES

EST. NAME HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 6 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT HUSKY DATE 2 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	 	STATION	VERTICAL						ELEVATION		L/R OR DI	HORIZONTAL		REMARKS	
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST		ROD	RIGHT TURNED HORIZONTAL ANGLE		LINE
1		724	660			89 37 52	+4.0	+4.2	+0.2		1561.3			1	
2		726	840											2	
3		728	220			89 40 51	-4.0	+1.2	-2.8		1558.3			3	
4	X	730	0			90 00 00	-5.0	-	-5.0		1556.1			4	
5		732	220			91 24 57	-2.0	-5.4	-7.4		1553.7			5	
6		734	440			90 50 20	-2.0	-6.4	-8.4		1552.7			6	
7		736	660			90 22 29	-2.0	-4.3	-6.3		1554.6			7	
8		738	880											8	
9		740	1100			90 23 36	-5.2	-7.6	-12.8		1548.3			9	
10		742	1320											10	
11		744	1540			90 09 10	-5.2	-4.1	-9.3		1551.8			11	
12		746	1760											12	
13		748	1980			90 10 24	-5.2	-6.0	-11.2		1549.9			13	
14		750	2200											14	
15		752	2420			90 04 39	-5.2	-3.3	-8.5		1541.4			15	
16	o	754	2640			90 00 00	-10.75	-	-10.8		1550.3			16	
17	o					270 00 00	-10.75	-	-10.8					17	

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VERTICAL AND HORIZONTAL SURVEY NOTES

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GSI AREA HOKARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 7 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT HUSKY DATE 6 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	 	STATION	VERTICAL						ELEVATION		L/R OR DI	HORIZONTAL		REMARKS	
			DISTANCE		<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST		ROD	RIGHT TURNED HORIZONTAL ANGLE		LINE
			SLOPE	HORIZ											
1													1		
2		754	T 1420	1320		90 40 14	+15.0	+30.9	+25.9	1596.3				2	
3			C 100	2640		269 19 28	+15.0	+31.1	+46.1					3	
4		754	2420			91 08 50	+0	-48.5	-52.5	1543.8				4	
5		758	2200			-								5	
6		760	1980			91 13 24	+0	-42.3	-46.3	1550.0				6	
7		762	1760			-								7	
8		764	1540			91 17 36	+0	-34.8	-38.8	1557.5				8	
9		766	1320			-								9	
10		768	1100			91 08 58	+0	-22.1	-26.1	1570.2				10	
11		770	880			-								11	
12		772	660			91 18 08	+4.0	-15.0	-19.0	1577.3				12	
13		774	440			-								13	
14		776	220			91 37 10	+0	-6.2	-10.2	1586.1				14	
15		778	0			90 01 00	+0	-	-5.0	1591.3				15	
16		780	220			90 12 42	2.0	-0.8	-2.8	1593.5				16	
17		782	440			-								17	

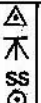



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HORIZONTAL AND VERTICAL SURVEY NOTES

GCS AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 5 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT MURKY DATE 8 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 184

LINE		STATION	VERTICAL						ELEVATION		L/R OR DI	RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS	
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION					
				SLOPE 	HORIZ 										INST
1													1		
2		702	1980										2		
3		704	2200			91 12 37	5.2	-47.1	-52.3		1588.2		3		
4	O	706	112.10 1210			90 49 56	10.0	-35.1	-50.1		1590.1		4	TARGET	
5	O		61.00 2420			269 09 20	15.0	-35.7	-50.7				5		
6													6		
7													7		
8	A	706	2640 ✓			89 14 23	+6.0	-35.0	-29.0	1561.1			8		
9	A					270 45 26	+6.0	-34.9	-28.9				9		
10		708	2420			89 18 09	-2.0	+29.5	+27.5		1588.6		10		
11		710	2200										11		
12		712	1980			89 14 09	-7.0	+26.4	+22.4		1583.5		12		
13		714	1760										13		
14		716	1540			89 26 02	-4.0	+15.2	+11.2		1572.3		14		
15		718	1320										15		
16		720	1100			89 36 28	-4.0	+7.5	+3.5		1564.6		16		
17		722	880				-4.0	-	-4.0		1557.1		17		






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  = FORESIGHT

VERTICAL AND HORIZONTAL SURVEY NOTES

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GS/AREA: Howard Pass STATE/COUNTY: Alaska BOOK NO. 4 PAGE 4 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT Hurray DATE 8 DY 4 MO 72 YR
 SURVEYOR J. Anderson INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	  	STATION	VERTICAL							HORIZONTAL		REMARKS			
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			L/R OR DI	RIGHT TURNED HORIZONTAL ANGLE	LINE
				SLOPE 	HORIZ 					INST	ROD				
1									1640.5			1			
2		670	1540									2			
3		672	1320	92 39 03	4.0	-61.0	-65.0		1575.5			3			
4		674	1100									4			
5		676	880	92 39 25	13.0	-40.6	-53.8		1586.7			5	8.0' + 5.0' BPOSS		
6		678	660									6			
7		680	440	92 37 06	4.0	-20.1	-24.1		1616.4			7			
8		682	220									8			
9	X	684	0	90 00 00	5.0	-	3.0		1635.5			9			
10		686	220									10			
11		688	440	92 28 03	5.2	-18.9	-24.1		1616.4			11			
12		690	660									12			
13		692	880	92 32 38	7.0	-39.1	-46.1		1594.4			13			
14		694	1100									14			
15		696	1320	92 19 43	5.2	-53.6	-58.8		1581.7			15			
16		698	1540									16			
17		700	1760	91 28 57	5.2	-45.5	-50.7		1582.8			17			

