

# VERTICAL AND HORIZONTAL SURVEY NOTES

GSI AREA HOWARD PASS. STATE/COUNTY AK. BOOK NO. 2 PAGE 305 OF       
 LINE/LOOP NO. 634 TYPE SURVEY      CLIENT      DATE 7 BY 4 MO 79 YR       
 SURVEYOR L. LYMAN. INSTRUMENT DESC/SERIAL NO. WILD T2 CREW NO. 1186

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	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	⊙	BM 79334								1813.9			1	
2													2	
3	Δ		695		88-05	5.8	-	18.4	1795.5		S.		3	
4		669	0		-	5.2			1790.3		-		4	
5		668	000		92-30	7.7	-	41.0	1749.5		N.		5	
6		667	1760		91-30	11.6	-	57.7	1737.8				6	
7	⊙	666	2640		91-10	11.7	-	65.4	1730.1				7	
8	Δ		1760		89-05	5.3	-	25.4	1704.7				8	
9		665	000		-	0.5			1704.2		S		9	
10		664	0		-	5.3			1699.4				10	LAST ST
11													11	NORTH
12													12	
13	⊙	BM 79334	5084.25		88-43-18	5.2	+	108.2	+	1813.0	S.		13	(1813.0)
14	Δ				271-16-54	5.2	+	108.5	108.3				14	
15													15	
16													16	
17													17	

WORKED BY L. L. CHECKED BY 1ST      2ND     

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

# VERTICAL AND VERTICAL SURVEY NOTES

GSI AREA HOWARD PASS. STATE/COUNTY AK BOOK NO. 2 PAGE 304 OF         
 LINE/LOOP NO. 134 TYPE SURVEY        CLIENT        DATE 7 BY 4 MO 7 YR  
 SURVEYOR L. UYMAN INSTRUMENT DESC/SERIAL NO. WILD T2 CREW NO. 1186

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	STATION	VERTICAL						ELEVATION		L/R OR DJ	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	⊙											1		
2	Δ		165			-	6.2	+ 6.2	1803.2		5.	2		
3		674	0			-	5.2		1798.0		-	3		
4		673	000			92-00	6.4	- 37.1	1766.1		N.	4		
5		672	1760			91-20	12.4	- 53.3	1749.9			5		
6		671	2640			90-50	9.2	- 47.6	1755.6			6		
7		670	3520			-	2.5		1800.7			7		
8	⊙	BM. 79334	3700			89-40	10.1	+ 11.4	1814.5			8		
9	⊙		✓			270-23-24	14.0	+ 11.2	11.3			9		
10									1813.9		✓	10		
11								VERTICAL				11		
12								TIE.				12		
13									+0.6			13		
14												14		
15												15		
16												16		
17												17		

WORKED BY L. U.C. CHECKED BY 1ST        2ND       

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# HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA \_\_\_\_\_ STATE/COUNTY AK BOOK NO. 2 PAGE 303 OF \_\_\_\_\_  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT \_\_\_\_\_ DATE 7 BY 4 MO 79 YR  
 SURVEYOR L. LYMAN INSTRUMENT DESC/SERIAL NO. \_\_\_\_\_ CREW NO. 1186

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 DI		RIGHT TURNED HORIZONTAL ANGLE	LINE
				SLOPE					HORIZ	INST				
1	⊙	BM. 79 333								2024.7		1		
2												2		
3	Δ		855		91-10	12.5	+ 29.9	2054.6			S.W.	3		
4		682	68		-	9.5				2045.1	S.	4		
5			0		-	5.2				2049.4	-	5	TP.	
6		681	810		96-00	5.2	- 89.4			1965.2	N.	6		
7		680	1700		93-30	6.8	- 110.4			1944.2		7		
8	⊙	679	2570		91-40	11.4	- 86.1			1968.5		8		
9	Δ		275		-	12.6	+ 12.6	1981.1			S	9		
10			0		-	5.2				1975.9	-	10		
11		678	605		92-00	8.1	- 29.2			1951.9	N.	11		
12	⊙		1100		92-00	12.5	- 50.9			1930.2		12		
13	Δ		1265		86-00	6.9	- 81.1	1849.1				13		
14		677	880		86-00	9.7	+ 51.5			1905.6	S.	14		
15		676	0		-	5.2				1843.9	-	15		
16		675	880		92-00	11.0	- 41.7			1807.4	N.	16		
17	⊙		1595		91-30	10.4	- 52.1			1777.0		17		

WORKED BY L.J.C. CHECKED BY 1ST \_\_\_\_\_ 2ND \_\_\_\_\_

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# VERTICAL AND HORIZONTAL SURVEY NOTES

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GSI AREA \_\_\_\_\_ STATE/COUNTY AK BOOK NO. 2 PAGE 302 OF \_\_\_\_\_  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT \_\_\_\_\_ DATE 7 DY 4 MO 79 YR  
 SURVEYOR L. LYMAN INSTRUMENT DESC/SERIAL NO. WILD T2 CREW NO. 1186

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	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	⊙											1		
2	Δ		1860		91-00	12.7	+ 45.2	1773.7				2		
3		688	1580		71-10	13.1	- 45.3		1728.4			3		
4		687	715		94-30	10.0	- 65.9		1707.8		S.	4		
5		-	0		-	5.2			1768.5		-	5		
6		686	165		87-45-50	4.0	+ 2.4		1776.1		N.	6		
7		685	1030		84-30	6.8	+ 91.5		1815.2			7		
8	⊙		1520		84-30	12.0	+ 133.0		1906.7			8		
9	Δ		1760		93-40	12.7	+ 125.0	2031.7				9		
10		684	1375		94-30	7.7	- 117.2		1914.5			10		
11		683	495		96-00	11.0	- 62.5		1969.2		S.	11		
12			0		-	5.2			2026.5			12		
13	⊙	B.M. 79333	615		-	8.2	- 8.2		2023.5		W.	13		
14									2024.7			14		
15								VERTICAL TIE, -1.2				15		
16												16		
17												17		

