

HORIZONTAL AND VERTICAL SURVEY NOTES

101

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE A-1 OF
 LINE/LOOP NO. 613 TYPE SURVEY CLIENT DATE 18 BY 4 MO 79 YR
 SURVEYOR HELANDER 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 | | | | | | | | | | |
| 1 | | | ESTABLISH ELEVATION AT VP 2296 | | | | | | | | | 1 | | |
| 2 | | | BY RECIPROCAL ANGLE SURVEY | | | | | | | | | 2 | | |
| 3 | | | | | | | | | | | 3 | | | |
| 4 | | | | | ELEVATION BAS 79385 | | | 1857.1 | | | 4 | | | |
| 5 | | | | | | | | | | | 5 | | | |
| 6 | | 79385 - 2296 | 4572 ²⁰ | 9020-30 | 6.1 | HI | | | | | 6 | | | |
| 7 | | | | 269-39-39 | 6.0 | HT | | | | | 7 | | | |
| 8 | | | | | | | | | | | 8 | | | |
| 9 | | 2296 - 79385 | 4572 ²⁰ | 89-36-46 | 5.4 | HI | | | | | 9 | | | |
| 10 | | | | 270-23-19 | 9.0 | HT | ELEV DIFF = | - 27.3 | | | 10 | | | |
| 11 | | | | | | | | | | | 11 | | | |
| 12 | | | | | | | | 1829.8 | | | 12 | | | |
| 13 | | | | | | | | | | | 13 | | | |
| 14 | | | | | | | | | | | 14 | | | |
| 15 | | | | | | | | | | | 15 | | | |
| 16 | | | | | | | | | | | 16 | | | |
| 17 | | | | | | | | | | | 17 | | | |

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SYMBOLS = BACKSIGHT = INSTRUMENT SET-UP = SIDESHOT = FORESIGHT
 TI-28471B

HORIZONTAL AND VERTICAL SURVEY NOTES

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2

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 1 OF
 LINE/LOOP NO. 613 TYPE SURVEY CLIENT +26° CALM. 1427 DATE 18 DY 4 MO 79 YR
 SURVEYOR HELANDER/BENEDICT 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 D/I | | RIGHT TURNED HORIZONTAL ANGLE | LINE |
| | | | SLOPE | HORIZ | | | | | INST | ROD | | | | |
| 1 | | | TAKE OFF VP | 2296 | 613 | | | 1829 ⁸ | | | | 1 | | |
| 2 | | | | | | | | | | | | 2 | | |
| 3 | Δ | VP 2296 | 0 | | HI 5.4 | | \oplus 5.4 | 1835 ² | | | | 3 | B.O.L. PIPE | |
| 4 | | 2294 | 2201 | | | | | | | | | 4 | | |
| 5 | | 2292 | 440 | 90-56-45 | 5.3 | | -12 ⁶ | 1822 ⁶ | | | | 5 | | |
| 6 | | 2290 | 660 | | | | | | | | | 6 | | |
| 7 | | 2288 | 880 | 91-16-40 | 7.0 | | -26 ⁶ | 1808 ⁶ | | | | 7 | | |
| 8 | | 2286 | 1100 | | | | | | | | | 8 | | |
| 9 | | 2284 | 1320 | 91-18-00 | 7.0 | | -36 ⁹ | 1798 ³ | | | | 9 | | |
| 10 | | 2282 | 1540 | | | | | | | | | 10 | | |
| 11 | | 2280 | 1760 | 90-48-02 | 4.0 | | -28 ⁵ | 1806 ⁷ | | | | 11 | | |
| 12 | | 2278 | 1980 | | | | | | | | | 12 | | |
| 13 | | 2276 | 2200 | 90-24-09 | 4.0 | | -19 ⁴ | 1815 ⁸ | | | | 13 | | |
| 14 | | 2274 | 2420 | | | | | | | | | 14 | | |
| 15 | | | | | | | | | | | | 15 | | |
| 16 | \odot | 2272 | 2640 | 90-12-05 | 6.0 | | -15 ¹ | 1820 ¹ | | | | 16 | | |
| 17 | \odot | | | 269-47-55 | 6.0 | | - | | | | | 17 | | |

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SYMBOLS Δ = BACKSIGHT ∇ = INSTRUMENT SET-UP SS = SIDESHOT \odot = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

103

3

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 2 OF
 LINE/LOOP NO. 6/3 TYPE SURVEY CLIENT DATE 18 DY 4 MO 79 YR
 SURVEYOR HELANDER / BENEDICT 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 DJI | | RIGHT TURNED HORIZONTAL ANGLE | LINE |
| | | | SLOPE | HORIZ | | | | | INST | ROD | | | | |
| 1 | | 2272 | | | | | | | | | | 1 | | |
| 2 | | | | | | | | | | | | 2 | | |
| 3 | Δ | | 2646 | | 91-47-32 | 6.0 | 88 ⁴ | 1908 ⁵ | | | | 3 | | |
| 4 | Δ | | | | 268-12-20 | 6.0 | 89 ⁵ | | | | | 4 | | |
| 5 | | | | | | | | | | | | 5 | | |
| 6 | | 2270 | 2420 | | | | | | | | | 6 | | |
| 7 | | 2268 | 2200 | | 91-57-28 | 4.2 | -79 ³ | 1829 ³ | | | | 7 | | |
| 8 | | 2266 | 1980 | | | | | | | | | 8 | | |
| 9 | | 2264 | 1760 | | 92-20-05 | 4.2 | -75 ⁸ | 1832 ⁷ | | | | 9 | | |
| 10 | | 2262 | 1540 | | | | | | | | | 10 | | |
| 11 | | 2260 | 1320 | | 93-04-42 | 4.2 | -75 ⁰ | 1833 ⁵ | | | | 11 | | |
| 12 | | 2258 | 1100 | | | | | | | | | 12 | | |
| 13 | | 2256 | 880 | | 94-51-00 | 4.0 | 78 ⁴ | 1830 ² | | | | 13 | | |
| 14 | | 2254 | 660 | | | | | | | | | 14 | | |
| 15 | | 2252 | 446 | | 92-40-40 | 4.2 | 24 ⁸ | 1883 ⁸ | | | | 15 | | |
| 16 | | 2250 | 220 | | | | | | | | | 16 | | |
| 17 | ⊗ | 2248 | 0 | | HI | 5.6 | -5 ⁶ | 1902 ⁹ | | | | 17 | | |

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

HORIZONTAL AND VERTICAL SURVEY NOTES

104

4

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. _____ PAGE 3 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT _____ DATE 18 DY 4 MO 79 YR
 SURVEYOR HELANDER / BENEDICT 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 DI | | RIGHT TURNED HORIZONTAL ANGLE | LINE |
| | | | SLOPE | HORIZ | | | | | INST | ROD | | | | |
| 1 | | | | | | | | | | | | 1 | | |
| 2 | | | | | | | | | | | | 2 | | |
| 3 | | 2246 | 220 | | | | | | | | | 3 | | |
| 4 | | 2244 | 440 | 84-51-05 | 5.3 | 34° | | | 1942 ⁷ | | | 4 | | |
| 5 | | 2243 | 660 | | | | | | | | | 5 | | |
| 6 | | 2240 | 880 | 84-10-30 | 4.6 | 85 ³ | | | 1993 ⁹ | | | 6 | | |
| 7 | | 2238 | 1100 | | | | | | | | | 7 | | |
| 8 | | 2236 | 1320 | 83-53-26 | 5.3 | 135 ² | | | 2043 ⁸ | | | 8 | | |
| 9 | | 2234 | 1540 | | | | | | | | | 9 | | |
| 10 | | 2232 | 1760 | 83-49-40 | 5.3 | 184 | | | 2092 ⁵ | | | 10 | | |
| 11 | | 2230 | 1980 | | | | | | | | | 11 | | |
| 12 | | 2228 | 2206 | 83-43-08 | 5.3 | 235 ⁵ | | | 2144 ⁰ | | | 12 | | |
| 13 | | 2226 | 2420 | | | | | | | | | 13 | | |
| 14 | | 2224 | 2640 | 83-19-00 | 4.0 | 303 ⁵ | | | 2211 ⁹ | | | 14 | | |
| 15 | | | | | | | | | | | | 15 | | |
| 16 | ⊙ | 2223 | 2750 | 83-18-45 | 6.0 | 314 ⁵ | | | 2222 ⁸ | | | 16 | | |
| 17 | ⊙ | | | 276-41-00 | 6.0 | - | | | | | | 17 | | |

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

HORIZONTAL AND VERTICAL SURVEY NOTES

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5

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 4 OF
 LINE/LOOP NO. 613 TYPE SURVEY CLIENT DATE 18 DY 4 MO 79 YR
 SURVEYOR HELANDER / BENEDICT 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 | RIGHT TURNED HORIZONTAL ANGLE | LINE | REMARKS |
|------|---|---------|----------|-------|---------------------|---------------|-----------|----------------------|-----------|--------|-----------|-------------------------------|------|---------|
| | | | DISTANCE | | VERTICAL ANGLE OBS. | ROD RDG OR HI | ELEV DIFF | FINAL ELEVATION DIFF | INST | ROD | | | | |
| | | | SLOPE | HORIZ | | | | | | | | | | |
| 1 | Δ | | 110 | | 90 00 00 | 99 | | 99 | 2232.7 | | | 1 | | |
| 2 | - | | | | 267 28 42 | 5 | | 99 | | | | 2 | | |
| 3 | ⊥ | 2222 | 0 | | - | 52 | | -52 | | 2227.5 | | 3 | | |
| 4 | | 2220 | | | 91 50 00 | 4 | | | | | | 4 | | |
| 5 | ⊙ | 2218 | 440 | | 91 09 45 | 14 | | 229 | | 2209.8 | | 5 | | |
| 6 | - | | | | 268 51 47 | - | | | | | | 6 | | |
| 7 | | | | | | | | | | | | 7 | | |
| 8 | Δ | | 1790 | | 86 42 20 | 5.0 | | 97.9 | 2111.7 | | | 8 | | |
| 9 | Δ | | | | 273 18 25 | 5.0 | | 98' | | | | 9 | | |
| 10 | | 2216 | 1570 | | 86 51 00 | 4.2 | | | | | | 10 | | |
| 11 | | 2214 | 1350 | | | | | | | | | 11 | | |
| 12 | | 2212 | 1130 | | 87 11 45 | 4.2 | | 51' | | 2162.8 | | 12 | | |
| 13 | | 2210 | 910 | | | | | | | | | 13 | | |
| 14 | | 2208 | 690 | | 87 48 40 | 4.0 | | 22.7 | | 2134.0 | | 14 | | |
| 15 | | 2206 | 470 | | | | | | | | | 15 | | |
| 16 | | 2204 | 250 | | 90 51 40 | 2.0 | | 58 | | 2105.9 | | 16 | | |
| 17 | | 2202 | 30 | | | | | | | | | 17 | | |