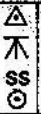
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SYMBOLS  = BACKSIGHT
  = INSTRUMENT SET-UP
  = SIDESHOT
  = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 3 OF
 JOB NO. 638 TYPE SURVEY CLIENT HUCKY DATE 8 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE		STATION	VERTICAL							HORIZONTAL		REMARKS		
			DISTANCE		<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	ELEVATION		LIR OR DIR		RIGHT TURNED HORIZONTAL ANGLE	LINE
			SLOPE	HORIZ				INST	ROD					
1									1663.3			1	WORKED UPWARDS BACKWARDS	
2		652	1540		91 49 31	5.2	+ 49.1	- 54.3		1609.0		2		
3		654	1760									3		
4	SS	B.M. 72373	T 11.12 1015		86 16 49	7.0	+ 131.2	+ 130.2		1793.5	REFERENCE: D.A.S SURVEY	4		
5	SS		C 1.00 2030	2025.7	273 42 48	7.0	+ 131.2	+ 130.2				5		
6	0	656	T 91.90 990		89 02 14	2.0	+ 33.3	+ 31.3		1634.6		6	TARGET	
7	0		C 2.00 1980		276 56 06	2.0	+ 32.3	+ 30.3				7		
8												8		
9												9		
10	Δ	656	3080 ✓		88 58 59	+ 1.0	- 54.7	- 53.7 ✓		1640.5		10		
11	Δ				271 00 48	+ 1.0	- 54.5	- 53.5				11		
12		658	2860									12		
13		660	2640		90 09 43	2.0	- 7.5	- 3.5		1631.0		13		
14		662	2420									14		
15		664	2200		90 59 30	4.0	- 38.1	- 42.1		1598.4		15		
16		666	1980									16		
17		668	1760		91 56 04	2.0	- 59.4	- 61.4		1577.1		17		

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SYMBOLS Δ = BACKSIGHT  = INSTRUMENT SET-UP SS = SIDESHOT  = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 2 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT MUSKY DATE 6 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

LINE	 	STATION	VERTICAL							HORIZONTAL		REMARKS		
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		LR OR DR		RIGHT TURNED HORIZONTAL ANGLE	LINE
			SLOPE	HORIZ					INST	ROD				
1									1683.6			1	↑ TURNS WORKED BACKWARDS	
2		630	660		89 37 50	-5.2	+4.3	-0.9		1682.7		2		
3		632	880		-							3		
4		634	T 13.50	550	89 47 14	-8.0	+4.1	-3.9		1679.3		4		
5			E 8.00	1100	270 10 43	-8.0	+3.4	-4.6				5		
6												6		
7												7		
8		634	T 6.42	442	87 43 50	+1.5	-17.5	-16.0	1663.3			8		
9			B 2.0	442	272 15 57	+1.5	-17.5	-16.0				9		
10		636	220		89 35 23	-2.0	+1.6	-0.4		1662.9		10		
11		638	0		70 00 00	+7.9	-	-7.9		1658.4		11		
12		640	220		95 00 22	-5.2	-19.2	-24.4		1638.9		12		
13		642	440		-							13		
14		644	660		93 49 14	-5.2	-44.0	-49.2		1614.1		14		
15		646	880		-							15		
16		648	1100		92 27 17	-5.2	-47.1	-52.3		1611.0		16		
17		650	1320		-							17		

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 = SIDESHOT
 = FORESIGHT

VERTICAL AND HORIZONTAL SURVEY NOTES

45

GSI AREA Howard Pass STATE/COUNTY ALASKA BOOK NO. 4 PAGE 1 OF
 LINE/LOOP NO. 638 TYPE SURVEY CLIENT Husky DATE 8 DY 4 MO 79 YR
 SURVEYOR J. Anderson INSTRUMENT DESC/SERIAL NO. CREW NO. 1194

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	STATION	VERTICAL						ELEVATION		LR OR DI	RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD				
			SLOPE	HORIZ										
1		NORTH END OF LINE												
2	Δ	600	1440	1340	90 55 43	+15.0	+43.4	+58.4	1683.6					
3	Δ		1100	2680	269 02 31	+15.0	+44.8	+59.8						
4		602		2420										
5		604		2200	31 37 00	-4.0	-62.6	-66.6						
6		606		1980										
7		608		1760	91 43 03	-4.0	-52.7	-56.7						
8		610		1540										
9		612		1320	91 55 06	+4.0	-44.2	-48.2						
10		614		1100										
11		616		880	92 02 45	+4.0	-31.4	-35.4						
12		618		660										
13		620		440	92 02 53	-4.0	-15.7	-19.7						
14		622		220										
15	⊙	MARKER PIPE V.I.A. 2284, C-611 624		0	90 00 00	-5.0	-	-5.0						
16		626		220										
17		628		440	89 07 32	-5.2	+6.7	+1.5						

(1625.66)

1448.2

1186
(1699.34)

TURNS WORKED BACKWARDS

INTERSECTION LINES
611 & 638

1-638 VP 624
1-611 VP 2284

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HORIZONTAL AND VERTICAL SURVEY NOTES

46

GSI AREA Howard Pass. STATE/COUNTY AK. BOOK NO. 2 PAGE 322 OF
 LINE/LOOP NO. 632 TYPE SURVEY CLIENT DATE 12 BY 4 MO 79 YR
 SURVEYOR L. LYMAN. INSTRUMENT DESC/SERIAL NO. WILD T2 CREW NO. 1186