WORKED BY L.J.L. CHECKED BY 1ST \_\_\_\_\_ 2ND \_\_\_\_\_

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# HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA \_\_\_\_\_ STATE/COUNTY AK. BOOK NO. 2 PAGE 301 OF \_\_\_\_\_  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT \_\_\_\_\_ DATE 7 DY 4 MO 79 YR  
 SURVEYOR L. L. MAN. 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			RIGHT TURNED HORIZONTAL ANGLE	
				SLOPE	HORIZ					INST	ROD			
1												1		
2		696.	2360		29-30	7.8	+12.8		1658.5		N.		2	BASE of Bluff.
3			340		76-00	12.5	+47.8	1706.3			S.		3	
4			0		-	5.0			1701.3		-		4	
5			410		-	3.2	-3.2		1703.1		N.		5	
6			1010		89-00	2.1	-9.5	1693.6					6	
7		695.	000		-	5.2			1698.4		S.		7	
8		694.	0		-	5.2			1688.4		-		8	
9		693.	000		91-00	6.6	-22.0		1671.6		N.		9	
10		692.	1760		90-20	11.5	-21.7		1671.9				10	DEEP RAVINE NORTH.
11			1760		90-10	10.6	+15.7	1697.6					11	
12		691.	000		90-10	14.2	-16.8		1670.8		S.		12	
13		690	0		-	5.2			1682.4		-		13	
14		689.	000		00-30	9.8	+13.2		1700.8		N.		14	
15			1480		00-00	10.7	+40.9		1728.5				15	
16													16	
17													17	

WORKED BY L.J.L. CHECKED BY 1ST \_\_\_\_\_ 2ND \_\_\_\_\_

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

# VERTICAL SURVEY NOTES

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GSI AREA HOWARD PASS. STATE/COUNTY AK. BOOK NO. 2 PAGE 300 OF       
 LINE/LOOP NO. 634 TYPE SURVEY      CLIENT      DATE 7 BY 4 MO 79 YR       
 SURVEYOR L. LYMAN. INSTRUMENT DESC/SERIAL NO. WILD T2. CREW NO. 1186.

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	STATION	VERTICAL						ELEVATION		LR OR DR	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	⊙	703.										✓ 1	QUERY. CR.	
2												2	100' NORTH	
3												3	STEEP. ROCK	
4	Δ		490		-	5.7	+ 5.7	1659.9			S.	4	BANKS.	
5			0		-	5.2		1654.7			-	5		
6		702	385		-	14.1		1645.8			N.	6		
7	⊙		770		90 - 30	11.9	- 18.6	1641.3				7		
8	Δ		1370		89 - 00	3.2	- 20.7	1620.6				8		
9		701	880		89 - 20	10.3	- 0.1	1620.5			S	9		
10		700	0		-	5.5		1615.1			-	10	KILIGWA. RIVER	
11	⊙		380		-	4.9	- 4.9	1615.7			N.	11	ROCK. BANKS.	
12	Δ		770		91 - 20	12.1	+ 30.0	1645.7				12		
13		697.	275		92 - 00	13.6	- 23.2	1622.5			S.	13		
14			0		-	5.2		1640.5			-	14		
15		698.	605		-	8.0		1637.7			N.	15		
16		697	1495.		-	2.8		1642.9				16		
17												17		

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# VERTICAL AND HORIZONTAL SURVEY NOTES

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GSI AREA \_\_\_\_\_ STATE/COUNTY AK BOOK NO. 2 PAGE 277 OF \_\_\_\_\_  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT \_\_\_\_\_ DATE 6 BY 4 MO 72 YR  
 SURVEYOR L. LYMAN INSTRUMENT DESC/SERIAL NO. \_\_\_\_\_ CREW NO. 1186

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	⊙								1837.2			1		
2	Δ		1045.	86-30	10.2	-	53.5	1783.7				2		
3		711	880	86-30	4.5	+	49.1		1832.8		S.	3		
4		710	0	-	5.2				1778.5		-	4		
5		709.	880	92-20	11.3	-	47.1		1736.6		N.	5		
6		708.	1760	92-20	10.0	-	81.6		1702.1			6		
7	⊙	707.	2640	91-50	13.2	-	97.6		1686.1			7		
8	Δ		2640	89-30	12.0	-	11.0	1675.1				8		
9		706.	1760	89-50	14.3	-	9.2		1665.9			9		
10		705.	880	89-40	6.6	-	1.5		1673.6		S.	10		
11		704.	0	-	5.2				1669.9		-	11		
12	⊙	703.	880	90-40	10.7	-	20.9.		1154.2		N.	12		
13												13		
14												14		
15												15		
16												16		
17												17		

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# VERTICAL SURVEY NOTES

GSI AREA \_\_\_\_\_ STATE/COUNTY AK. BOOK NO. 2 PAGE 297 OF \_\_\_\_\_  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT \_\_\_\_\_ DATE 6 BY 4 MO 79 .YR  
 SURVEYOR L. LYMAN INSTRUMENT DESC/SERIAL NO. Wild T2 CREW NO. 1186

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	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 	HORIZ 										
1									1774.6			1		
2		728	000		91-00	7.0	-	22.4		1752.2	N.	2		
3		727	1760		90-50	9.0	-	34.6		1740.0		3		
4	⊙	726	2640		90-40	12.3	-	43.0		1731.6		4		
5	Δ		2640		89-40	7.2	-	6.2	1725.4			5		
6		725	1760		+1/2	8.6	+88	+0.2		1725.6		6	TRAIL / RIVER	
7		724	000		-	2.8				1722.6	S.	7		
8		723	0		-	5.2				1720.2	-	8	RIVER / VALLEY.	
9		722	000		-	5.7				1719.7	N.	9		
10		721	1760		00-30	5.1	+	41.0		1766.4		10	RIVER / BANK	
11	⊙		<del>2020</del>		00-10	10.0	+	54.6		1780.0		11		
12	Δ		1470		90-30	12.1	+	24.9	1704.9			12		
13		720	000		91-10	14.0	-	31.9		1773.0	S.	13		
14		719	0		-	5.2				1799.7	-	14		
15		718	000		06-00	0.0	+	53.2		1858.1	N.	15		
16	⊙	TP	1140		05-20	5.7	+	86.5		1891.4		16		
17												17		