11.0 1/2
2.0

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

HORIZONTAL AND VERTICAL SURVEY NOTES

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6

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. _____ PAGE 5 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT _____ DATE 19 DY 4 MO 79 YR
 SURVEYOR HELANDER/BENEDICT 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 | | LINE |
| | | | SLOPE | HORIZ | | | | | INST | ROD | | | | |
| 1 | | | | | | | | | 2111.7 | | | 1 | | |
| 2 | | | | | | | | | | | | 2 | | |
| 3 | ∇ | 2201+80 ² | 0 | - | 5.6 | -56 | | | 2106.1 | | | 3 | | |
| 4 | | 2200 | 190 | 98-26-48 | 4.0 | -31.9 | | | 2079.8 | | | 4 | | |
| 5 | | 2198 | 300 | | | | | | | | | 5 | | |
| 6 | | 2196+52 ² | 575 | 95-25-33 | 5.0 | -59.4 | | | 2052.3 | | | 6 | | |
| 7 | | 4322-47X5 | 582 | 96-27-15 | 5.0 | -70.4 | | | 2041.2 | | (2046) | 7 | INT. PIPE L-613 2196+52 ² | |
| 8 | | 2196 | 630 | 95-03-25 | 2.0 | -57.5 | | | 2059.1 | | | 8 | L-47X5 434+90 ² | |
| 9 | | 2194 | 850 | | | | | | | | | 9 | | |
| 10 | | 2192 | 1070 | 92-18-00 | 4.0 | -46.9 | | | 2064.7 | | | 10 | | |
| 11 | | 2190 | 1290 | | | | | | | | | 11 | | |
| 12 | | 2188 | 1510 | 90-53-10 | 4.0 | -27.3 | | | 2084.4 | | | 12 | | |
| 13 | | 2186 | 1730 | | | | | | | | | 13 | | |
| 14 | | 2184 | 1950 | 89-33-05 | 4.0 | -11.3 | | | | | | 14 | | |
| 15 | | 2182 | 2170 | | | | | | | | | 15 | | |
| 16 | \odot | 2180 | 2390 | 88-35-05 | 14.0 | -45.1 | | | 2157.2 | | | 16 | | |
| 17 | \odot | | | 271-25-55 | 14.0 | - | | | | | | 17 | | |

6.95 F
11.00

14.9 11A
3.0

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SYMBOLS Δ = BACKSIGHT ∇ = INSTRUMENT SET-UP SS = SIDESHOT \odot = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

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GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 11 OF
 LINE/LOOP NO. 613 TYPE SURVEY CLIENT DATE 19 BY 4 MO 79 YR
 SURVEYOR BENEDICT/HELANDER 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 | <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 | | | | | | | | | | | | 1 | | |
| 2 | | | | | | | | | | | | 2 | | |
| 3 | | 2064 | 330 | | | 92-13-40 | 4.2 | -17° | | | 2174' | | 3 | |
| 4 | | 2062 | 110 | | | | | | | | | | 4 | |
| 5 | ∇ | 2061 | 0 | | | HI | 5.6 | -56 | | | 2185 ³ | | 5 | |
| 6 | | 2060 | 110 | | | 93-23-05 | 2.0 | -79 | | | 2183 ² | | 6 | |
| 7 | | 2058 | 330 | | | | | | | | | | 7 | |
| 8 | | 2056 | 550 | | | 92-55-25 | 5.3 | 33 ³ | | | 2157 ⁸ | | 8 | |
| 9 | \odot | 2054 | 770 | | | 92-59-08 | 10.0 | 50' | | | 2141 ² | | 9 | |
| 10 | \odot | | | | | 267-01-52 | 10.0 | | | | | | 10 | |
| 11 | | | | | | | | | | | | | 11 | |
| 12 | Δ | | 1440 | | | 86-36-50 | 5.0 | 80' | 2000 ⁹ | | | | 12 | |
| 13 | Δ | | | | | 273-24-05 | 5.0 | 80 | | | | | 13 | |
| 14 | | | | | | | | | | | | | 14 | |
| 15 | | 2052 | 1220 | | | | | | | | | | 15 | |
| 16 | | 2050 | 1000 | | | 87-10-50 | 4.2 | 45' | | | 2105 ⁹ | | 16 | |
| 17 | | 2048 | 780 | | | 87-29-37 | 4.0 | 30' | | | 2091 ⁰ | | 17 | |

13.8
10.0 1/2
3.8

12.2
5.0 1/2
7.2

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SYMBOLS Δ = BACKSIGHT ∇ = INSTRUMENT SET-UP SS = SIDESHOT \odot = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

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GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. _____ PAGE 7 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT _____ DATE 19 BY 4 MO 79 YR
 SURVEYOR BENEDICT / HELANDER 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 | | 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 | ○ | 2156 | 880 | | 89 10 10 | 10 | | 28 | | | 2278 ⁴ | | 2 | |
| 3 | - | | | | 270 50 54 | - | | - | | | | | 3 | |
| 4 | | | | | 87-22-00 | | | | | | | | 4 | |
| 5 | Δ | | 1540 | | 82-27-00 | 130 | | 578 | | 2220 ² | | | 5 | |
| 6 | Δ | | 1540 | | 272-39-13 | 13.0 | | 581 | | | | | 6 | |
| 7 | | | | | | | | | | | | | 7 | |
| 8 | | 2154 | 1320 | | | | | | | | | | 8 | |
| 9 | | 2152 | 1100 | | 87-24-00 | 4.2 | | 457 | | | 2265 ⁹ | | 9 | |
| 10 | | 2150 | 880 | | | | | | | | | | 10 | |
| 11 | | 2148 | 660 | | 87-11-11 | 4.2 | | 282 | | | 2248 ⁴ | | 11 | |
| 12 | | 2146 | 440 | | | | | | | | | | 12 | |
| 13 | | 2144 | 220 | | 87-27-45 | 4.0 | | 57 | | | 2226 ⁰ | | 13 | |
| 14 | Δ | 2142 | 0 | | | HI | 5.4 | -5 ⁴ | | | 2214 ³ | | 14 | |
| 15 | | 2140 | 220 | | | | | | | | | | 15 | |
| 16 | | 2138 | 440 | | 93-03-22 | 5.3 | | -288 | | | 2191 ⁵ | | 16 | |
| 17 | | 2136 | 660 | | | | | | | | | | 17 | |

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

HORIZONTAL AND VERTICAL SURVEY NOTES

109

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 8 OF
 LINE/LOOP NO. 613 TYPE SURVEY CLIENT DATE 19 DY 4 MO 79 YR
 SURVEYOR BENEDICT/MELANDER 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 DJI | | RIGHT TURNED HORIZONTAL ANGLE |
| | | | <input type="checkbox"/> FEET <input type="checkbox"/> METERS SLOPE | HORIZ | | | | | INST | ROD | | | |
| 1 | | | | | | | | | | | | 1 | |
| 2 | | | | | | | | | | | | 2 | |
| 3 | | 2134 | 880 | | 93-02-00 | 5.3 | -51.9 | | 2168.9 | | | 3 | |
| 4 | | 2132 | 1100 | | | | | | | | | 4 | |
| 5 | | 2130 | 1320 | | 93-02-00 | 5.3 | -75.1 | | 2145.1 | | | 5 | |
| 6 | | 2128 | 1540 | | 93-02-00 | 4.0 | -85.9 | | 2139.8 | | | 6 | |
| 7 | | 2126 | 1760 | | | | | | | | | 7 | |
| 8 | | 2124 | 1980 | | 92-57-40 | 5.3 | -107.3 | | 2112.7 | | | 8 | |
| 9 | | 2122 | 2200 | | | | | | | | | 9 | |
| 10 | ⊙ | 2120 | 2420 | | 92-52-48 | 10.0 | -131.5 | | 2089.1 | | | 10 | |
| 11 | ⊙ | | | | 267-08-10 | 10.0 | -131.1 | | | | | 11 | |
| 12 | | | | | | | | | | | | 12 | |
| 13 | Δ | | 2420 | | 90-25-30 | 5.0 | -22.8 | 2111.6 | | | | 13 | |
| 14 | Δ | | | | 269-35-25 | 5.0 | -22.5 | | | | | 14 | |
| 15 | | | | | | | | | | | | 15 | |
| 16 | | 2118 | 2200 | | | | | | | | | 16 | |
| 17 | | 2116 | 1980 | | 91-08-32 | 4.2 | -43.6 | | 2068.0 | | | 17 | |

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

HORIZONTAL AND VERTICAL SURVEY NOTES

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GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. _____ PAGE 9 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT _____ DATE 19 DY 4 MO 79 YR
 SURVEYOR BENEDICT / MELANDER INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184










| LINE | | STATION | VERTICAL | | | | | | ELEVATION | | 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 | LR OR DR | RIGHT TURNED HORIZONTAL ANGLE | | LINE |
| | | | | SLOPE | | | | | | | | | | |
| 1 | | | | | | | | | 2111.6 | | | 1 | | |
| 2 | | | | | | | | | | | | 2 | | |
| 3 | | 2114 | 1760 | | | | | | | | | 3 | | |
| 4 | | 2112 | 1540 | 91-59-32 | 7.0 | | 605 | | 2051' | | | 4 | | |
| 5 | | 2110 | 1320 | | | | | | | | | 5 | | |
| 6 | ✓ | 2108 | 1100 | 91-55-42 | 21.0 | | -58° | | 2059' | | | 6 | | |
| 7 | | 2106 | 880 | | | | | | | | | 7 | | |
| 8 | | 2104 | 660 | 91-02-20 | 4.2 | | -16' | | 2095' | | | 8 | | |
| 9 | | 2102 | 440 | | | | | | | | | 9 | | |
| 10 | | 2100 | 220 | 91-34-02 | 4.0 | | -10' | | 2101.5 | | | 10 | | |
| 11 | ∧ | 2098 | 0 | HI | 5.4 | | -5' | | 2106.2 | | | 11 | | |
| 12 | | 2096 | 220 | 89-36-45 | 4.0 | | -25' | | 2109' | | | 12 | | |
| 13 | | 2094 | 440 | | | | | | | | | 13 | | |
| 14 | | 2092 | 660 | 89-52-50 | 5.3 | | 3' | | 2107.7 | | | 14 | | |
| 15 | | 2090 | 880 | | | | | | | | | 15 | | |
| 16 | | 2088 | 1100 | 89-59-05 | 5.3 | | 5° | | 2106.6 | | | 16 | | |
| 17 | | 2086 | 1320 | | | | | | | | | 17 | | |