LINE	 	STATION	VERTICAL						HORIZONTAL		REMARKS	
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			RIGHT TURNED HORIZONTAL ANGLE
				SLOPE					HORIZ	INST		
1		bn. 79 373							1753.6			
2												
3												
4			2500		27-50	7.5	-	86.9	1706.7	SE.		
5			✓		272-20	14.8	-	86.9				
6		T.S. 48	1540		93-01-05	14.7	-	95.7	1611.0	S.		
7		T.S. 36	220		93-00	12.7	-	24.2	1682.5			
8			0		-	5.2			1701.5	-		
9		INT. 611/632	1030		91-00	9.6	-	27.6	1679.1	N.	IRON-PIPE	
10											PT. 1184.	
11												
12		T.S. 24	1100		91-00	10.6	-	29.8	1676.7			
13			1320		88-00	8.8	-	37.2	1639.7	S.		
14		T.S. 12	0		-	5.2			1634.5	-		
15		SP. 600	1265		-	14.5			1625.2	N.	VER. 600 PT. 1184.	
16												
17		TP.	1560		89-20	8.3	+	9.8	1649.5			

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HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA _____ STATE/COUNTY AK. BOOK NO. 2 PAGE 323 OF _____
 LINE/LOOP NO. 638 TYPE SURVEY _____ CLIENT _____ DATE 12 BY 4 MO 79 YR
 SURVEYOR L. LYMAN INSTRUMENT DESC/SERIAL NO. WILD T2 CREW NO. 1186

LINE	 	STATION	VERTICAL						HORIZONTAL		REMARKS	
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			RIGHT TURNED HORIZONTAL ANGLE
				SLOPE					HORIZ	INST		
1									1649.5		1	
2			570		89 - 00	2.1	- 7.0	1642.5		S.	2	
3		599.			-	5.2			1637.3	-	3	
4		598.			92 - 40	12.8	- 53.7		1588.8	N.	4	
5			2640		87 - 40	14.3	- 93.1	1495.7			5	
6		597.	1760		88 - 20	5.5	+ 45.7		1541.4		6	
7		596.	880		88 - 20	10.0	+ 15.6		1511.3	S.	7	
8		595.			-	5.2			1490.5	-	8	
9		594.	880		91 - 30	10.4	- 33.4		1462.3	N.	9	
10		593.	1760		91 - 10	12.0	- 47.8		1447.9		10	
11		592.	2640		90 - 50	13.1	- 51.5		1444.2		11	
12			1330		96 - 00	14.5	+ 152.8	1597.0			12	
13		591	450		104 - 20	15.0	- 127.9		1469.1	S.	13	+ 5.0' BOOST
14					-	5.2			1591.8	-	14	STEEP HILL
15		590.	430		88 - 10	8.0	+ 5.7		1602.7	N.	15	GRAVEL
16											16	
17											17	

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HORIZONTAL AND VERTICAL SURVEY NOTES

48

GSI AREA _____ STATE/COUNTY AK BOOK NO. 2 PAGE 224 OF _____
 LINE/LOOP NO. 632 TYPE SURVEY _____ CLIENT _____ DATE 12 DY 4 MO 79 YR
 SURVEYOR L. L. MAN. INSTRUMENT DESC/SERIAL NO. WILD T2 CREW NO. 1186

LINE	 	STATION	VERTICAL							HORIZONTAL		REMARKS	
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		L/R OR DJ		RIGHT TURNED HORIZONTAL ANGLE
				SLOPE					HORIZ	INST			
1		590							1602.7			1	
2			1760		89-20	7.8	- 12.7	1590.0				2	
3		589	880		-	2.5			1587.5	S.		3	
4		588	0		-	5.2			1584.8	-		4	
5		587	880		90-30	9.9	- 17.6		1572.4	N.		5	
6		BM. 79372	920		90-30	11.4	- 17.4		1570.6			6	
7									1573.2			7	
8							VERTICAL TIE		- 2.6			8	
9			2105		87-20	10.0	- 110.8	1462.4				9	
10		586	1760		88-20	10.5	+ 40.7		1503.1			10	
11		585	880		89-00	3.5	+ 11.9		1474.3	S.		11	
12		584	0		-	5.2			1457.2	-		12	
13		583	880		91-00	5.6	- 21.0		1441.4	N.		13	
14		582	1760		90-30	9.9	- 25.3		1437.1			14	
15		581	2140		-	10.9	- 10.9		1451.5			15	
16												16	
17												17	

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HORIZONTAL AND VERTICAL SURVEY NOTES

49

GSI AREA _____ STATE/COUNTY AK BOOK NO. 2 PAGE 325 OF _____
 LINE/LOOP NO. 438 TYPE SURVEY _____ CLIENT _____ DATE 12 BY 4 MO 72 YR
 SURVEYOR L. LYMAN INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1181

LINE	 	STATION	VERTICAL						ELEVATION		L/R OR DI	HORIZONTAL		REMARKS
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD		RIGHT TURNED HORIZONTAL ANGLE	LINE	
				SLOPE										
1		581.							1451.5			1		
2			1760		90-35-25	14.0	+	32.1	1483.6			2		
3		580	880		90-30	4.4	-	12.1	1471.5		S	3		
4		579.	0		-	5.2			1478.4		-	4		
5		578.	880		-	11.2			1472.4		N	5		
6		577.	1760		90-10	13.2	-	18.3	1465.3			6		
7		576.	2640		90-22-15	14.0	-	31.1	1452.5			7		
8												8		
9												9		
10												10		
11												11		
12												12		
13												13		
14												14		
15												15		
16												16		
17												17		