WORKED BY L. L. CHECKED BY 1ST \_\_\_\_\_ 2ND \_\_\_\_\_

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# VERTICAL SURVEY NOTES

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GSI AREA \_\_\_\_\_ STATE/COUNTY AK BOOK NO. 2 PAGE 278 OF \_\_\_\_\_  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT \_\_\_\_\_ DATE 6 BY 4 MO 79 YR  
 SURVEYOR L. LYMAN INSTRUMENT DESC/SERIAL NO. \_\_\_\_\_ CREW NO. 1186

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			
1	○	TP										1	
2	Δ		60.5		88 - 20	7.3	-	10.3	1891.1		S.	2	
3		717	0		-	5.2			1875.7		-	3	
4		716	0		91 - 30	8.4	-	31.4	1849.7		N.	4	
5	○		1260		91 - 30	14.1	-	47.1	1834.0			5	
6	Δ		2255		90 - 20	11.9	+	25.0	1859.0			6	
7		715	1760		91 - 10	13.2	-	49.0	1810.0			7	
8		714	880		91 - 10	6.9	-	24.8	1834.2		S.	8	
9		713	0		-	5.2			1853.8		-	9	
10	○	BM 79332	545		92 - 00	7.9	-	26.9	1832.1		SW.	10	
11									1831.6			11	
12								VERTICAL	L. TIE		+0.5	12	
13												13	
14	Δ		545		91 - 30	12.6	+	26.9	1858.5		SW	14	
15		712	880		-	8.2			1850.3		N	15	TP
16	○		1595		90 - 20	12.0	-	21.3	1837.2		N	16	
17												17	

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# VERTICAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY AK BOOK NO. 2 PAGE 276 OF       
 LINE/LOOP NO. 634 TYPE SURVEY      CLIENT      DATE 6 BY 4 MO 99 YR       
 SURVEYOR L. LYMAN INSTRUMENT DESC/SERIAL NO.      CREW NO. 1186

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 DI		RIGHT TURNED HORIZONTAL ANGLE	
				SLOPE					HORIZ	INST				ROD
1	⊙	TP.								1878.2			1	
2	Δ		1925		89 - 00	11.8	-	21.8	1856.4				2	
3		740	1760		89 - 20	3.0	+	17.5		1873.9			3	
4		739	880		89 - 20	4.1	+	5.6		1862.0	S		4	
5		738	0		-	5.2				1851.2	-		5	
6		737	880		90 - 40	7.3	-	19.0		1838.4	N.		6	
7		736	1760		-1/2	8.0	-	16.8		1839.6			7	
8	⊙	735	2640		-	2.4	-	2.4		1854.0			8	
9	Δ		880		-	8.6	+	8.6	1812.6		S.		9	
10		734	0		-	5.4				1857.2	-		10	
11		733	880		91 - 00	12.4	-	27.8		1834.8	N.		11	
12	⊙	732	1760		91 - 10	11.5	-	47.3		1815.3			12	
13	Δ		2140		89 - 00	5.4	-	40.7	1774.6				13	
14		731	1760		89 - 00	8.5	+	22.2		1796.8			14	
15		730	880		89 - 00	10.0	+	5.4		1780.0	S.		15	
16		729	0		-	5.2				1769.4	-		16	
17											N.		17	

WORKED BY L. J. L. CHECKED BY 1ST      2ND       
 SYMBOLS    Δ = BACKSIGHT    ⊠ = INSTRUMENT SET-UP    SS = SIDESHOT    ⊙ = FORESIGHT

# VERTICAL SURVEY NOTES

GSI AREA Howard PASS. STATE/COUNTY AK. BOOK NO. 2 PAGE 295 OF       
 LINE/LOOP NO. 634. TYPE SURVEY      CLIENT      DATE 6 BY 4 MO 79 YR  
 SURVEYOR L. LYMAN. INSTRUMENT DESC/SERIAL NO. WILD T2. CREW NO. 1186.

LINE	SS ◎	STATION	VERTICAL							HORIZONTAL		REMARKS	
			DISTANCE	□ FEET □ METERS		VERTICAL ANGLE OBS.	ROD RDG OR HI	ELEV DIFF	FINAL ELEVATION DIFF	ELEVATION			RIGHT TURNED HORIZONTAL ANGLE
				SLOPE	HORIZ					INST	ROD		
1	◎	BM. 79331.									1875.3	✓	
2													
3													
4	△		854		89 - 00	3.8	- 11.1		1864.2				
5													
6		T.S. # 12	1265		90 - 25 - 20	3.8	- 13.1		1851.1		S.		
7		T.S. # 24	2585		90 - 17 - 40	3.8	- 17.1		1847.1		S.		
8		T.S. # 36	3900		90 - 16 - 08	3.8	- 22.1		1842.1		S.		
9		T.S. # 48	5225		90 - 05 - 12	3.8	- 11.7		1852.5		S.		
10													
11		INT. 611/234	2640		90 - 10	10.7	- 18.4		1845.8		S. (1865.2)		INT. 611/634
12	CK		✓		269 - 50	10.1	- 18.3						IRON - PIPE
13		742	0		-	5.2			1859.0		(1858.1)		OLD VP. 742
14													PART 7. 1184
15		741	880		-	2.1			1862.1		N		
16	◎	TP.	1595		89 - 00	13.8	+ 14.0		1878.2		N		
17													

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# VERTICAL AND HORIZONTAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 2 PAGE 30 OF 172  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT \_\_\_\_\_ DATE 13 DY 3 MO 79 YR  
 SURVEYOR W.D. HELANDER INSTRUMENT DESC/SERIAL NO. \_\_\_\_\_ CREW NO. 1184

12

11.1  
1.6 1/2  
10.1

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												1		
2												2		
3		<u>BAS 79331</u>	<u>2020<sup>±</sup></u>		<u>89-09-44</u>	<u>5.0</u>						3		
4					<u>270-49-06</u>	<u>5.0</u>	<u>+24.3</u>		<u>1874.8</u>			4		
5												5		
6									<u>1875.2</u>		<u>BAS 79331</u>	6	<u>TRUE VALUE</u>	
7												7		
8									<u>-0.4</u>		<u>MISTIC</u>	8		
9												9		
10												10		
11												11		
12												12		
13												13		
14												14		
15												15		
16												16		
17												17		