WORKED BY BRB 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. 4 PAGE 10 OF 111
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT _____ DATE 19 DY 4 MO 79 YR
 SURVEYOR BENEDICT / MELADDER 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 | LINE | |
| | | | | SLOPE  | | | | | HORIZ  | INST | | | | | ROD |
| 1 | | | | | | | | | | | | 1 | | | |
| 2 | | | | | | | | | | | | | 2 | | |
| 3 | | 2084 | 1540 | | 90-01-40 | 5.3 | | -6° | | | 21056 | | | 3 | |
| 4 | | 2082 | 1760 | | | | | | | | | | | 4 | |
| 5 | | 2080 | 1980 | | 89-59-00 | 5.3 | | 46 | | | 21069 | | | 5 | |
| 6 | | 2078 | 2200 | | | | | | | | | | | 6 | |
| 7 |  | 2076 | 2420 | | 89-48-20 | 6.0 | | 23 | | | 21192 | | | 7 | |
| 8 |  | | | | 270-12-35 | 6.0 | | 27 | | | | | | 8 | |
| 9 | | | | | | | | | | | | | | 9 | |
| 10 |  | | 1650 | | 92-07-30 | 16.0 | | 77' | 2191' | | | | | 10 | |
| 11 |  | | | | 267-53-30 | 16.0 | | 76' | | | | | | 11 | |
| 12 | | | | | | | | | | | | | | 12 | |
| 13 | | 2074 | 1430 | | | | | | | | | | | 13 | |
| 14 |  | 2072 | 1210 | | 92-01-20 | 16.0 | | 58' | | | 21325 | | | 14 | |
| 15 | | 2070 | 990 | | | | | | | | | | | 15 | |
| 16 | | 2068 | 770 | | 92-01-20 | 12.5 | | 39' | | | 21515 | | | 16 | |
| 17 | | 2066 | 550 | | | | | | | | | | | 17 | |

WORKED BY BBB CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

112

12

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 11 OF
 LINE/LOOP NO. 613 TYPE SURVEY CLIENT DATE 19 BY 4 MO 79 YR
 SURVEYOR BENEDICT/HELANDER 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 | | LIR OR DIR | RIGHT TURNED HORIZONTAL ANGLE | | LINE |
| | | | | SLOPE | | | | | HORIZ | INST | | | | |
| 1 | | | | | | | | | | | | 1 | | |
| 2 | | | | | | | | | | | | 2 | | |
| 3 | | 2064 | 330 | | 92-13-40 | 4.2 | -17° | | 2174' | | | 3 | | |
| 4 | | 2062 | 110 | | | | | | | | | 4 | | |
| 5 | ⊗ | 2061 | 0 | | HI | 5.6 | -56 | | 2185 ³ | | | 5 | | |
| 6 | | 2060 | 110 | | 93-23-05 | 2.0 | -79 | | 2183 ² | | | 6 | | |
| 7 | | 2058 | 330 | | | | | | | | | 7 | | |
| 8 | | 2056 | 550 | | 92-55-25 | 5.3 | 33 ³ | | 2157 ⁸ | | | 8 | | |
| 9 | ⊙ | 2054 | 770 | | 92-59-08 | 10.0 | 50' | | 2141 ² | | | 9 | | |
| 10 | ⊙ | | | | 267-01-52 | 10.0 | | | | | | 10 | | |
| 11 | | | | | | | | | | | | 11 | | |
| 12 | Δ | | 1440 | | 86-36-50 | 5.0 | 80' | 2000 ⁹ | | | | 12 | | |
| 13 | Δ | | | | 273-24-05 | 5.0 | 80 | | | | | 13 | | |
| 14 | | | | | | | | | | | | 14 | | |
| 15 | | 2052 | 1220 | | | | | | | | | 15 | | |
| 16 | | 2050 | 1000 | | 87-10-50 | 4.2 | 45' | | 2105 ⁹ | | | 16 | | |
| 17 | | 2048 | 780 | | 87-29-37 | 4.0 | 30' | | 2091 ⁰ | | | 17 | | |

13.8
10.0 1/2
3.8

12.2
5.0 1/2
7.2

WORKED BY BEB CHECKED BY 1ST 2ND

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

HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 12 OF 113
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT _____ DATE 19 DY 4 MO 79 YR
 SURVEYOR BENEDICT/HELANDER 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 | | | | |
| | | | SLOPE | HORIZ | | | | | | | | | | |
| 1 | | | | | | | | | | | | 1 | | |
| 2 | | | | | | | | | | | | 2 | | |
| 3 | | 2046 | 560 | | | | | | | | | 3 | | |
| 4 | | 2044 | 340 | | | 87-33-10 | 4.2 | | | | 2071.2 | 4 | | |
| 5 | | 2042 | 120 | | | | | | | | | 5 | | |
| 6 | | 2040 + 100 INT | 0 | | | HI | 5.8 | | -58 | | 2055' | 6 | INT. PIPE. | |
| 7 | | | | | | | | | | | | 7 | L-613 2040+100 | |
| 8 | | 1736 L-46XS | 370 | | | ✓ | 13.8 | | -138 | | 2047' | 8 | (2046-46XS) L-46XS 1739+30 | |
| 9 | | | | | | | | | | | | 9 | | |
| 10 | | 2040 | 100 | | | 93-42-47 | 4.0 | | 105 | | 2050.4 | 10 | | |
| 11 | | 2038 | 320 | | | | | | | | | 11 | | |
| 12 | | 2036 | 540 | | | 93-22-20 | 5.3 | | 37' | | 2023.8 | 12 | | |
| 13 | | 2034 | 760 | | | | | | | | | 13 | | |
| 14 | | 2032 | 980 | | | 93-36-14 | 5.3 | | 66.9 | | 1994.0 | 14 | | |
| 15 | SS | 2030 | 1200 | | | 93-35-16 | 13.0 | | 88' | | 1973.0 | 15 | | |
| 16 | | 2028 | | | | 266-25-40 | 13.0 | | | | | 16 | | |
| 17 | | 2026 | | | | | | | | | | 17 | | |

WORKED BY BBB CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

14

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. _____ PAGE 13 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT _____ DATE 19 DY 4 MO 79 YR
 SURVEYOR BENEDICT / HELANDER 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 D/L | | RIGHT TURNED HORIZONTAL ANGLE | LINE |
| | | | SLOPE | <input type="checkbox"/> FEET <input type="checkbox"/> METERS HORIZ | | | | | INST | ROD | | | | |
| 1 | | | | | | | | | | | | 1 | | |
| 2 | | | | | | | | | | | | | 2 | |
| 3 | ○ | | 1130 | | 89-14-10 | 5.0 | 10' | | | | 2071' | | 3 | |
| 4 | ○ | | | | 270-46-40 | 5.0 | 10 ² | | | | | | 4 | |
| 5 | | | | | | | | | | | | | 5 | |
| 6 | Δ | | 1300 | | 94-46-32 | 5.0 | 113 ² | 2184' | | | | | 6 | |
| 7 | Δ | | | | 265-14-30 | 5.0 | 113 ² | | | | | | 7 | |
| 8 | | | | | | | | | | | | | 8 | |
| 9 | ○ | 79369 | ○ | | H1 | 5.7 | -5.7 | | | | 2178.4 | | 9 | |
| 10 | | | | | | | | | | | | | 10 | |
| 11 | | | | | | | | | | | | | 11 | |
| 12 | | | | | | | | | | | | | 12 | |
| 13 | | | | | | | | | | | | | 13 | |
| 14 | | | | | | | | | | | | | 14 | |
| 15 | | | | | | | | | | | | | 15 | |
| 16 | | | | | | | | | | | | | 16 | |
| 17 | | | | | | | | | | | | | 17 | |

13.3 F
2.0 F
PS.0
2.0 F

WORKED BY ARB. 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. 4 PAGE 14 OF 15
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT HOOPY DATE 20 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 184

| LINE | <input type="checkbox"/> Δ <input type="checkbox"/> SS <input type="checkbox"/> ⊙ | STATION | VERTICAL | | | | | | | ELEVATION | | L/R OR DJI | 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 | | | | | | | | | | 1972.0 | | | 1 | | |
| 2 | Δ | 2030 | T1A70 1320 | 2636.9 | 87 13 23 | +1.5 | -127.8 | -126.3 | 1847.2 | | | | 2 | | |
| 3 | Δ | | c. 150 2640 | | 272 45 14 | +1.5 | -126.8 | -125.2 | | | | | 3 | | |
| 4 | | 2028 | 2420 | | 87 30 10 | -2.0 | +105.4 | +103.4 | | 1950.6 | | | 4 | | |
| 5 | | 2026 | 2200 | | - | | | | | | | | 5 | | |
| 6 | | 2024 | 1980 | | 87 55 41 | +4.0 | +71.6 | +67.6 | | 1914.8 | | | 6 | | |
| 7 | | 2022 | 1760 | | - | | | | | | | | 7 | | |
| 8 | | 2020 | 1540 | | 88 35 07 | +4.0 | +38.0 | +34.0 | | 1881.2 | | | 8 | | |
| 9 | | 2018 | 1320 | | - | | | | | | | | 9 | | |
| 10 | | 2016 | 1100 | | 89 16 40 | +4.0 | +13.9 | +9.9 | | 1857.1 | | | 10 | | |
| 11 | | 2014 | 880 | | - | | | | | | | | 11 | | |
| 12 | | 2012 | 660 | | 90 36 51 | +4.0 | -7.1 | -11.1 | | 1836.1 | | | 12 | | |
| 13 | | 2010 | 440 | | - | | | | | | | | 13 | | |
| 14 | | 2008 | 220 | | 91 59 59 | +4.0 | -7.7 | -11.7 | | 1835.5 | | | 14 | | |
| 15 | ⊗ | 2006 | 0 | | 90 00 00 | +4.9 | - | -4.9 | | 1842.3 | | | 15 | | |
| 16 | | 2004 | 220 | | 87 45 26 | -2.0 | +2.9 | +0.9 | | 1848.1 | | | 16 | | |
| 17 | | 2002 | 440 | | - | | | | | | | | 17 | | |