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SYMBOLS = BACKSIGHT = INSTRUMENT SET-UP = SIDESHOT = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA _____ STATE/COUNTY AK. BOOK NO. 2 PAGE 326 OF _____
 LINE/LOOP NO. 438 TYPE SURVEY _____ CLIENT _____ DATE 12 DY 4 MO 79 YR
 SURVEYOR L. LYMAN INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1186

LINE	 	STATION	VERTICAL						HORIZONTAL		REMARKS		
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			L/R OR D/I	RIGHT TURNED HORIZONTAL ANGLE
				SLOPE					HORIZ	INST			
1		576							1452.5			1	
2												2	
3												3	
4			900		90 - 30	4.5	- 26.9	1425.6		E		4	
5					-	5.2		1420.4		-		5	
6		BM 77.371	500		-	10.8	- 10.8	1414.8		W		6	
7								1415.1				7	
8							VERTICAL TIE	- 0.3				8	
9												9	
10			2140		90 - 30	9.6	+ 22.3	1443.4		SW		10	
11		575	605		-	6.3		1437.1		S		11	
12			0		-	5.2		1438.2		-		12	
13		574	275		90 - 30	13.4	- 15.8	1427.6		N		13	
14		573	1155		91 - 00	10.1	- 30.3	1413.1				14	
15			1540		90 - 30	12.5	- 25.9	1417.5				15	
16												16	
17												17	

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HORIZONTAL AND VERTICAL SURVEY NOTES

51

GSI AREA _____ STATE/COUNTY AK BOOK NO. 2 PAGE 327 OF _____
 LINE/LOOP NO. 638 TYPE SURVEY _____ CLIENT _____ DATE 12 BY 4 MO 72 YR
 SURVEYOR L. LYMAN INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1186

LINE	 	STATION	VERTICAL							HORIZONTAL		REMARKS		
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		L/R OR DI		RIGHT TURNED HORIZONTAL ANGLE	LINE
				SLOPE					HORIZ	INST				
1												1		
2			1375		89-30	7.3	-	4.7	1412.8			2		
3		S72	880		90-10	13.2	-	15.8			S.	3		
4		S71	0		-	5.2					-	4		
5		S70	880		91-00	8.2	-	23.6			N.	5		
6		S67	1760		91-00	11.0	-	41.7				6		
7		S68	2640		90-50	8.7	-	47.1				7		
8			2365		89-40	8.0	-	5.8	1359.9			8		
9		S67	1485		-	4.0						9		
10		S66	605		-	10.7					S.	10		
11			0		-	5.2					-	11		
12		S65	275		-	9.8					N.	12		
13			660		-	9.0	-	9.0				13		
14												14		
15												15		
16												16		
17												17		

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



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VERTICAL SURVEY NOTES

52

GSI AREA HOWARD PASS. STATE/COUNTY AK. BOOK NO. 2 PAGE 328 OF
 LINE/LOOP NO. 63P. TYPE SURVEY CLIENT DATE 12 BY 4 MO 77 YR
 SURVEYOR L. LYMAN. INSTRUMENT DESC/SERIAL NO. WILD T2. CREW NO. 1176.

LINE		STATION	VERTICAL							HORIZONTAL		REMARKS	
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		L/R OR DI		RIGHT TURNED HORIZONTAL ANGLE
				SLOPE 					HORIZ 	INST			
1												1	
2			2255.		89-10	8.5	-	24.3	1326.6			2	
3		564.	1760		+1/2	4.8	+2.8	+4.0	1330.6			3	
4		563.	880		-	2.0			1324.6		S.	4	
5		562.	0		-	5.2			1321.4		-	5	
6		561.	880		-	9.1			1317.5		N.	6	
7		560	1760		89-20	5.2		+15.3	1341.9			7	
8			2640		89-30	14.3		-8.7	1333.2			8	
9		559.	1760		-	0.1			1333.1			9	
10		558.	880		-	2.6			1330.6		S.	10	
11		557	0		-	5.7		-5.7	1327.5		-	11	LAST SP.
12												12	NORTH.
13		T.S. 12.	1265		89-18-50	3.8		+11.3	1344.5			13	
14			1760		90-02	4.0		+5.0	1349.5			14	
15		T.S. 24	440		-	5.0			1344.5		S.	15	
16		T.S. 28	0		-	5.2			1344.3		-	16	
17		T.S. 46.	2200		90-42-45	3.8		-31.2	1318.3		N.	17	

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SYMBOLS  = BACKSIGHT  = INSTRUMENT SET-UP  = SIDESHOT  = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

53

GSI AREA _____ STATE/COUNTY AK BOOK NO. 2 PAGE 329 OF _____
 LINE/LOOP NO. 638 TYPE SURVEY _____ CLIENT _____ DATE 12 DY 4 MO 77 YR
 SURVEYOR L. LYMAN INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1186

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> T <input type="checkbox"/> SS <input type="checkbox"/> C	STATION	VERTICAL						HORIZONTAL		REMARKS											
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			L/R OR DI	RIGHT TURNED HORIZONTAL ANGLE									
				SLOPE					HORIZ	INST				ROD								
1																						
2		BM. 49372																				
3																						
4																						
5																						
6																						
7																						
8		SP. 557	26307.55		90-33-50	5.7		- 244.9				1320.3										
9					269-26-08	5.7																
10												1327.5										
11				MEAN	90-33-51																	
12												+0.8										
13																						
14																						
15																						
16																						
17																						

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 SYMBOLS Δ = BACKSIGHT T = INSTRUMENT SET-UP SS = SIDESHOT C = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. _____ PAGE 1 OF 15
 LINE/LOOP NO. 638 TYPE SURVEY _____ CLIENT _____ DATE 7 DY 4 MO 79 YR
 SURVEYOR Jensen INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