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




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# HORIZONTAL AND VERTICAL SURVEY NOTES

17/

13

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 2 PAGE 19 OF       
 LINE/LOOP NO. 634 TYPE SURVEY      CLIENT -33° CALM CLEAR DATE 13 DY 3 MO 79 YR  
 SURVEYOR W.D. HELANDER 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		TARE	OFF	VP 766	L-634							1	SEE PG 1, L-4	
2												2		
3		766	0		HI 5.3		+5.3	1850.5				3		
4												4		
5		764	220									5		
6		762	440		89-55-50	5.0	-4.5	1846.0				6		
7		760	660									7		
8		758	880		89-52-07	5.0	-3.0	1847.5				8		
9		756	1100									9		
10		754	1320		89-48-52	5.0	-0.7	1849.8				10		
11		752	1540									11		
12		750	1760		89-46-00	5.0	+2.2	1852.7				12	BAS 79431 IS 600'	
13		748	1980									13	WEST OF VP 748	
14		746	2200		89-45-05	5.0	+4.7	1855.2				14		
15		744	2420									15		
16		742	2640		<sup>43</sup> 89-44-00	5.0	+8.2	1858.7				16		
17												17		

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# HORIZONTAL AND VERTICAL SURVEY NOTES

170

14

GSI AREA: Howard Pass STATE/COUNTY: ALASKA BOOK NO. 2 PAGE 18 OF 18  
 LINE/LOOP NO. 624 TYPE SURVEY \_\_\_\_\_ CLIENT Husky DATE 12 DY 3 MO 79 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			LR OR DI RIGHT TURNED HORIZONTAL ANGLE	LINE
			SLOPE	HORIZ						INST	ROD			
1												1		
2	Δ	1180	T 13.38	938		96 48 38	+15.0	+111.2	+126.2	2545.5			2	
3	Δ		B 4.00			263 10 40	+15.0	+111.4	+126.4				3	
4		1182	713			-							4	
5		1184	493			100 16 53	-7.4	-88.0	-92.4	2453.1			5	
6		1186	273			-							6	
7		1188	53			90 09 24	-14.0	-0.1	-14.1	2521.4			7	
8	⊗	1188 + 53'	0										8	
9		1190	167			85 47 57	-5.4	+12.2	+6.8	2552.3			9	
10		1192	382			86 08 23	-5.4	+6.5	+1.4	2546.9			10	
11	⊙	B.M. 79328	T 14.83	363		89 18 11	-14.0	+4.4	-9.6	2534.5	REFERENCE: D.A.S SURVEY		11	LAST V.P TO THE
12	⊙		B 11.00			270 41 10	-14.0	+4.3	-9.7	2535.8			12	SOUTH
13										+1.3	MISCLOSURE		13	
14													14	
15													15	
16													16	
17													17	

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# VERTICAL AND HORIZONTAL SURVEY NOTES

169

15

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 2 PAGE 17 OF 18  
 LINE/LOOP NO. \_\_\_\_\_ TYPE SURVEY \_\_\_\_\_ CLIENT HUSKY DATE \_\_\_\_DY \_\_\_\_MO 79 YR  
 SURVEYOR \_\_\_\_\_ 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		RIGHT TURNED HORIZONTAL ANGLE		LINE	
			SLOPE	<input type="checkbox"/> FEET <input type="checkbox"/> METERS HORIZ					INST	ROD				
1									2510.3			1		
2		1162	440		96 41 04	13.0	51.2	64.2		2446.1			2	
3		1164	660		96 43 26	5.4	77.3	82.7		2427.6			3	
4		1166	880										4	
5		1168	1100		95 13 13	5.4	100.1	105.5		2404.8			5	
6		1170	1320										6	
7		1172	1540		94 19 46	5.4	116.3	121.7		2388.6			7	
8		1174	1760										8	
9		1176	1980		93 18 53	5.4	114.5	119.9		2390.4			9	
10		1178	2200										10	
11	⊙	1180	2420 ✓		91 47 41	15.0	75.8	90.8		2419.2			11	2418.3
12	⊙				268 11 24	15.0	76.4	91.1 91.4					12	
13													13	
14													14	
15													15	
16													16	
17													17	

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










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# VERTICAL AND HORIZONTAL SURVEY NOTES

168 16

GSI AREA Howard Pass STATE/COUNTY ALASKA BOOK NO. 2 PAGE 16 OF 18  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT MARKY DATE 12 DY 3 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				
1												1		
2		1139	220 ✓		90 01 09	-8.5	-0.1	-8.6		2704.9		2	2702.9	
3					269 58 28	-8.5	-0.1	-8.6				3		
4												4		
5		1139	2090 ✓		84 37 32	+1.0	-195.8	-194.8	2510.3			5		
6					275 21 51	+1.0	-195.4	-194.4				6		
7		1140	1980									7		
8		1142	1760		85 05 56	-4.4	+150.4	+146.0		2656.3		8		
9		1144	1540		85 27 47	-4.4	+121.8	+117.4		2627.7		9		
10		1146	1320		-							10		
11		1148	1100		86 30 02	-4.4	+73.5	+69.1		2579.4		11		
12		1150	880		-							12		
13		1152	660		87 30 24	-4.4	+28.7	+24.3		2534.6		13		
14		1154	440		-							14		
15		1156	220		91 07 01	-4.0	-4.3	-8.3		2502.0		15		
16		1158	0		-	-4.8	-	-4.8		2505.5		16		
17		1160	220		-							17		

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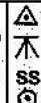

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# VERTICAL AND HORIZONTAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 7 PAGE 15 OF 18  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT HUSKY DATE 12 DY 3 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 										
1												1		
2	o	1118	1760 ✓		85 38 23	-6.0	+133.8	+127.8		2588.5		2	2586.5	
3	o				274 20 57	-6.0	+133.5	+121.5				3		
4												4		
5	Δ	1118	2090 ✓		93 00 57	+15.0	+110.0	+125.0	2713.5			5		
6	Δ				266 58 54	+15.0	+110.0	+125.0				6		
7		1120	1870		93 23 55	-4.4	-105.5	-109.9		2603.6		7		
8		1122	1650		-							8		
9		1124	1430		93 53 35	-4.4	-97.1	-101.5		2612.0		9		
10		1126	1210		-							10		
11		1128	990		95 19 32	-4.4	-91.9	-96.3		2617.2		11		
12		1130	770		-							12		
13		1132	550		96 29 32	-4.4	-62.2	-66.6		2646.9		13		
14		1134	330		-							14		
15		1136	110		96 14 02	-4.4	-11.9	-16.3		2697.2		15		
16	⊗	1137	0		-	-5.0	-	-5.0		2708.5		16		
17		1138	110		91 51 34	+0.0	-3.6	-3.6		2709.9		17		