REFERENCE: THIS BOOK, P. 12 LINE 15

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 15 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT MUSKY DATE 20 DY 4 MO 79 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 | | | | | | | | | | 1847.2 | | | 1 | | |
| 2 | | 2000 | 860 | | | 88 17 00 | -2.0 | +19.8 | +17.8 | | 1865.0 | | | 2 | |
| 3 | | 1998 | 880 | | | - | | | | | | | | 3 | |
| 4 | | 1996 | 1100 | | | 88 05 48 | -2.0 | +30.5 | +34.5 | | 1881.7 | | | 4 | |
| 5 | | 1994 | 1320 | | | - | | | | | | | | 5 | |
| 6 | o | 1992 | 712.70 | 770 | | 88 08 03 | -8.0 | +50.1 | +42.1 | | 1882.0 | | | 6 | |
| 7 | o | | 5.00 | 1540 | | 271 50 28 | -8.0 | +49.5 | +41.5 | | | | | 7 | |
| 8 | | | | | | | | | | | | | | 8 | |
| 9 | | | | | | | | | | | | | | 9 | |
| 10 | Δ | 1992 | 2420 | | | 90 15 34 | +15.0 | +11.0 | +26.0 | 1915.5 | | | 10 | | |
| 11 | Δ | | | | | 269 43 00 | +15.0 | +12.0 | +27.0 | | | | 11 | | |
| 12 | | 1990 | 2200 | | | - | | | | | | | 12 | | |
| 13 | | 1988 | 1780 | | | 90 15 40 | -22.0 | -9.0 | -31.0 | | 1884.5 | | | 13 | |
| 14 | | 1986 | 1760 | | | - | | | | | | | 14 | | |
| 15 | | 1984 | 1540 | | | 90 15 47 | -22.0 | -2.1 | -29.1 | | 1886.4 | | | 15 | 15.0' + 7' BOOST |
| 16 | | 1982 | 1520 | | | - | | | | | | | 16 | | |
| 17 | | 1980 | 1100 | | | 90 29 31 | -7.0 | -9.4 | -16.4 | | 1893.1 | | | 17 | |

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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. 4 PAGE 16 OF
 LINE/LOOP NO. 613 TYPE SURVEY CLIENT Husky DATE 20 DY 4 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 | 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 | | | | | | | | | | 1915.5 | | | | 1 | |
| 2 | | 1972 | 860 | | | | | | | | | | | 2 | |
| 3 | | 1976 | 660 | | | 90 14 57 | 4.0 | 3.3 | -7.3 | | 1908.2 | | | 3 | |
| 4 | | 1974 | 440 | | | | | | | | | | | 4 | |
| 5 | | 1972 | 220 | | | 90 43 07 | 2.0 | 2.8 | -4.8 | | 1910.7 | | | 5 | |
| 6 | π | 1970 | 0 | | | 90 00 00 | 4.9 | - | -4.9 | | 1910.6 | | | 6 | |
| 7 | | 1968 | 220 | | | 90 57 10 | 4.0 | 3.7 | -7.7 | | 1907.8 | | | 7 | |
| 8 | | 1966 | 440 | | | | | | | | | | | 8 | |
| 9 | | 1964 | 660 | | | 90 52 20 | 4.0 | 10.0 | -14.0 | | 1901.5 | | | 9 | |
| 10 | | 1962 | 880 | | | | | | | | | | | 10 | |
| 11 | | 1960 | 1100 | | | 90 58 10 | 4.0 | 18.6 | -22.6 | | 1892.9 | | | 11 | |
| 12 | 0 | 1957 | 1205 | 0 | 005 | 90 57 83 | 7.0 | 20.5 | -27.5 | | 1887.8 | | | 12 | |
| 13 | 0 | | 1200 | 1220 | | 269 00 54 | 7.0 | 20.8 | -27.8 | | | | | 13 | |
| 14 | | | | | | | | | | | | | | 14 | |
| 15 | | | | | | | | | | | | | | 15 | |
| 16 | | | | | | | | | | | | | | 16 | |
| 17 | | | | | | | | | | | | | | 17 | |

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WORKED BY CHECKED BY 1ST 2ND

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

HORIZONTAL AND VERTICAL SURVEY NOTES

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GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. 118 PAGE 17 OF 17
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT HUBBY DATE 20 DY 5 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 D/I | | RIGHT TURNED HORIZONTAL ANGLE |
| | | | | SLOPE | | | | | HORIZ | INST | | | |
| 1 | | | | | | | | | | | | 1 | |
| 2 | Δ | 1252 | 2530 ✓ | | | 89 02 40 | +2.0 | -42.2 | +40.2 | 1848.1 | | | 2 |
| 3 | Δ | | | | | 270 55 58 | +2.0 | -41.2 | +39.2 | | | | 3 |
| 4 | | 1258 | 2420 | | | - | | | | | | | 4 |
| 5 | | 1256 | 2200 | | | 89 19 21 | -2.0 | +26.0 | +24.0 | 1872.1 | | | 5 |
| 6 | | 1284 | 1980 | | | - | | | | | | | 6 |
| 7 | | 1252 | 1760 | | | 87 40 41 | +2.0 | +9.9 | +5.9 | 1854.0 | | | 7 |
| 8 | | 1250 | 1540 | | | - | | | | | | | 8 |
| 9 | | 1248 | 1320 | | | 89 42 09 | -11.0 | +6.9 | -4.1 | 1844.0 | | | 9 |
| 10 | | 1246 | 1100 | | | - | | | | | | | 10 |
| 11 | | 1244 | 880 | | | 89 38 47 | +4.0 | +5.4 | +1.4 | 1849.5 | | | 11 |
| 12 | | 1242 | 660 | | | - | | | | | | | 12 |
| 13 | | 1240 | 440 | | | 89 45 40 | +4.0 | +1.8 | -2.2 | 1845.9 | | | 13 |
| 14 | | 1238 | 220 | | | - | | | | | | | 14 |
| 15 | \times | 1236 | 0 | | | 90 00 00 | +4.9 | - | -4.9 | 1843.2 | | | 15 |
| 16 | | 1234 | 220 | | | - | | | | | | | 16 |
| 17 | | 1232 | 440 | | | 90 56 08 | +4.0 | -7.2 | -11.2 | 1836.9 | | | 17 |

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WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

SYMBOLS Δ = BACKSIGHT \times = INSTRUMENT SET-UP SS = SIDESHOT \odot = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. 4 PAGE 18 OF 119
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT Husky DATE 20 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 | HORIZ | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | 1 | |
| 2 | | 1920 | 660 | | | | | | | | | | | 2 | |
| 3 | | 1928 | T 13+0 | 440 | 91 20 35 | -8.5 | -20.6 | -29.1 | | 1818.8 | | | | 3 | |
| 4 | | | B 9.00 | 880 | 268 37 48 | -8.5 | -21.0 | -29.5 | | | | | | 4 | |
| 5 | | | | | | | | | | | | | | 5 | |
| 6 | | | | | | | | | | | | | | 6 | |
| 7 | | 1928 | T 15.10 | 1210 | 89 14 08 | +1.0 | -32.3 | -31.3 | 1788.1 | | | | | 7 | |
| 8 | | | C 1.00 | 2420 | 270 44 05 | +1.0 | -31.0 | -30.0 | | | | | | 8 | |
| 9 | | 1926 | 2200 | | | | | | | | | | | 9 | |
| 10 | | 1924 | 1980 | | 89 43 23 | -2.0 | +9.6 | +7.6 | | 1795.7 | | | | 10 | |
| 11 | | 1922 | 1760 | | | | | | | | | | | 11 | |
| 12 | | 1920 | 1540 | | 90 18 33 | -11.0 | -8.3 | -19.3 | | 1768.8 | | | | 12 | |
| 13 | | 1918 | 1320 | | | | | | | | | | | 13 | |
| 14 | | 1916 | 1100 | | 90 14 56 | -4.0 | -4.8 | -8.8 | | 1779.3 | | | | 14 | |
| 15 | | 1914 | 880 | | | | | | | | | | | 15 | |
| 16 | | 1912 | 660 | | 91 12 25 | +4.0 | -13.9 | -17.9 | | 1770.2 | | | | 16 | |
| 17 | | 1910 | 440 | | | | | | | | | | | 17 | |

TI-23471B

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

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GS1 AREA Howard Pass STATE/COUNTY Alaska BOOK NO. _____ PAGE 12 OF _____

LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT Husky DATE 20 DY 4 MO 77 YR

SURVEYOR J. Anderson INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

| LINE | | STATION | VERTICAL | | | | | | | ELEVATION | | L/R OR D/I | 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 | | | | | | | | | | 1788.1 | | | | 1 | |
| 2 | | 1908 | 220 | | 80 33 35 | -4.0 | -2.1 | -6.1 | | 1782.0 | | | | 2 | |
| 3 | | 1906 | 0 | | 90 00 00 | +4.9 | - | -4.9 | | 1783.2 | | | | 3 | |
| 4 | | 1904 | 220 | | 92 08 28 | -4.0 | -8.2 | -12.2 | | 1775.9 | | | | 4 | |
| 5 | | 1902 | 440 | | - | | | | | | | | | 5 | |
| 6 | | 1900 | 660 | | 90 31 56 | -4.0 | -6.1 | -10.1 | | 1776.0 | | | | 6 | |
| 7 | | 1898 | 880 | | - | | | | | | | | | 7 | |
| 8 | | 1896 | 1100 | | 87 47 23 | -4.0 | +4.0 | +0.0 | | 1788.1 | | | | 8 | |
| 9 | | 1894 | 1320 | | - | | | | | | | | | 9 | |
| 10 | | 1892 | 1540 | | 89 33 30 | -4.0 | +11.9 | +7.9 | | 1796.0 | | | | 10 | |
| 11 | | 1890 | 1760 | | - | | | | | | | | | 11 | |
| 12 | | 1888 | 1980 | | 89 34 10 | -4.0 | +14.9 | +10.9 | | 1797.0 | | | | 12 | |
| 13 | | 1886 | 2200 | | - | | | | | | | | | 13 | |
| 14 | | 1884 | 2420 | | 89 36 11 | -4.0 | +16.8 | +12.8 | | 1806.9 | | | | 14 | |
| 15 | | 1882 | 2640 | | - | | | | | | | | | 15 | |
| 16 | o | 1880 | 2860 ✓ | | 89 28 37 | -15.0 | +26.1 | +11.1 | | 1798.7 | | | | 16 | |
| 17 | o | | | | 270 30 10 | -15.0 | +25.1 | +10.1 | | | | | | 17 | |

TI-23471B

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

121

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GS1 AREA Howard Pass STATE/COUNTY Alaska BOOK NO. 4 PAGE 20 OF