54

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	STATION	VERTICAL						ELEVATION		LR OR DR	HORIZONTAL		REMARKS
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD		RIGHT TURNED HORIZONTAL ANGLE	LINE	
			SLOPE	HORIZ										
1													1	
2													2	
3													3	
4	Δ	BAS 49373	3518.4 ⊕	D	88-07-51	6.0							4	Take off
5				R	271-51-51	✓							5	
6	Δ	624	2640.0 ⊙			5.9							6	Int. Lns. 638 & 611
7	⊙	600		D	91-12-03	4.0							7	
8				R	268-47-54	✓							8	
9													9	188-43-02
10													10	
11	SS	2288	740.0 ⊕	D	92-18-06	11.0							11	Vp 2288 Ln - 611
12				R	267-41-20	✓							12	
13													13	
14													14	
15													15	
16													16	
17													17	

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

SYMBOLS Δ = BACKSIGHT ⊠ = INSTRUMENT SET-UP SS = SIDESHOT ⊙ = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Howard STATE/COUNTY Alaska BOOK NO. _____ PAGE 2 OF 15 55
 LINE/LOOP NO. 638 TYPE SURVEY _____ CLIENT _____ DATE 7 BY 4 MO 79 YR.
 SURVEYOR Jensen INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	STATION	VERTICAL						HORIZONTAL		REMARKS		
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			RIGHT TURNED HORIZONTAL ANGLE	LINE
				SLOPE					HORIZ	INST			
1											1		
2											2		
3											3		
4	Δ	600	2640.0 ⊙		D 89-12-07 4.0					V ₁	00	4	Takeoff 600
5					R 268-47-53 ✓					D	180-12-57	5	
6	⊙	624	3520.0 ⊙								180-12-57	6	
7	⊙	656			D 89-39-50 11.0					V ₂	179-59-45	7	
8					R 270-20-30 ✓					R	00-13-03	8	
9											180-12-48	9	180-12-53
10												10	
11	Δ	624	3520.0 ⊙		D 90-10-52 11.0					V ₁	00	11	23
12					R 269-49-18					D	180-23-38	12	180-21-35
13	⊙	656	3190.0 ⊙			5.9					180-23-38	13	180-21-12
14	⊙	685			D 91-03-50 6.0					V ₂	180-00-22	14	180-00-22
15					R 268-56-18 ✓					R	00-23-39	15	00-21-27
16											207	16	180-00-05
17												17	180-23-20
													180-21-08

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SYMBOLS Δ = BACKSIGHT ⊙ = INSTRUMENT SET-UP ⊙ = SIDESHOT ⊙ = FORESIGHT
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HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. _____ PAGE 2 OF 15 56
 LINE/LOOP NO. 638 TYPE SURVEY _____ CLIENT _____ DATE 7 DY 4 MO 79 YR
 SURVEYOR Jensen INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	STATION	VERTICAL						HORIZONTAL		LINE	REMARKS	
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION				RIGHT TURNED HORIZONTAL ANGLE LR OR DR
				SLOPE					HORIZ	INST			
1											1		
2											2		
3	Δ	656	3140.0 [Ⓟ] 3149.6 [Ⓟ]		D 88-50-20	11.0			03		V ₁ 17 28	3	
4					R 271-09-42	✓		31			D 175-39-42	4	
5	⊗	685	2310.0 [Ⓟ]			5.7		17 79			175-37-30	5	
6	○	706			D 91-05-15	6.0		96			V ₂ 180-00-27	6	
7					R 268-54-13	✓		3179.6			R 255-37-17	7	
8											175-32-44	8	175-37-45
9												9	
10	Δ	685	2310.0 [Ⓟ]		D 88-54-16	6.0		09			V ₁ 01	10	
11					R 271-05-40	✓		90			D 170-29-26	11	
12	⊗	706	4020.0 [Ⓟ]			5.8		00			170-29-25	12	
13	○	788	4006.6 [Ⓟ]		D 89-58-17	6.0		06 6.6			V ₂ 179-50-59	13	
14					R 270-01-30	✓		4006.6			R 350-29-13	14	
15											170 29-14	15	170-29-19
16												16	
17												17	

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SYMBOLS Δ = BACKSIGHT ⊗ = INSTRUMENT SET-UP SS = SIDESHOT ⊙ = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. _____ PAGE 4 OF 15 57
 LINE/LOOP NO. 638 TYPE SURVEY _____ CLIENT _____ DATE 8 BY 4 MO 79 YR
 SURVEYOR Jensen INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

LINE	 	STATION	VERTICAL						HORIZONTAL		REMARKS		
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			RIGHT TURNED HORIZONTAL ANGLE	
				SLOPE					HORIZ	INST			ROD
1													
2													
3		706	9006.6①	<input checked="" type="checkbox"/> D	90-02-58	6.0			48		V ₁	00	
4				<input checked="" type="checkbox"/> R	269-57-15	✓			83		D	180-09-43	
5		788	4840.0②			5.9			33			180-09-43	
6		832	4833.5①	<input checked="" type="checkbox"/> D	90-44-25	0.0			35		V ₂	179-59-56	
7				<input checked="" type="checkbox"/> R	269-45-45	✓			4833.5		R	0-09-44	
8												180-09-40	180-09-42
9													
10		788	4833.5①	<input checked="" type="checkbox"/> D	89-46-13	6.0			34		V ₁	00	
11				<input checked="" type="checkbox"/> R	270-14-03	✓			40		D	166-21-20	
12		832	3410.0②			5.8			05			166-21-20	
13		863	3405.7①	<input checked="" type="checkbox"/> D	89-29-14	6.0			5.7		V ₂	179-59-53	
14				<input checked="" type="checkbox"/> R	270-30-56	✓			3405.7		R	346-21-14	
15												166-21-21	166-21-20
16													
17													