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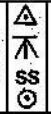





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# HORIZONTAL AND VERTICAL SURVEY NOTES

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18

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 2 PAGE 14 OF 18  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT HUSKY DATE 12 DY 3 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													1		
2		1088	1540 ✓			91 17 22	+1.0	+34.7	+35.7	2460.9			2		
3						268 42 18	+1.0	+34.8	+35.8				3		
4		1090	1320			-							4		
5		1092	1100			93 43 21	-4.4	-71.4	-75.8	2385.1			5		
6		1094	880			-							6		
7		1096	660			98 28 24	-4.0	-97.3	-101.3	2359.6			7		
8		1098	440			-							8		
9		1100	220			91 34 33	-4.4	-5.9	-10.3	2450.6			9		
10		1102	0			-	-4.8	-	-4.8	2456.1			10		
11		1104	220			85 39 04	-5.4	+16.7	+11.3	2472.2			11		
12		1106	440			-							12		
13		1108	660			85 47 08	-5.4	+48.5	+43.1	2504.0			13		
14		1110	880			-							14		
15		1112	1100			85 33 46	-5.4	+85.1	+79.7	2540.6			15		
16		1114	1320			-							16		
17		1116	1540			85 29 36	-5.4	+121.0	+115.6	2576.5			17		

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# VERTICAL AND SURVEY NOTES

164

19

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 2 PAGE 13 OF 18  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT HUSKY DATE 12 DY 3 MO 79 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						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												1		
2	Δ	1072	1540 ✓		91 10 45	+15.0	+31.7	+46.7	2418.7			2		
3	Δ				268 49 03	+15.0	+31.8	+46.8				3		
4		1074	1320									4		
5		1076	1100		91 20 17	-22.0	-25.7	-47.7		2371		5	15' + 7' BOOST	
6		1078	880									6		
7	Σ	1080	660		92 05 06	-4.4	-24.0	-28.4		2390.3		7		
8		1082	440		97 16 51	-4.4	-55.8	-60.2		2358.5		8		
9		1084	220		97 50 35	-4.4	-30.0	-34.0		2384.7		9		
10	Σ	1086	0			-5.0	-	-5.0		2413.7		10		
11		1087	110		88 15 06	-0.0	+3.4	+3.4		2422.1		11	PEAK	
12	⊙	1088	220 ✓		87 15 52	-4.0	+10.5	+6.5		2425.2		12	2422.3	
13	⊙				272 43 54	-4.0	+10.5	+6.5				13		
14												14		
15												15		
16												16		
17												17		

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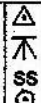





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# HORIZONTAL AND VERTICAL SURVEY NOTES

164 20

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. 2 PAGE 12 OF 18  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT Husky DATE 11 DY 3 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					
															
1														1	
2	A	1046	1320 ✓		31 47 19	+5.0	+42.2	+47.2	2363.6					2	
3	A				268 12 25	+5.0	+42.2	+47.2						3	
4		1048	1100		31 40 02	-4.4	-32.0	-36.4		2327.2				4	
5		1050	880											5	
6		1052	860		31 44 13	-4.4	-19.2	-23.6		2340.0				6	
7		1054	440											7	
8		1056	220		32 14 42	-4.4	-8.3	-12.7		2350.9				8	
9	A	1058	10			-5.5	-	-5.5		2358.1				9	
10		1060	220		30 09 08	-4.4	-0.6	-5.0		2358.6				10	
11		1062	440		89 52 30	+4.4	+1.3	-3.1		2360.5				11	
12		1064	660		89 32 57	-4.4	+5.8	+1.4		2365.0				12	
13		1066	880											13	
14		1068	1100		89 34 04	-4.4	+9.6	+5.2		2368.8				14	
15		1070	1320											15	
16	o	1072	1540 ✓		89 29 23	-5.0	+13.4	+8.4		2372.0				16	2369.1
17	o				270 31 07	-5.0	+13.4	+8.4						17	

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

# VERTICAL AND HORIZONTAL SURVEY NOTES

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GSI AREA HOWARD PASS STATE/COUNTY \_\_\_\_\_ BOOK NO. 2 PAGE 11 OF 18  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT \_\_\_\_\_ DATE 11 DY 3 MO 79 YR  
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. \_\_\_\_\_ CREW NO. 1184

LINE	  	STATION	VERTICAL						ELEVATION		LR OR DR	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				
1												1		
2		1024	660		88 38 40	-5.4	+15.4	+10.0			216.6		2	
3		1026	880		-								3	
4		1028	1100		88 27 54	-5.4	+28.8	+23.4			212.6		4	
5		1030	1320		-								5	
6		1032	1540		88 22 57	-5.4	+44.8	+39.4			2140.0		6	
7		1034	1760		-						2156.0		7	
8		1036	1980		88 00 43	-5.4	+69.1	+63.7			2180.3		8	
9		1038	2200		-								9	
10		1040	2420		87 31 49	-5.4	+105.6	+100.2			2216.8		10	
11		1042	2640		-								11	
12		1044	2860		86 30 48	-5.4	+174.6	+169.2			2285.8		12	
13	0	1046	3080 ✓		86 03 34	-15.0	+214.8	+199.8			2316.4		13	2313.3
14	0				273 55 45	-15.0	+214.8	+199.8					14	
15													15	
16													16	
17													17	

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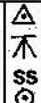




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SYMBOLS = BACKSIGHT    = INSTRUMENT SET-UP    = SIDESHOT    = FORESIGHT