LINE/LOOP NO. 613 TYPE SURVEY CLIENT Husky DATE 20 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 D/I | RIGHT TURNED HORIZONTAL ANGLE |
| | | | | SLOPE | HORIZ | | | | | INST | ROD | | | |
| 1 | | 1880 | 714.30 | 830 | | 92 48 48 | +15.0 | +81.5 | +96.5 | 1895.5 | | | 1 | |
| 2 | | | C 6.00 | 1440 | | 267 07 51 | +15.0 | +82.1 | +97.1 | | | | 2 | |
| 3 | | 1878 | 1430 | | | - | | | | | | | 3 | |
| 4 | | 1876 | 1210 | 1206.2 | | 94 31 26 | -2.0 | -95.1 | -97.1 | 1798.4 | | | 4 | |
| 5 | | 1874 | 790 | | | - | | | | | | | 5 | |
| 6 | | 1872 | 770 | 763.1 | | 97 41 58 | -4.0 | -102.2 | -107.2 | 1681.9 | 1788.3 | | 6 | |
| 7 | | 1870 | 650 | | | - | | | | | | | 7 | |
| 8 | | 1868 | 330 | 225.4 | | 99 33 56 | -7.0 | -37.5 | -41.5 | 1746.6 | | | 8 | |
| 9 | | 1866 | 110 | 107.5 | | 102 12 14 | -2.0 | -22.7 | -24.7 | 1763.4 | | | 9 | |
| 10 | X | 1865 | 0 | | | 90 00 00 | -4.9 | - | -4.9 | 1783.2 | | | 10 | |
| 11 | | 1864 | 110 | | | 86 43 03 | -2.0 | +6.3 | +4.3 | 1722.4 | 1799.8 | | 11 | |
| 12 | | 1862 | T 13.30 | 330 | | 86 35 58 | -4.0 | +17.6 | +5.6 | 1901.0 | | | 12 | |
| 13 | | | S 10.00 | 330 | | 273 22 44 | -4.0 | +19.4 | +5.4 | | | | 13 | |
| 14 | | | | | | | | | | | | | 14 | |
| 15 | | | | | | | | | | | | | 15 | |
| 16 | | | | | | | | | | | | | 16 | |
| 17 | | | | | | | | | | | | | 17 | |

TI-23471B

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

HORIZONTAL AND VERTICAL SURVEY NOTES

122

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GSI AREA Howard Pass STATE/COUNTY ALASKA BOOK NO. _____ PAGE 21 OF _____
 LINE/LOOP NO. 1 / 613 TYPE SURVEY _____ CLIENT Husky DATE 20 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 D/I | | RIGHT TURNED HORIZONTAL ANGLE |
| | | | SLOPE | <input type="checkbox"/> FEET <input type="checkbox"/> METERS HORIZ | | | | | INST | ROD | | | |
| 1 | | | | | | | | | | | | | |
| 2 | | 1862 | T 13.10 1210 | 88 31 23 | +1.0 | -62.4 | -61.4 | 1840.0 | | | | | |
| 3 | | | C 1.00 2420 | 27 27 19 | +1.0 | -61.5 | -60.5 | | | | | | |
| 4 | | 1840 | 0 | 90 00 00 | -4.9 | - | -4.9 | | | | | | |
| 5 | | SOUTH OF LINE | T 12.79 1075 | 88 19 22 | -2.0 | +62.9 | +60.9 | 1900.5 | | | | | |
| 6 | | | C 2.00 2150 | 27 39 05 | -2.0 | +62.0 | +60.0 | | | | | | |
| 7 | | SOUTH OF LINE | T 13.25 825 | 92 07 32 | +15.0 | +61.2 | +76.2 | 1977.1 | | | | | |
| 8 | | | C 5.00 1650 | 267 51 04 | +15.0 | +61.9 | +76.9 | | | | | | |
| 9 | | B.M. 79368 | T 10.90 890 | 89 50 55 | -1.5 | +2.4 | +0.9 | 1980.7 | | | REFERENCE: G.A.S. SURVEY | | |
| 10 | | | D 2.00 890 | 270 07 50 | -1.5 | +2.0 | +0.5 | 1977.8 | | | MISCLOSE | | |
| 11 | | | | | | | | -2.9 | | | | | |
| 12 | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | |

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WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

123 23

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. 4 PAGE 22 OF
 LINE/LOOP NO. 613 TYPE SURVEY CLIENT Husky DATE 20 BY 4 MO 29 YR
 SURVEYOR J. Anderson INSTRUMENT DESC/SERIAL NO. CREW NO. 1187

| 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 | LINE |
| | | | | SLOPE | | | | | HORIZ | INST | | | | |
| 1 | | | | | | | | | | 1903.9 | | | | |
| 2 | | 1862 | T 13.10 | 1210 | 88 31 23 | +1.0 | -62.4 | -61.4 | 1842.9 | | | | | |
| 3 | | | C 1.00 | 2420 | 271 27 17 | +1.0 | -61.5 | -60.5 | | | | | | |
| 4 | | 1860 | 2200 | | 88 35 54 | -2.0 | +37.6 | +37.6 | | 1880.5 | | | | |
| 5 | | 1858 | 1980 | | | | | | | | | | | |
| 6 | | 1856 | 1760 | | 88 42 35 | -2.0 | +37.6 | +37.6 | | 1880.5 | | | | |
| 7 | | 1854 | 1540 | | | | | | | | | | | |
| 8 | | 1852 | 1320 | | 88 49 00 | -2.0 | +27.3 | +25.3 | | 1868.2 | | | | |
| 9 | | 1850 | 1100 | | | | | | | | | | | |
| 10 | | 1848 | 880 | | 89 10 16 | -2.0 | +12.7 | +10.7 | | 1853.6 | | | | |
| 11 | | 1846 | 660 | | | | | | | | | | | |
| 12 | | 1844 | 440 | | 89 58 12 | -2.0 | +0.2 | -1.8 | | 1841.1 | | | | |
| 13 | | 1842 | 220 | | | | | | | | | | | |
| 14 | | 1840 | 0 | | 90 00 00 | -4.9 | - | -4.9 | | 1838.0 | | | | |
| 15 | | 1838 | 220 | | | | | | | | | | | |
| 16 | | 1836 | 440 | | 90 01 43 | -2.0 | -0.2 | -2.2 | | 1840.7 | | | | |
| 17 | | 1834 | 660 | | | | | | | | | | | |

ELEVATION ADJUSTED FOLLOWING MISCLOSURE (SEE PRECEDING PAGE)





WORKED BY _____ CHECKED BY 1ST _____ 2ND _____
 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. _____ PAGE 23 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT Husky DATE 20 BY 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 DR | RIGHT TURNED HORIZONTAL ANGLE |
| | | | SLOPE | HORIZ | | | | | INST | ROD | | | | |
| 1 | | | | | | | | | | 1842.9 | | | 1 | |
| 2 | SS | ETIVILUK TEST | 7.70 | 670 | | 87 53 21 | 7.0 | + 1.3 | + 0.3 | | | 1843.2 | 2 | |
| 3 | SS | WELL SITE | 51.00 | 670 | | 270 05 13 | 7.0 | + 1.0 | + 0.0 | | | 1842.9 | 3 | |
| 4 | | 1832 | 880 | | | 87 35 54 | 2.0 | + 6.2 | + 4.2 | | | 1847.1 | 4 | |
| 5 | | 1836 | 1100 | | | - | | | | | | | 5 | |
| 6 | | 1828 | 1320 | | | 87 14 55 | 2.0 | + 17.3 | + 15.3 | | | 1858.2 | 6 | |
| 7 | | 1826 | 1540 | | | - | | | | | | | 7 | |
| 8 | | 1824 | 1760 | | | 87 04 00 | 2.0 | + 28.7 | + 26.7 | | | 1869.6 | 8 | |
| 9 | | 1822 | 1980 | | | - | | | | | | | 9 | |
| 10 | | 1820 | 2200 | | | 88 53 39 | 2.0 | + 42.5 | + 40.5 | | | 1883.4 | 10 | |
| 11 | | 1818 | 2420 | | | - | | | | | | | 11 | |
| 12 | O | 1816 | 74.70 | 1320 | | 88 30 20 | 2.0 | + 64.2 | + 62.2 | | | 1904.4 | Adjusted 12 | |
| 13 | O | | 1.50 | 2640 | | 271 22 25 | 2.0 | + 63.3 | + 61.3 | | | | 13 | |
| 14 | | | | | | | | | | | | | 14 | |
| 15 | | | | | | | | | | | | | 15 | |
| 16 | | | | | | | | | | | | | 16 | |
| 17 | | | | | | | | | | | | | 17 | |

TI-23471B

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

SYMBOLS

 = BACKSIGHT

 = INSTRUMENT SET-UP

 = SIDESHOT

 = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

125

25

GSI AREA Howard Pass STATE/COUNTY ALASKA BOOK NO. 4 PAGE 24 OF
 LINE/LOOP NO. 613 TYPE SURVEY CLIENT Husky DATE 30 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 | | VERTICAL ANGLE OBS. | ROD RDG OR HI | ELEV DIFF | FINAL ELEVATION DIFF | ELEVATION | | L/R OR D/I | | RIGHT TURNED HORIZONTAL ANGLE | LINE |
| | | | <input type="checkbox"/> FEET <input type="checkbox"/> METERS SLOPE | <input type="checkbox"/> FEET <input type="checkbox"/> METERS HORIZ | | | | | INST | ROD | | | | |
| 1 | | | | | | | | | | | | 1 | | |
| 2 | Δ | 1816 | T 13.80 880 | | 93 34 26 | +15.0 | +54.7 | +69.9 | 1974.5 | | | | 2 | |
| 3 | Δ | | C 5.00 880 | | 266 24 15 | +15.0 | +55.2 | +70.2 | | | | | 3 | |
| 4 | | 1814 | 660 | | - | | | | | | | | 4 | |
| 5 | | 1812 | 440 | 475.3 | 95 05 56 | -2.0 | -39.0 | -41.0 | 1933.5 | | | | 5 | |
| 6 | | 1810 | 220 | | - | | | | | | | | 6 | |
| 7 | κ | 1808 | 0 | | 90 00 00 | -4.0 | - | -4.9 | 1969.6 | | | | 7 | |
| 8 | | 1806 | 220 | | - | | | | | | | | 8 | |
| 9 | | 1809 | 440 | | 88 30 00 | -2.0 | +11.5 | +9.5 | 1984.0 | | | | 9 | |
| 10 | o | 1802 | T 13.60 660 | | 88 28 40 | -7.0 | +17.5 | +10.5 | 1984.7 | | Adjusted | | 10 | |
| 11 | o | | D 7.00 660 | | 271 29 42 | -7.0 | +17.2 | +10.2 | | | | | 11 | |
| 12 | | | | | | | | | | | | | 12 | |
| 13 | | | | | | | | | | | | | 13 | |
| 14 | Δ | 1802 | K 9.75 775 | | 91 31 17 | +15.0 | +41.2 | +56.2 | 2041.0 | | | | 14 | |
| 15 | Δ | | C 2.00 1550 | | 268 27 11 | +15.0 | +41.8 | +56.8 | | | | | 15 | |
| 16 | | 1800 | 1320 | | 92 41 42 | -4.0 | -62.1 | -66.1 | 1974.9 | | | | 16 | |
| 17 | | 1728 | 1100 | | | | | | | | | | 17 | |