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

SYMBOLS

= BACKSIGHT

= INSTRUMENT SET-UP

= SIDESHOT

= FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. _____ PAGE 5 OF 15 58
 LINE/LOOP NO. 638 TYPE SURVEY _____ CLIENT _____ DATE 8 BY 4 MO 29 YR
 SURVEYOR Jensen INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	STATION	VERTICAL						HORIZONTAL		REMARKS		
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			RIGHT TURNED HORIZONTAL ANGLE	
				SLOPE					HORIZ	INST			ROD
1											1		
2												2	
3	Δ	832	3465.7①	D 90-30-53	6.0			74		V ₁	00	3	
4				R 269-29-16	✓			46		D	175-54-50	4	
5	T	863	7480.0⊙		5.8			62			175-54-50	5	
6	⊙	931	7462.2	D 87-52-12	6.0			2.2		V ₂	180-00-02	6	
7				R 272-08-07	✓			7462.2		R	355-55-40	7	
8											175-54-38	8	175-54-44
9	Δ	863	7480.0⊙	D 92-08-10	6.0					V ₁	00	9	
10			7462.2⊙	R 267-51-14	✓					D	180-10-23 ⁴	10	
11	T	931	990⊙		5.9						180-10-23	11	
12	⊙	940		D 89-34-44	6.0					V ₂	180-00-05 ^c	12	
13				R 270-25-05	✓					R	00-10-37 ⁵	13	
14											180-10-32	14	180-10-28
15												15	
16												16	
17												17	

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

SYMBOLS

Δ = BACKSIGHT

T = INSTRUMENT SET-UP

SS = SIDESHOT

⊙ = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. _____ PAGE 6 OF 15
 LINE/LOOP NO. 638 TYPE SURVEY _____ CLIENT _____ DATE 9 BY 4 MO 79 YR
 SURVEYOR Jensen INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

59

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ◎	STATION	VERTICAL						HORIZONTAL		REMARKS				
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			LR OR DR	RIGHT TURNED HORIZONTAL ANGLE		
				SLOPE					HORIZ	INST				ROD	
1															
2															
3	A	931	496.0 [⊙]		90-23-19 2D	6.0					V ₁	02'	3	180-01-36	
4					269 3700 R	✓					D	180-00-09 4	4	180-01-16	
5	⊥	940	3630.°			5.8						180-00-07	5	180-00-18	
6	○	973			90-23-57 3D	6.0					V ₂	180-00-09	6	00-01-34	
7					269 3602 R	✓					R	00-00-16	7	180-01-16	
8												179-59-54	8	180-00-02	
9													9		
10	Δ	940	3630.°		89-36-06 D ²				12		V ₁	00'	10		
11					270 2412 R				20		D	166-17-41	11		
12	⊥	973	12050.0 [⊙]						09			166-17-41	12		
13	○	1082 + 60	12095.9 [⊙]		89-40-08 D				95		V ₂	179-59-57	13		
14					270 2012 R				5.9		R	346 17 34	14		
15									12095.9			166-17-37	15	166-17-39	
16													16		
17													17		

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____
SYMBOLS Δ = BACKSIGHT ⊥ = INSTRUMENT SET-UP SS = SIDESHOT ◎ = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. _____ PAGE 7 OF 15 60
 LINE/LOOP NO. 638 TYPE SURVEY _____ CLIENT _____ DATE 9 DY 4 MO 19 YR
 SURVEYOR Jensen INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

LINE	 	STATION	VERTICAL						HORIZONTAL		LINE	REMARKS		
			DISTANCE	<input checked="" type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION				LR OR RI	RIGHT TURNED HORIZONTAL ANGLE
				SLOPE					HORIZ	INST				
1												1		
2													2	
3	A	973	12096.9①		D 90-31-20	6.0			54		V1	00	3	
4					R 269-38-54	✓			42		D	171-25-50	4	
5	K	1082 + 60'	5440.0②			5.8			24			171-25-50	5	
6	O	1132	5424.4①		D 89-00-40	6.0			4.4		V2	179-59-59	6	
7					R 270-59-25	✓			5424.4		R	351-25-40	7	
8												171-25-39	8	171-25-44
9													9	Field check
10	A	1082 + 60'	5440.0②		D 91-00-16	6.0			13		V1	00	10	00
11			5424.0①		R 268-59-54	✓			3.5		D	180-05-01	11	184-00-25
12	K	1132	13640 ②			5.8			56			180-05-01	12	184-00-25
13	O	1256	13569.4①		D 87-33-00	6.0			69		V2	180 00 14	13	179-59-53
14					R 272-26-52	✓			94		R	04 04 50	14	04-00-24
15									13569.4			180-04-36	15	180-04-46
16													16	184-00-17
17													17	184-00-21