# HORIZONTAL AND VERTICAL SURVEY NOTES

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GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 2 PAGE 10 OF 18  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT HUCKY DATE 11 DY 3 MO 79 YR  
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. \_\_\_\_\_ CREW NO. 1184

LINE		STATION	VERTICAL							ELEVATION		LR 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	ELEVATION						
			SLOPE 	HORIZ 					INST	ROD					
1													1		
2	$\Delta$	994	2690 ✓		89 18 10	+5.0	-30.7	-25.7	2116.6				2		
3	$\Delta$				270 41 22	+5.0	-30.7	-25.7					3		
4		996	2420		89 50 27	-4.4	+7.0	+2.6	2119.2				4		
5		998	2200		-								5		
6		1000	1980		89 39 23	-4.4	+0.0	-4.4	2112.2				6		
7		1002	1760		-								7		
8		1004	1540		90 12 00	-4.4	-4.5	-8.9	2107.7				8		
9		1006	1320		-								9		
10		1008	1100		90 31 25	-4.4	-9.6	-14.0	2102.6				10		
11		1010	880		-								11		
12		1012	660		90 56 21	-4.4	-11.5	-15.9	2100.7				12		
13		1014	440		-								13		
14		1016	220		91 04 00	-4.4	-3.8	-8.2	2108.4				14		
15	$\Sigma$	1018	0		-	-5.5	-	-5.5	2111.1				15		
16		1020	220		88 42 44	-5.4	+5.1	-0.3	2116.3				16		
17		1022	440		-								17		

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SYMBOLS  $\Delta$  = BACKSIGHT       $\Sigma$  = INSTRUMENT SET-UP      SS = SIDESHOT       $\odot$  = FORESIGHT

# VERTICAL AND HORIZONTAL SURVEY NOTES

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GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 7 PAGE 9 OF 18  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT HUSKY DATE 11 DY 3 MO 79 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							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					
			SLOPE 	HORIZ 											
1										2078.2			1		
2		268	220			90 51 40	-4.4	-3.2	-7.6		2070.6			2	
3	Δ	920	0			-	-5.5	-	-5.5		2072.7			3	
4		972	220			92 22 27	-5.4	-9.0	-14.4		2063.8			4	
5		974	440			-	-	-	-					5	
6		976	660			92 22 27	-5.4	-26.9	-32.3		2045.9			6	
7		978	880			-	-	-	-					7	
8		980	1100			89 30 50	-5.4	+9.6	+4.2		2082.4			8	
9		982	1320			-	-	-	-					9	
10		984	1540			88 52 29	-5.4	+31.4	+26.0		2104.2			10	
11		986	1760			-	-	-	-					11	
12		988	1980			88 54 57	-5.4	+40.3	+34.9		2113.1			12	
13		990	2200			-	-	-	-					13	
14		992	2420			88 54 50	-5.4	+49.3	+43.9		2122.1			14	
15	⊙	994	2640 ✓			88 31 36	-5.0	+69.1	+64.1		2142.3			15	2142.6
16	⊙					271 28 09	-5.0	+69.1	+64.1					16	
17														17	

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# HORIZONTAL AND VERTICAL SURVEY NOTES

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24

GSI AREA Howard Pass STATE/COUNTY ALASKA BOOK NO. 2 PAGE 8 OF 18  
 LINE/LOOP NO. 624 TYPE SURVEY \_\_\_\_\_ CLIENT Husky DATE 11 BY 3 MO 79 YR  
 SURVEYOR J. Anderson INSTRUMENT DESC/SERIAL NO. \_\_\_\_\_ CREW NO. 1184

LINE	<input type="checkbox"/> Δ <input type="checkbox"/> ↕ <input type="checkbox"/> SS <input type="checkbox"/> ⊙	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				
			SLOPE 	HORIZ 										
1										2034.2			1	
2		946	1760										2	
3		948	1980			89 39 30	5.4	+ 11.5	+ 6.1	1	2040.3		3	
4		950	2200										4	
5	⊙	952	2420 ✓			89 00 44	5.0	+ 42.2	+ 37.2		2071.4		5	2070.6
6	⊙					270 58 37	5.0	+ 42.2	+ 37.2				6	
7													7	
8													8	
9	Δ	952	1980 ✓			90 11 56	+ 1.0	+ 5.8	+ 6.8		2078.2		9	
10	Δ					269 47 34	+ 1.0	+ 5.8	+ 6.8				10	
11		954	1760										11	
12		956	1540			91 15 14	- 11.9	- 35.8	- 47.7		2030.5		12	5.5' + 6.4' BOOST
13		958	1320										13	
14		960	1100			90 05 37	- 6.8	- 3.2	- 10.0		2068.2		14	
15		962	880										15	
16		964	660			91 14 30	- 4.4	- 13.2	- 17.8		2060.4		16	
17		966	440										17	

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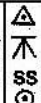




⊙ = FORESIGHT



# VERTICAL AND HORIZONTAL SURVEY NOTES

25

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 119 PAGE 7 OF 18  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT Husky DATE 11 DY 3 MO 79 YR  
 SURVEYOR J. ARNOLD 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				
			SLOPE 	HORIZ 										
1									ADJUSTED 2034.2			1		
2		914	1760									2		
3		916	1540			91 35 46	-4.4	-44.8	-49.2		1985.0	3		
4		918	1320									4		
5		920	1100			91 42 18	-4.4	-32.0	-36.4		1997.8	5		
6		922	880									6		
7		924	660			91 52 18	-4.4	-21.1	-25.5		2008.7	7		
8		926	440									8		
9		928	220			91 46 01	-4.4	-7.0	-11.4		2022.0	9		
10	⊗	930	0			90 00 00	-5.6	-	-5.6		2028.6	10		
11		932	220			89 42 27	5.4	+1.3	-4.1		2030.1	11		
12		934	440									12		
13		936	660			89 42 27	-5.4	+3.8	-1.6		2032.6	13		
14		938	880									14		
15		940	1100			89 44 53	-5.4	+6.4	+1.0		2035.2	15		
16		942	1320									16		
17		944	1540			89 42 49	-5.4	+7.0	+3.6		2037.8	17		

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# HORIZONTAL AND VERTICAL SURVEY NOTES