TI-23471B

WORKED BY CHECKED BY 1ST 2ND

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

HORIZONTAL AND VERTICAL SURVEY NOTES

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GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. _____ PAGE 25 OF _____

LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT HUSKY DATE 20 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 DJ | | RIGHT TURNED HORIZONTAL ANGLE | LINE |
| | | | | SLOPE | | | | | HORIZ | INST | | | | |
| 1 | | | | | | | | | 2041.0 | | | 1 | | |
| 2 | | 1796 | 880 | 077.6 | 34 15 00 | 2.0 | -65.0 | -67.0 | | | 074.0 | | 2 | |
| 3 | | 1794 | 660 | | | | | | | | | | 3 | |
| 4 | | 1792 | 440 | 437.7 | 35 48 37 | 4.0 | -44.3 | -48.3 | | | 1992.7 | | 4 | |
| 5 | | 1790 | 220 | | | | | | | | | | 5 | |
| 6 | X | 1788 | 0 | | 90 00 00 | 4.9 | - | -4.9 | | | 2036.1 | | 6 | |
| 7 | | 1786 | 220 | | 90 53 12 | 5.2 | -3.4 | -8.6 | | | 2032.4 | | 7 | |
| 8 | o | 1785 | A 14.30 330 | | 90 31 53 | 15.0 | -3.1 | -18.1 | | | 2023.0 | Adjusted | 8 | |
| 9 | o | | B 11.00 330 | | 269 26 57 | 15.0 | -3.2 | -18.2 | | | | | 9 | |
| 10 | | | | | | | | | | | | | 10 | |
| 11 | | | | | | | | | | | | | 11 | |
| 12 | Δ | 1785 | 2970 | | 84 56 03 | +2.0 | -262.3 | -260.3 | | | 1763.4 | | 12 | 259.6 |
| 13 | Δ | | | | 275 02 18 | +2.0 | -250.8 | -258.8 | | | | | 13 | |
| 14 | | 1784 | 2860 | | 84 57 54 | -2.0 | +251.0 | +249.0 | | | 2012.4 | | 14 | |
| 15 | | 1782 | 2680 | | | | | | | | | | 15 | |
| 16 | | 1780 | 2420 | 2413.1 | 85 39 48 | 2.0 | +182.5 | +180.5 | | | 1943.9 | | 16 | |
| 17 | | 1778 | 2200 | | | | | | | | | | 17 | |

TI-23471B

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. 4 PAGE 127 OF 26 27
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT Hukey DATE 20 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 DJI | | RIGHT TURNED HORIZONTAL ANGLE | LINE |
| | | | SLOPE | HORIZ | | | | | | INST | ROD | | | | |
| 1 | | | | | | | | | | 1763.4 | | | 1 | | |
| 2 | | 1776 | 1980 ✓ | 1976.1 | 86 24 38 | 2.0 | + 123.7 | + 121.7 | | | | 1885.1 | | 2 | |
| 3 | | 1774 | 1760 | | - | | | | | | | | | 3 | |
| 4 | | 1772 | 1450 | | 87 03 51 | 2.0 | + 71.7 | + 69.7 | | | | 1833.1 | | 4 | |
| 5 | | 1770 | 1320 | | - | | | | | | | | | 5 | |
| 6 | | 1768 | 1100 | | 88 14 34 | 2.0 | + 33.7 | + 31.7 | | | | 1795.1 | | 6 | |
| 7 | | 1766 | 880 | | - | | | | | | | | | 7 | |
| 8 | | 1764 | 660 | | 90 23 10 | 4.0 | - 4.4 | - 8.4 | | | | 1755.0 | | 8 | |
| 9 | | 1762 | 440 | | - | | | | | | | | | 9 | |
| 10 | | 1760 | 220 | | 93 28 18 | 4.0 | - 13.3 | - 17.3 | | | | 1746.1 | | 10 | |
| 11 | X | 1758 | 0 | | 90 00 00 | 4.0 | - | - 4.9 | | | | 1758.5 | | 11 | |
| 12 | | 1756 | 220 | | 90 50 06 | 2.0 | - 3.7 | - 5.7 | | | | 1757.7 | | 12 | |
| 13 | | 1754 | 440 | | - | | | | | | | | | 13 | |
| 14 | | 1752 | 660 | | 91 13 55 | 4.0 | - 14.2 | - 18.2 | | | | 1745.2 | | 14 | |
| 15 | | 1750 | 880 | | - | | | | | | | | | 15 | |
| 16 | | 1748 | 1100 | | 90 42 14 | 4.0 | - 13.5 | - 17.5 | | | | 1745.9 | | 16 | |
| 17 | | 1746 | 1320 | | - | | | | | | | | | 17 | |

TI-23471B

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 27 OF 128
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT Husky DATE 20 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

28

| LINE | | STATION | VERTICAL | | | | | | | ELEVATION | | LIR 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 | | | | | | | | | | 1763.4 | | | | 1 | |
| 2 | | 1744 | 1540 | | | 90 01 03 | -4.0 | -0.5 | -4.5 | | 1758.9 | | | 2 | |
| 3 | | 1742 | 1760 | | | | | | | | | | | 3 | |
| 4 | | 1740 | 1980 | | | 89 33 28 | -2.0 | +15.3 | +13.3 | | 1776.7 | | | 4 | |
| 5 | | 1738 | 2200 | | | | | | | | | | | 5 | |
| 6 | | 1736 | 2420 | | | 89 01 31 | -2.0 | +41.2 | +39.2 | ✓ | 1802.6 | | | 6 | |
| 7 | ○ | 1734 | T 14.20 1320 | | | 89 22 30 | -1.0 | +28.8 | +27.8 | | 1790.3 | | Adjusted | 7 | + 27.3 |
| 8 | ○ | | C 1.00 2640 | | | 270 36 06 | -1.0 | +27.7 | +26.7 | | | | | 8 | |
| 9 | | | | | | | | | | | | | | 9 | |
| 10 | | | | | | | | | | | | | | 10 | |
| 11 | Δ | 1734 | T 14.20 1220 | 1214.2 | | 95 35 33 | +15.0 | +118.3 | +133.3 | | 1924.1 | | | 11 | |
| 12 | A | | B 2.00 1220 | | | 264 23 33 | +15.0 | +119.2 | +134.2 | | | | | 12 | |
| 13 | | 1732 | 990 | 984.3 | | 96 10 09 | -11.0 | -105.8 | -116.8 | | 1807.3 | | | 13 | |
| 14 | | 1730 | 770 | | | | | | | | | | | 14 | |
| 15 | | 1728 | 550 | 546.8 | | 96 10 09 | -7.0 | -58.8 | -65.8 | | 1858.3 | | | 15 | |
| 16 | | 1726 | 330 | | | | | | | | | | | 16 | |
| 17 | | 1724 | 110 | 109.4 | | 95 54 13 | -2.0 | -11.3 | -13.3 | | 1910.8 | | | 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. 4 PAGE 28 OF 29
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT Husky DATE 20 DY 4 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 | | VERTICAL ANGLE OBS. | ROD RDG OR HI | ELEV DIFF | FINAL ELEVATION DIFF | INST | ROD | | | | |
| | | | SLOPE | HORIZ | | | | | | | | | | |
| 1 | | | | | | | | | | 1924.1 | | | 1 | |
| 2 | X | 1723 | 0 | | 90 00 00 | 4.9 | - | 4.9 | | 1919.2 | | | 2 | |
| 3 | | 1722 | 110 | | - | | | | | | | | 3 | |
| 4 | | 1720 | 330 | | 88 12 19 | 2.0 | +9.7 | +7.7 | | 1931.6 | | | 4 | |
| 5 | | 1718 | 500 | | - | | | | | | | | 5 | |
| 6 | | 1716 | 770 | | 87 45 57 | 2.0 | +30.0 | +28.0 | | 1952.1 | | | 6 | |
| 7 | | 1714 | 990 | | - | | | | | | | | 7 | |
| 8 | o | 1712 | T 11.52 602 | | 87 51 56 | 5.5 | +44.8 | +39.3 | | 1963.3 | | Adjusted | 8 | |
| 9 | o | | C 5.50 1204 | | 272 06 52 | 5.5 | +44.4 | +38.9 | | | | | 9 | |
| 10 | | | | | | | | | | | | | 10 | |
| 11 | | | | | | | | | | | | | 11 | |
| 12 | Δ | 1712 | T 7.40 440 | | 88 12 50 | 3.0 | -13.7 | -10.7 | | 1952.6 | | | 12 | |
| 13 | Δ | | C 3.00 440 | | 271 45 28 | 3.0 | -13.5 | -10.7 | | | | | 13 | |
| 14 | | 1710 | 220 | | - | | | | | | | | 14 | |
| 15 | X | 1708 | 0 | | 90 00 00 | 4.9 | - | -4.9 | | 1947.7 | | | 15 | |
| 16 | | 1706 | 220 | | - | | | | | | | | 16 | |
| 17 | | 1704 | 440 | +37.7 | 95 53 04 | 2.0 | -44.9 | -46.9 | | 1905.7 | | | 17 | |