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

SYMBOLS = BACKSIGHT
 = INSTRUMENT SET-UP
 SS = SIDESHOT
 = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

61

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. _____ PAGE 8 OF _____
 LINE/LOOP NO. 638 TYPE SURVEY _____ CLIENT _____ DATE 10 BY 4 MO 79 YR
 SURVEYOR Jensen INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	STATION	VERTICAL						HORIZONTAL		REMARKS		
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			RIGHT TURNED HORIZONTAL ANGLE	
				SLOPE					HORIZ	INST			ROD
1													
2													
3													
4	Δ	1132	13569.40		D 92-28-23	6.0					V ₁	00	4
5					R 267 31-28	✓					D	185-38-53	5
6	⊙	1256	660.0 ⊙			5.7						185-38-53	6
7	⊙	1262			D 91-45-55	6.0					V ₂	179-59-57	7
8					R 268-13-56	✓					R	05 38-53	8
9												185-38-50	9
10													10
11	Δ	1256	660.0 ⊙		D 88-08-12	6.0			37		V ₁	01	11
12					R 271-51-45	✓			72		D	180-09-31	12
13	⊙	1262	3740.6 ⊙			5.6			29			180-09-30	13
14	⊙	1296	5729.6 ⊙		D 93-46-10	6.0			9.6		V ₂	179-59-52	14
15					R 266-13-36	✓			3729.6		R	00-09-34	15
16												180-09-26	16
17													17

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

SYMBOLS Δ = BACKSIGHT ⊕ = INSTRUMENT SET-UP SS = SIDESHOT ⊙ = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

62

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. _____ PAGE 8 OF _____
 LINE/LOOP NO. 638 TYPE SURVEY _____ CLIENT _____ DATE 10 BY 4 MO 79 YR
 SURVEYOR Jensen INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	STATION	VERTICAL						HORIZONTAL		REMARKS			
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			LR OR DR	RIGHT TURNED HORIZONTAL ANGLE	
				SLOPE					HORIZ	INST				ROD
1														
2														
3	Δ	1262	3729.6 ⊕	D	86-13-03	6.0			51		V ₁	02		
4				R	273-46-58	✓			16		D	181-47-48		
5	⊗	1296	5170.⊙			5.8			68			181-47-46		
6	⊙	1343	5168.3 ⊕	D	89-13-40	7.0			8.3		V ₂	180-00-00		Marker Pipe
7				R	270-46-20	✓			5168.3		R	01-47-47		
8												187-47-47		181-47-47
9														
10	Δ	1296	5168.3 ⊕	D	90-42-22	11.0			09		V ₁	02		
11				R	269-17-35	✓			96		D	188-20-01		
12	⊗	1343	⊙ 9680.0			5.9			65			188-19-59		
13	⊙	1431	⊕ 9652.0	D	89-51-04	6.0			52		V ₂	179-59-58		
14				R	270-08-53	✓			2.0		R	08-20-01		
15									9652.0			188-19-58		- 188-19-59
16														
17														

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

SYMBOLS Δ = BACKSIGHT ⊗ = INSTRUMENT SET-UP SS = SIDESHOT ⊙ = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. _____ PAGE 7 OF _____
 LINE/LOOP NO. 638 TYPE SURVEY _____ CLIENT _____ DATE 10 DAY 4 MO 79 YR
 SURVEYOR Jensen INSTRUMENT DESC/SERIAL NO. _____ CREW NO. _____

63

LINE	 <small>SS</small> 	STATION	VERTICAL							HORIZONTAL		REMARKS		
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		JR OR DI		RIGHT TURNED HORIZONTAL ANGLE	
			SLOPE	HORIZ					INST	ROD				
1												1		
2													2	
3		1296	5168.36	D 90-42-22	11.0			09		V ₁	180-00-02		3	
4				R 269-17-35	6.0			91		D	184-10-36		4	
5		1343	9134.26		5.7			13			184-10-34		5	
6		BAS - 79377		D 90-13-03	6.0			34		V ₂	180-00-10		6	
7				R 269-47-13				4.2		R	04-10-38		7	
8								9134.2			184-10-28		8	184-10-31
9													9	
10													10	
11													11	
12													12	
13													13	
14													14	
15													15	
16													16	
17													17	

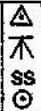




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SYMBOLS = BACKSIGHT
 = INSTRUMENT SET-UP
 = SIDESHOT
 = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

64

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. _____ PAGE 10 OF _____
 LINE/LOOP NO. 638 TYPE SURVEY _____ CLIENT _____ DATE 11 BY 4 MO 39 YR
 SURVEYOR Jensen INSTRUMENT DESC/SERIAL NO. _____ CREW NO. _____

LINE	 SS 	STATION	VERTICAL							HORIZONTAL		REMARKS		
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		LR OR DR		RIGHT TURNED HORIZONTAL ANGLE	
			SLOPE	HORIZ					INST	ROD				
1												1		
2													2	
3													3	
4													4	
5													5	
6													6	
7													7	
8													8	
9													9	
10		1343	9652.00	D	90-08-45	6.0				V ₁	02	10		
11				R	269-50-50	✓				D	169-55-07	11		
12		1431	2860.00			5.8					169-55-05	12		
13		1457		D	90-53-21	6.0				V ₂	179-59-56	13		
14				R	269-06-18	✓				R	349-55-12	14		
15											169-55-08	15	169-55-06	
16												16		
17												17		

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

SYMBOLS  = BACKSIGHT  = INSTRUMENT SET-UP  = SIDESHOT  = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

65

GSI # Edward Pass STATE/COUNTY Alaska BOOK NO. PAGE 11 OF
638 TYPE SURVEY CLIENT DATE 11 BY 4 MO 79 YR
Jensen INSTRUMENT DESC/SERIAL NO. CREW NO. 1184