26

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 7 PAGE 6 OF 18  
 LINE/LOOP NO. 624 TYPE SURVEY \_\_\_\_\_ CLIENT HUSKY DATE 11 DY 3 MO 79 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							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					
			SLOPE 	HORIZ 											
1										1986.4			1		
2		896	440			90 56 08	-4.4	-7.7	-12.1		1974.3			2	
3		898	220			-								3	
4	⊥	900	0			90 00 00	-5.5	-	-5.5		1980.9			4	
5		902	220			-								5	
6		904	440			89 34 19	-5.4	+2.8	-1.6		1984.8			6	
7		906	660			-								7	
8		908	880			89 25 33	-5.4	+7.7	+2.3		1988.7			8	
9		910	1100			-								9	
10	○	912	1320 ✓			89 37 17	-8.0	+7.7	+2.7		1989.1			10	1983.7
11	○					270 22 31	-5.0	+7.7	+2.7					11	
12														12	
13														13	
14	Δ	912	1980 ✓			91 03 48	+13.0	+34.6	+47.6	2036.7				14	
15	Δ					268 55 56	+13.0	+34.6	+47.6					15	
16	SS	e.m. 29330	T 12.15	1830		88 47 28	-1.0	+37.3	+36.3		2070.5	REFERENCE: S.A.S SURVEY		16	
17	SS		C 3.00			271 11 54	-1.0	+37.3	+36.3		2073.0	MISCLOSURE + 2.5		17	

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
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# VERTICAL AND HORIZONTAL SURVEY NOTES

157

27

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 2 PAGE 5 OF 18  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT Hussey DATE 11 DY 3 MO 7 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		
															
1									1936.2				1		
2		872	880			89 18 30	-5.4	+10.2	+4.8			1941.0		2	
3		874	1100											3	
4		878	1320			89 15 14	-5.4	+11.5	+6.1			1942.3		4	
5		878	1540											5	
6		880	1760			89 15 52	-5.4	+20.5	+15.1			1951.3		6	
7		882	1980											7	
8		884	2200			89 17 24	-5.4	+25.6	+20.2			1956.4		8	
9		886	2420											9	
10	O	888	2640 ✓			89 22 05	-5.0	+30.7	+25.7			1961.9		10	1954.8
11	O					270 37 48	-5.0	+36.7	+25.7					11	
12														12	
13	A	888	1320			90 32 33	+13.0	+11.5	+24.5			1986.4		13	
14	A					269 26 47	+13.0	+11.5	+24.5					14	
15		890	1100											15	
16		892	880			90 55 49	+4.4	-15.4	-19.8			1966.6		16	
17		894	660											17	

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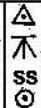








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**SYMBOLS**     = BACKSIGHT     = INSTRUMENT SET-UP     = SIDESHOT     = FORESIGHT

# VERTICAL AND HORIZONTAL SURVEY NOTES

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GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 2 PAGE 4 OF 18  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT HUCKY DATE 11 DY 3 MO 79 YR  
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. \_\_\_\_\_ CREW NO. 1184

LINE		STATION	VERTICAL						ELEVATION		LR 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												1		
2		842	2420.1			90 38 08	+5.0	+28.2	+33.2	1936.2			2	
3						269 21 05	+5.0	+28.2	+33.2				3	
4		844	2206			90 41 04	-4.4	-25.6	-30.0		1906.2		4	
5		846	1980			-							5	
6		848	1760			90 45 01	-4.4	-25.6	-30.0		1906.2		6	
7		850	1540			-							7	
8		852	1320			90 37 52	-4.4	-15.4	-19.8		1916.4		8	
9		854	1100			-							9	
10		856	880			90 37 32	-4.4	-10.2	-14.6		1921.6		10	
11		858	660			-							11	
12		860	440			90 37 32	-4.4	-5.1	-9.5		1926.7		12	
13		862	220			-							13	
14		964	0			-	5.5	-	-5.5		1930.7		14	
15		866	220			-							15	
16		868	440			89 21 40	-5.4	+5.1	-0.3		1935.9		16	
17		870	660			-							17	

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# VERTICAL AND HORIZONTAL SURVEY NOTES

29

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 2 PAGE 3 OF 18  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT HUBERT DATE 11 DY 3 MO 72 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	<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										1883.0			1		
2		822	660										2		
3		824	880			87 27 27	5.4	+ 7.7	+ 2.3		1885.3		3		
4		826	1100										4		
5		828	1320			87 37 56	5.4	+ 7.7	+ 2.3		1885.3		5		
6		830	1540										6		
7		832	1760			87 31 32	5.4	+ 15.4	+ 10.0		1893.0		7		
8		834	1980										8		
9		836	2200			87 32 00	9.0	+ 19.2	+ 10.2		1893.2		9		
10		838	2420										10		
11		840	2640			87 33 05	7.2	+ 23.0	+ 15.8		1898.8		11		
12	o	842	2860 ✓			87 31 46	5.0	+ 25.0	+ 20.0		1903.0		12	1899.2	
13	o					270 28 25	5.0	+ 25.0	+ 20.0				13		
14													14		
15													15		
16													16		
17													17		

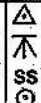





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SYMBOLS = BACKSIGHT    = INSTRUMENT SET-UP    = SIDESHOT    = FORE-SIGHT.

# VERTICAL AND HORIZONTAL SURVEY NOTES

30

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. 2 PAGE 2 OF 18  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT Husky DATE 11 DY 3 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		790	2860 ✓		90 21 57	+13.0	+16.6	+29.6	1883.0				1		
2					269 37 48	+13.0	+16.6	+29.6					2		
3		792	2640		90 32 31	4.4	-23.0	-57.0	1828.0		1853.6		3		
4		794	2420		-								4		
5		796	2200		90 32 13	4.4	-19.2	-23.6	1859.4				5		
6		798	1980		-								6		
7		800	1760		90 30 15	4.0	-15.4	-19.4	1863.6				7		
8		802	1540		-								8		
9		804	1320		90 34 17	4.4	-11.5	-15.9	1867.1				9		
10		806	1100		-								10		
11		808	880		90 37 59	4.0	-10.2	-14.2	1868.8				11		
12		810	660		-								12		
13		812	440		90 41 00	4.4	-5.1	-9.5	1873.5				13		
14		814	220		-								14		
15		816	0			5.5	-	-5.5	1877.5				15		
16		818	220		-								16		
17		820	440		89 38 37	-5.4	+2.6	+2.8	1880.2				17		