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WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA Howard Pass STATE/COUNTY ALASKA BOOK NO. _____ PAGE 130 OF 30
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT Husky DATE 20 DY 4 MO 29 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 DR | | RIGHT TURNED HORIZONTAL ANGLE | LINE |
| | | | | SLOPE | | | | | HORIZ | INST | | | | |
| 1 | | | | | | | | | 1952.6 | | | 1 | | |
| 2 | | 1702 | 660 | | | | | | | | | 2 | | |
| 3 | | 1700 | 880 | 876.3 | 95 16 02 | 7.0 | 80.4 | -84.4 | | 1868.2 | | 3 | | |
| 4 | | 1698 | 1100 | | | | | | | | | 4 | | |
| 5 | | 1696 | 1320 | 1314.5 | 95 14 32 | 16.5 | 120.1 | -136.5 | | 1816.1 | | 5 | 9.5' + 7' BOOST | |
| 6 | | 1694 | 1540 | | | | | | | | | 6 | | |
| 7 | | 1692 | 1760 | 1753.0 | 95 06 26 | 11.0 | 156.1 | -167.1 | | 1785.5 | | 7 | | |
| 8 | | 1690 | 1980 | | | | | | | | | 8 | | |
| 9 | | 1688 | 2200 | 2192.2 | 94 49 54 | 7.0 | 184.6 | -188.6 | | 1764.0 | | 9 | | |
| 10 | | 1686 | 2420 | | | | | | | | | 10 | | |
| 11 | | 1684 | 2640 | 2632.7 | 94 15 10 | 7.0 | 195.2 | -199.2 | | 1753.4 | | 11 | | |
| 12 | ⊙ | 1682 | 2860 ✓ | 2852.7 | 94 09 02 | 15.0 | 203.2 | -218.2 | | 1733.3 | Adjusted | 12 | -218.7 | |
| 13 | ⊙ | | | | 265 53 47 | 15.0 | 204.1 | -219.1 | | | | 13 | | |
| 14 | | | | | | | | | | | | 14 | | |
| 15 | | | | | | | | | | | | 15 | | |
| 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. 4 PAGE 131 OF 31
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT Husky DATE 21 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 D/I | RIGHT TURNED HORIZONTAL ANGLE |
| | | | | | | | | | | | INST | | | |
| 1 | | | | | | | | | | | | | 1 | |
| 2 | | 1682 | T 1.420 1320 | | 85 58 21 | +1.0 | -185.4 | -184.4 | 1648.9 | | | | 2 | |
| 3 | | | C 1.00 2610 | | 274 01 28 | +1.0 | -185.3 | -184.3 | | | | | 3 | |
| 4 | | 1680 | 2420 | 2+15.6 | 86 33 37 | -2.0 | +144.9 | +142.9 | | 1621.8 | | | 4 | |
| 5 | | 1678 | 2200 | | | | | | | | | | 5 | |
| 6 | | 1676 | 1980 | | 87 06 30 | -2.0 | +99.9 | +97.9 | | 1646.8 | | | 6 | |
| 7 | | 1674 | 1760 | | | | | | | | | | 7 | |
| 8 | | 1672 | 1540 | | 87 29 57 | -4.0 | +67.2 | +63.2 | | 1612.1 | | | 8 | |
| 9 | | 1670 | 1320 | | | | | | | | | | 9 | |
| 10 | | 1668 | 1100 | | 87 37 27 | -2.0 | +45.0 | +43.0 | | 1591.9 | | | 10 | |
| 11 | | 1666 | 880 | | | | | | | | | | 11 | |
| 12 | | 1664 | 660 | | 88 02 03 | -2.0 | +22.6 | +20.6 | | 1569.5 | | | 12 | |
| 13 | | 1662 | 440 | | | | | | | | | | 13 | |
| 14 | | 1660 | 220 | | 88 50 52 | -2.0 | +4.4 | +2.4 | | 1551.3 | | | 14 | |
| 15 | | 1658 | 0 | | 90 00 00 | +9 | - | -4.9 | | 1546.4 | | | 15 | |
| 16 | | 1656 | 220 | | 92 30 35 | -4.0 | -9.6 | -13.6 | | 1535.3 | | | 16 | |
| 17 | | 1654 | 440 | | | | | | | | | | 17 | |

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

32

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. 132 PAGE 31 OF
 LINE/LOOP NO. 613 TYPE SURVEY CLIENT Husky DATE 21 BY 4 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 | | | | | | | 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 | LINE |
| | | | SLOPE | HORIZ | | | | | INST | ROD | | | | | |
| 1 | | | | | | | | | 1542.9 | | | | 1 | | |
| 2 | | 1652 | 660 | | 92 20 25 | 2.0 | -27.0 | -29.0 | | | | | 2 | | |
| 3 | | 1650 | 880 | | - | | | | | | | | 3 | | |
| 4 | | 1648 | 1100 | | 92 11 50 | 4.0 | -42.2 | -46.2 | | | | | 4 | | |
| 5 | | 1646 | 1320 | | - | | | | | | | | 5 | | |
| 6 | | 1644 | 1540 | | 92 06 40 | 2.0 | -56.7 | -58.7 | | | | | 6 | | |
| 7 | | 1642 | 1760 | | - | | | | | | | | 7 | | |
| 8 | | 1640 | 1980 | | 91 53 38 | 4.0 | -65.4 | -69.4 | | | | | 8 | | |
| 9 | | 1638 | 2200 | | - | | | | | | | | 9 | | |
| 10 | | 1636 | 2420 | | 91 48 35 | 4.0 | -76.4 | -80.4 | | | | | 10 | | |
| 11 | o | 1634 | 2640 | | 91 33 26 | 15.0 | -71.7 | -86.7 | | | | Adjustment | 11 | | |
| 12 | D | | | | 268 26 20 | 18.0 | -71.9 | -86.9 | | | | | 12 | | |
| 13 | | | | | | | | | | | | | 13 | | |
| 14 | | | | | | | | | | | | | 14 | | |
| 15 | Δ | 1634 | 13.45 1245 | | 89 42 22 | +1.0 | -12.5 | -11.5 | 1450.3 | | | | 15 | | |
| 16 | Δ | | 1.00 2430 | | 270 17 18 | +1.0 | -12.2 | -11.2 | | | | | 16 | | |
| 17 | | 1632 | 2200 | | 87 43 12 | 4.0 | +10.6 | +6.8 | | | | | 17 | | |

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

HORIZONTAL AND VERTICAL SURVEY NOTES

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33

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. _____ PAGE 33 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT Hussey DATE 21 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"/> ⊙ | 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 DJI | RIGHT TURNED HORIZONTAL ANGLE |
| | | | | SLOPE | HORIZ | | | | | INST | ROD | | | |
| 1 | | | | | | | | | 1450.3 | | | | 1 | |
| 2 | | 1528 | 1540 | | | | | | | | | | 2 | RIVER (ICE) |
| 3 | | 1596 | 1760 | | | 90 13 14 | -5.2 | -6.8 | -12.0 | | | 1438.3 | 3 | RIVER (ICE) |
| 4 | | 1527 | 1280 | | | | | | | | | | 4 | |
| 5 | | 1592 | 2200 | | | 87 27 27 | -4.0 | +13.2 | +9.2 | | | 1459.5 | 5 | |
| 6 | | 1590 | 2420 | | | | | | | | | | 6 | |
| 7 | ⊙ | 1588 | T 14.20 1320 | | | 87 37 05 | -1.0 | +17.6 | +16.6 | | | 1466.5 | 7 | Adjusted |
| 8 | ⊙ | | C 1.00 2640 | | | 270 22 47 | -1.0 | +17.5 | +16.5 | | | | 8 | |
| 9 | | | | | | | | | | | | | 9 | |
| 10 | | | | | | | | | | | | | 10 | |
| 11 | Δ | 1588 | T 14.20 1320 | | | 70 35 49 | +15.0 | +27.5 | +42.5 | 1509.1 | | | 11 | |
| 12 | Δ | | C 1.00 2640 | | | 269 24 00 | +15.0 | +27.6 | +42.6 | | | | 12 | |
| 13 | | 1586 | 2420 | | | | | | | | | | 13 | |
| 14 | | 1584 | 2200 | | | 70 51 44 | -4.0 | -38.1 | -37.1 | | | 1472.0 | 14 | |
| 15 | | 1582 | 1980 | | | | | | | | | | 15 | |
| 16 | | 1580 | 1760 | | | 90 50 35 | -4.0 | -25.9 | -29.9 | | | 1479.2 | 16 | |
| 17 | | 1578 | 1540 | | | | | | | | | | 17 | |

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

HORIZONTAL AND VERTICAL SURVEY NOTES

34

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. 4 PAGE 32 OF 133
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT Husky DATE 21 BY 4 MO 79 YR
 SURVEYOR J. Anderson INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

| LINE | <input type="checkbox"/> Δ <input type="checkbox"/> \nearrow <input type="checkbox"/> SS <input type="checkbox"/> \odot | 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 | | | | L/R OR D/I | RIGHT TURNED HORIZONTAL ANGLE |
| | | | SLOPE | HORIZ | | | | | | INST | ROD | | | | |
| 1 | | | | | | | | | 1450.3 | | | 1 | | | |
| 2 | | 1630 | 1380 | | | | | | | | | 2 | | | |
| 3 | | 1628 | 1760 | | | 87 43 12 | -4.0 | +8.6 | +4.6 | | | 1454.9 | 3 | | |
| 4 | | 1626 | 1540 | | | | | | | | | | 4 | | |
| 5 | | 1624 | 1320 | | | 87 46 11 | -4.0 | +5.3 | +1.3 | | | 1451.6 | 5 | | |
| 6 | | 1622 | 1100 | | | | | | | | | | 6 | | |
| 7 | | 1620 | 880 | | | 87 54 20 | -2.0 | +1.5 | +0.5 | | | 1449.0 | 7 | | |
| 8 | | 1618 | 660 | | | | | | | | | | 8 | | |
| 9 | | 1616 | 440 | | | 87 57 02 | -4.0 | +0.4 | -3.6 | | | 1446.7 | 9 | | |
| 10 | | 1614 | 220 | | | | | | | | | | 10 | | |
| 11 | \nearrow | 1612 | 0 | | | 90 00 00 | -4.9 | - | -4.9 | | | 1449.4 | 11 | | |
| 12 | | 1610 | 220 | | | | | | | | | | 12 | | |
| 13 | | 1608 | 440 | | | 90 22 02 | -4.0 | -2.8 | -6.8 | | | 1443.5 | 13 | | |
| 14 | | 1606 | 660 | | | | | | | | | | 14 | | |
| 15 | | 1604 | 880 | | | 90 20 05 | -4.0 | -5.1 | -9.1 | | | 1441.2 | 15 | | |
| 16 | | 1602 | 1100 | | | | | | | | | | 16 | | |
| 17 | | 1600 | 1320 | | | 90 15 48 | -4.0 | -6.1 | -10.1 | | | 1440.2 | 17 | | |

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WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