STATION	VERTICAL							HORIZONTAL		REMARKS		
	DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		LR OR DI		RIGHT TURNED HORIZONTAL ANGLE	LINE
	SLOPE	HORIZ				INST	ROD					
1											1	
2											2	
3											3	
4	Δ 1431	2860.0 ⊙ 2835.0 ⊙	D 89-04-55	6.0					V ₁	01	4	
5			R 270-59-45	✓					D	180-23-56	5	
6	π 1457	1650.0 ⊙								180-23-55	6	
7	○ 1472		D 92-50-47	6.0					V ₂	180-00-01	7	
8			R 267-08-40	✓					R	00-23-45	8	
9										180-23-44	9	180-23-49
10											10	
11	Δ 1457	1650.0 ⊙	D 87-05-08	6.0					V ₁	01	11	
12			R 272-59-25	✓					D	194-34-16	12	
13	π 1472	820.0 ⊙			5.7					194-34-15	13	
14	○ 1480		D 89-54-10	6.0					V ₃	179-59-52	14	
15			R 270-05-10	✓					R	14-34-10	15	
16										194-34-02	16	194-34-07
17											17	

WORKED BY CHECKED BY 1ST 2ND

SYMBOLS Δ = BACKSIGHT π = INSTRUMENT SET-UP SS = SIDESHOT ⊙ = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. _____ PAGE 12 OF _____ 66
 LINE/LOOP NO. 038 TYPE SURVEY _____ CLIENT _____ DATE 11 BY 4 MO 79 YR
 SURVEYOR Jensen INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

LINE	 SS 	STATION	VERTICAL						ELEVATION		L/R OR DI	RIGHT TURNED HORIZONTAL ANGLE	LINE	REMARKS
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	INST	ROD				
				SLOPE										
1												1		
2												2		
3		1472	880.0	D	90-06-42	4.0					V ₁	00	3	
4				R	269-52-50	✓					D	190-28-32	4	
5		1480	1320.0			5.8						190-28-32	5	
6		1492		D	88-11-18	4.0					V ₂	179-59-50	6	
7				R	271-48-04	✓					R	10-28-26	7	
8												190-28-16	8	190-28-24
9													9	
10		1480	1520.0	D	91-58-32	4.0			20		V ₁	00	10	
11				R	268-04-03	✓			01		D	187-04-51	11	
12		1492	20130.0			5.8			11			187-04-51	12	
13		1675	20112.9	D	89-13-23	8.0			12		V ₂	179-59-53	13	
14				R	270-46-05	✓			2.9		R	07-04-50	14	
15									20112.9			187-04-43	15	187-04-47
16													16	
17													17	

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

SYMBOLS

= BACKSIGHT

= INSTRUMENT SET-UP

SS = SIDESHOT

= FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. _____ PAGE 13 OF _____
 LINE/LOOP NO. 638 TYPE SURVEY _____ CLIENT _____ DATE 11 BY 4 MO 79 YR
 SURVEYOR Jensen INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

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LINE	 	STATION	VERTICAL						HORIZONTAL		REMARKS		
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			RIGHT TURNED HORIZONTAL ANGLE	LINE
			SLOPE	HORIZ					INST	ROD			
1											1		
2												2	
3		1492	20130.0	D 90-47-59	6.0			02		V ₁ 00		3	EOL
4				R 269-11-50	✓			28		D 42-40-58		4	
5		1675	2843.5		5.7			84		42-40-58		5	
6		Bas 79379		D 91-48-00	6.0			43		V ₂ 179-59-50		6	
7				R 268-12-00	✓			3.5		R 222-40-57		7	
8								2843.5		42-40-47		8	42-40-52
9												9	
10												10	
11												11	
12												12	
13												13	
14												14	
15												15	
16												16	
17												17	

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HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. _____ PAGE 14 OF 68
 LINE/LOOP NO. 638 TYPE SURVEY _____ CLIENT _____ DATE 12 BY 4 MO 79 YR
 SURVEYOR Jensen INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ◎	STATION	VERTICAL							HORIZONTAL		REMARKS		
			DISTANCE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS	VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		L/R OR D/I		RIGHT TURNED HORIZONTAL ANGLE	
				SLOPE					HORIZ	INST				ROD
1												1		
2													2	
3													3	
4	Δ	78251			91-37-12 D	4.0			06		V ₁	00	4	
5					R	✓		60			D	212-23-18	5	
6	⊗	78252	6048.31 ⊕			5.7		04				212-23-18	6	
7	○	1343			90-59-01 D	6.0		48			R	32-23-07	7	
8					R	✓		8.31			V ₁	179-59-55	8	
9								06048.31				212-23-15	9	212-23-15
10													10	
11	Δ	BAS 78252	6048.31 ⊕		89-00-52 D	6.0					V ₁	01	11	
12					R						D	17-54-20	12	
13	⊗	1343	5168.3 ⊕										13	
14	○ ₁	1296			90-41-33 D	11.0					V ₂	179-59-55	14	Up Line to North
15	○ ₂				R						R	197-54-15	15	17-54-03
16	○ ₃											→	16	Down line to South
17													17	

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HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. _____ PAGE 15 OF _____
 LINE/LOOP NO. 638 TYPE SURVEY _____ CLIENT _____ DATE 12 DY 4 MO 79 YR
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LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ○	STATION	VERTICAL							HORIZONTAL		REMARKS			
			DISTANCE		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION		LR OR DR		RIGHT TURNED HORIZONTAL ANGLE		
			SLOPE	HORIZ					FEET	METERS				INST	ROD
1												1			
2													2		
3	Δ	Bas 78252												3	
4														4	
5	⊥	1343												5	
6	○	1431												6	
7														7	
8														8	
9	Δ	78252												9	
10	⊥	vp-1343												10	
11	○	79377												11	
12														12	
13														13	
14														14	
15														15	
16														16	
17														17	

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SYMBOLS Δ = BACKSIGHT ⊥ = INSTRUMENT SET-UP ○ = FORESIGHT SS = SIDESHOT