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# HORIZONTAL AND VERTICAL SURVEY NOTES

32

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. \_\_\_\_\_ PAGE 1 OF \_\_\_\_\_  
 LINE/LOOP NO. 684 TYPE SURVEY \_\_\_\_\_ CLIENT \_\_\_\_\_ DATE 11 DY 3 MO 79 YR  
 SURVEYOR W.D. HELANDER INSTRUMENT DESC/SERIAL NO. \_\_\_\_\_ CREW NO. 1184

LINE	 SS	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										V	25	1	
2		<u>BAS 79331</u>			D 90-49-47	HI	5.3			D	340-13-37	2	
3		<u>Bas 79330 - 1P 766</u>	2020°		R 269-10-10	HT	6.0				340-13-12	3	
4										V	180-00-25	4	
5										R	160-13-22	5	
6											340-13-07	6	340-13-09
7												7	
8												8	
9												9	
10		<u>766</u>			D 89-32-22	HI				V	37	10	
11		<u>79331 - 864</u>	10.780		R 270-25-01	HT	6.0			D	202-10-32	11	
12			10.747						10		202-09-55	12	
13					D 89-02-15	HI			0 7	V	180-00-28	13	
14					R 270-49-57	HT	6.0		74	R	22-10-40	14	
15									47		202-10-12	15	202-10-04
16									7.73			16	
17												17	

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 = FORESIGHT



# HORIZONTAL AND VERTICAL SURVEY NOTES

33

GSI AREA HOARDED PASS STATE/COUNTY ALASKA BOOK NO. \_\_\_\_\_ PAGE 2 OF \_\_\_\_\_  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT \_\_\_\_\_ DATE 11 DY 3 MO 79 YR  
 SURVEYOR W.D. HELANDER 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			LIR OR DIR	RIGHT TURNED HORIZONTAL ANGLE	LINE
			SLOPE	HORIZ				INST	ROD					
1										V	39	1		
2		864		→ D	89-15-13			03		D	175-15-57	2		
3		766 908		R	270-41-54			39			175-15-18	3		
4								95		V	180-00-32	4		
5				← D	90-25-25			55		R	355-15-50	5		
6				R	269-31-45			5.41			175-15-18	6	175-15-18	
7												7		
8												8		
9												9		
10		900										10		
11		864 1057		→ D	88-45-03					V	19	11		
12				R	271-12-15					D	169-55-35	12		
13								17			169-55-16	13		
14				← D	90-41-27			72		V	180-00-12	14		
15				R	269-15-50			22		R	349-55-11	15		
16								24			169-54-59	16	169-55-07	
17								4.41				17		

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# HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. \_\_\_\_\_ PAGE 3 OF \_\_\_\_\_  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT -14°, CALM, CLEAR, DATE 11 DY 3 MO 79 YR  
 SURVEYOR W.D. HELANDER INSTRUMENT DESC/SERIAL NO. BEAUTIFUL CREW NO. 1184

LINE	 SS	STATION	VERTICAL						HORIZONTAL		REMARKS		
			DISTANCE		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													
2		1057	8910	→ D	87-42-02					08		180-05-00	19
3		900	1138	8881						88		180-04-41	
4				← D	91-14-17					88		180-00-07	
5				R	268-44-50					81		00-04-54	
6										1.80		180-04-47	
7													
8													
9													
10		1138	5940	D	91-24-30							20	
11		1057	1192	5904	R	268-34-48						177-15-27	
12										05		177-15-07	
13				D	92-16-06					59		180-00-44	
14				R	267-43-16					90		357-15-34	
15										04		177-14-50	177-14-58
16										4.61			
17													

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# HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. \_\_\_\_\_ PAGE 4 OF \_\_\_\_\_  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT \_\_\_\_\_ DATE \_\_\_\_\_ DY \_\_\_\_\_ MO \_\_\_\_\_ YR \_\_\_\_\_  
 SURVEYOR W.D. HELANDER INSTRUMENT DESC/SERIAL NO. \_\_\_\_\_ CREW NO. \_\_\_\_\_

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											✓	34	1	
2		117Z	700 <sup>2</sup>	→ D	92-33-21	HI	5.3				D	389-01-22	2	
3		113B 843 7932B		R	267-25-40	HT	4.0					339-00-48	3	
4											✓	180-00-58	4	
5				← O	88-35-27	HI	5.3				R	159-01-30	5	
6				R	271-24-03	HT	6.0					339-00-32	6	839-00-40
7													7	
8													8	
9													9	
10													10	
11													11	
12													12	
13													13	
14													14	
15													15	
16													16	
17													17	

80 f  
1.0  
700

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**SYMBOLS**

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= INSTRUMENT SET-UP

= SIDESHOT

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# HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. \_\_\_\_\_ PAGE 5 OF \_\_\_\_\_  
 LINE/LOOP NO. 634 TYPE SURVEY \_\_\_\_\_ CLIENT \_\_\_\_\_ DATE 13 DY 3 MO 79 YR  
 SURVEYOR W.D. HELANDER INSTRUMENT DESC/SERIAL NO. \_\_\_\_\_ CREW NO. 1184

LINE	 SS	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		LIR OR DIR		RIGHT TURNED HORIZONTAL ANGLE	LINE
				SLOPE					HORIZ	INST				
1														
2		766	2670°	→ D		89-44-54					V	20	1	
3		79331 742									D	14-05-24	2	
4												14-04-44	3	
5				← D		89-08-05					V	180-00-32	4	
6						R 270-51-18					R	194-05-24	5	
7												14-04-52	6	14-04-48
8													7	
9													8	
10		742	860°	→ D		88-52-05					V	35	9	
11		766 79331				R 271-07-35					D	34-45-45	10	
12												34-45-10	11	
13				← D		90-16-00					V	180-01-08	12	
14						R 269-43-15					R	211-46-34	13	
15												34-45-26	14	
16													15	34-45-18
17													16	
17													17	

9.6  
100  
860

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