SYMBOLS Δ = BACKSIGHT \nearrow = INSTRUMENT SET-UP SS = SIDESHOT \odot = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 24 OF 35
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT Huany DATE 21 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

| LINE | | STATION | VERTICAL | | | | | | ELEVATION | | L/R OR DIR | 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 | | | | | | | | | | | | | | | | | |
| 2 | | 1576 | 1320 | | | 90 52 53 | +4.0 | -20.3 | -24.3 | | 1509.1 | | | | 2 | | |
| 3 | | 1574 | 1100 | | | - | | | | | | | | | | 3 | |
| 4 | | 1572 | 880 | | | 90 58 31 | +4.0 | -15.0 | -19.0 | | | | | | | 4 | |
| 5 | | 1570 | 660 | | | - | | | | | | | | | | 5 | |
| 6 | | MARKER PIPE 1568 | 440 | | | 91 07 44 | +4.0 | -8.7 | -12.7 | | | | | | | 6 | MARKER PIPE INSTALLED AT THE 10 TH MILE |
| 7 | | 1566 | 220 | | | - | | | | | | | | | | 7 | |
| 8 | X | 1564 | 0 | | | 90 00 00 | +4.0 | - | -4.9 | | | | | | | 8 | |
| 9 | | 1562 | 220 | | | - | | | | | | | | | | 9 | |
| 10 | | 1560 | 440 | | | 89 30 +1 | -2.0 | +3.8 | +1.8 | | | | | | | 10 | |
| 11 | | 1558 | 660 | | | - | | | | | | | | | | 11 | |
| 12 | | 1556 | 880 | | | 89 15 20 | -2.0 | +11.4 | +9.4 | | | | | | | 12 | |
| 13 | | 1554 | 1100 | | | - | | | | | | | | | | 13 | |
| 14 | | 1552 | 1320 | | | 89 09 44 | -2.0 | +19.3 | +17.3 | | | | | | | 14 | |
| 15 | | 1550 | 1540 | | | - | | | | | | | | | | 15 | |
| 16 | | 1548 | 1760 | | | 89 03 20 | -2.0 | +29.0 | +27.0 | | | | | | | 16 | |
| 17 | | 1546 | 1980 | | | - | | | | | | | | | | 17 | |

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____


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. _____ PAGE 00 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT HUSEY DATE 21 BY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1164

| LINE |  SS | STATION | VERTICAL | | | | | | ELEVATION | | L/R OR D/I | HORIZONTAL | | REMARKS |
|------|---|---------|---------------|-------|---------------------|---------------|-----------|----------------------|-----------|--------|------------|-------------------------------|------|---------|
| | | | DISTANCE | | VERTICAL ANGLE OBS. | ROD RDG OR HI | ELEV DIFF | FINAL ELEVATION DIFF | INST | ROD | | RIGHT TURNED HORIZONTAL ANGLE | LINE | |
| | | | SLOPE | HORIZ | | | | | | | | | | |
| 1 | | | | | | | | | 1509.1 | | | | 1 | |
| 2 | | 1544 | 2200 | | 88 59 27 | 2.0 | + 38.7 | +36.7 | | 1545.8 | | | 2 | |
| 3 | | 1542 | 2420 | | - | | | | | | | | 3 | |
| 4 | o | 1540 | 74.75 1325 | | 88 59 44 | -1.5 | + 46.5 | + 45.0 | | 1552.6 | | Adjusted | 4 | |
| 5 | o | | c 1.50 2650 | | 271 00 09 | -1.5 | + 46.4 | + 44.9 | | | | | 5 | |
| 6 | | | | | | | | | | | | | 6 | |
| 7 | | | | | | | | | | | | | 7 | |
| 8 | Δ | 1540 | 74.24 1320 | | 90 59 05 | +15.0 | + 45.4 | + 60.4 | 1614.0 | | | | 8 | |
| 9 | Δ | | c 1.00 2640 | | 267 00 50 | +15.0 | + 45.4 | + 60.4 | | | | | 9 | |
| 10 | | 1538 | 2420 | | - | | | | | | | | 10 | |
| 11 | | 1536 | 2200 | | 91 12 07 | -4.0 | -46.2 | -50.2 | | 1563.8 | | | 11 | |
| 12 | | 1534 | 1980 | | - | | | | | | | | 12 | |
| 13 | | 1532 | 1760 | | 91 13 33 | -4.0 | -37.7 | -41.7 | | 1572.3 | | | 13 | |
| 14 | | 1530 | 1540 | | - | | | | | | | | 14 | |
| 15 | | 1528 | 1320 | | 91 10 57 | -4.0 | -27.2 | -31.2 | | 1582.8 | | | 15 | |
| 16 | | 1526 | 1100 | | - | | | | | | | | 16 | |
| 17 | | 1524 | 880 | | 91 12 35 | -4.0 | -18.7 | -22.7 | | 1591.3 | | | 17 | |

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WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

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GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. 4 PAGE 36 OF 137
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT _____ DATE 21 BY 4 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 | | | L/R OR DJ | RIGHT TURNED HORIZONTAL ANGLE |
| | | | | SLOPE | HORIZ | | | | | INST | ROD | | | |
| 1 | | | | | | | | | 1614.0 | | | | 1 | |
| 2 | | 1522 | 660 | | | | | | | | | | 2 | |
| 3 | | 1520 | 440 | 91 00 31 | 4.0 | 8.8 | -12.8 | | 1601.2 | | | | 3 | |
| 4 | | 1518 | 220 | | | | | | | | | | 4 | |
| 5 | X | 1516 | 0 | 90 00 00 | 4.0 | - | -4.0 | | 1609.1 | | | | 5 | |
| 6 | | 1514 | 220 | | | | | | | | | | 6 | |
| 7 | | 1512 | 440 | 89 17 11 | 2.0 | +5.5 | +3.5 | | 1617.5 | | | | 7 | |
| 8 | | 1510 | 660 | | | | | | | | | | 8 | |
| 9 | | 1508 | 880 | 88 53 03 | 2.0 | +17.1 | +15.1 | | 1629.1 | | | | 9 | |
| 10 | | 1506 | 1100 | | | | | | | | | | 10 | |
| 11 | | 1504 | 1320 | 88 46 14 | 2.0 | +28.3 | +26.3 | | 1640.3 | | | | 11 | |
| 12 | | 1502 | 1540 | | | | | | | | | | 12 | |
| 13 | | 1500 | 1760 | 88 42 32 | 2.0 | +39.7 | +37.7 | | 1651.7 | | | | 13 | |
| 14 | | 1498 | 1980 | | | | | | | | | | 14 | |
| 15 | | 1496 | 2200 | 88 42 07 | 5.2 | +49.8 | +44.6 | | 1636.3 | | 1657 | | 15 | |
| 16 | | 1494 | 2420 | | | | | | | | | | 16 | |
| 17 | ⊙ | 1492 | 2640 | 88 37 50 | 15.0 | +63.1 | +48.1 | | 1661.7 | | Adjusted | | 17 | |

21 22 00 15.0 + 63.0 + 48.0

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WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

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GSI AREA Howard Pass STATE/COUNTY ALASKA BOOK NO. _____ PAGE 37 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT Husky DATE 21 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 D/I | RIGHT TURNED HORIZONTAL ANGLE |
| | | | | SLOPE | HORIZ | | | | | INST | ROD | | | |
| 1 | | | | | | | | | | | | | 1 | |
| 2 | Δ | 1472 | 2640 ✓ | | | 91 16 34 | +15.0 | +58.8 | +73.8 | 1735.6 | | | 2 | |
| 3 | Δ | | | | | 248 43 18 | +15.0 | +58.9 | +73.9 | | | | 3 | |
| 4 | | 1490 | 2720 | | | - | | | | | | | 4 | |
| 5 | | 1488 | 2200 | | | 91 23 07 | -11.0 | -53.2 | -64.2 | 1671.4 | | | 5 | |
| 6 | | 1486 | 1980 | | | - | | | | | | | 6 | |
| 7 | | 1484 | 1760 | | | 91 18 34 | -11.0 | -40.2 | -51.2 | 1684.4 | | | 7 | |
| 8 | | 1482 | 1540 | | | - | | | | | | | 8 | |
| 9 | | 1480 | 1320 | | | 91 12 45 | -11.0 | -27.9 | -38.9 | 1696.7 | | | 9 | |
| 10 | | 1478 | 1100 | | | - | | | | | | | 10 | |
| 11 | | 1476 | 880 | | | 91 15 32 | -2.0 | -19.3 | -23.3 | 1712.3 | | | 11 | |
| 12 | | 1474 | 660 | | | - | | | | | | | 12 | |
| 13 | | 1472 | 440 | | | 91 12 17 | -4.0 | -9.3 | -13.3 | 1722.3 | | | 13 | |
| 14 | | 1470 | 220 | | | - | | | | | | | 14 | |
| 15 | X | 1468 | 0 | | | 90 00 00 | -4.9 | - | -4.9 | 1730.7 | | | 15 | |
| 16 | | 1466 | 220 | | | - | | | | | | | 16 | |
| 17 | | 1464 | 440 | | | 88 36 45 | -2.0 | +8.1 | +6.1 | 1741.7 | | | 17 | |

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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. 4 PAGE 38 OF 39
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT Husky DATE 21 DY 4 MO 72 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

| LINE | | STATION | VERTICAL | | | | | | ELEVATION | | L/R OR DJ | HORIZONTAL RIGHT TURNED HORIZONTAL ANGLE | LINE | REMARKS |
|------|----------|---------|-----------|---|----------------------------|------------------------|------------------|----------------------------|-----------|--------|-----------|---|------|---------|
| | | | DISTANCE | | VERTICAL ANGLE OBS. | ROD RDG OR HI | ELEV DIFF | FINAL ELEVATION DIFF | INST | ROD | | | | |
| | | | SLOPE | <input type="checkbox"/> FEET <input type="checkbox"/> METERS HORIZ | | | | | | | | | | |
| 1 | | | | | | | | | 1735.6 | | | 1 | | |
| 2 | | 1462 | 660 | | | | | | | | | 2 | | |
| 3 | | 1460 | 880 | | 88 36 12 | -2.0 | +21.4 | +12.4 | | 1755.0 | | 3 | | |
| 4 | | 1458 | 1100 | | | | | | | | | 4 | | |
| 5 | | 1456 | 1320 | | 88 29 57 | -5.2 | +34.6 | +29.4 | | 1765.0 | | 5 | | |
| 6 | | 1454 | 1540 | | | | | | | | | 6 | | |
| 7 | | 1452 | 1780 | | 88 37 46 | -7.5 | +42.1 | +34.6 | | 1770.2 | | 7 | | |
| 8 | | 1450 | 1980 | | | | | | | | | 8 | | |
| 9 | | 1448 | 2200 | | 88 29 30 | -11.0 | +57.9 | +46.9 | | 1782.5 | | 9 | | |
| 10 | | 1446 | 2420 | | | | | | | | | 10 | | |
| 11 | | 1444 | 2640 ✓ | | 88 28 24 | -15.0 | +70.3 | +55.3 | | 1790.3 | Adjusted | 11 | | |
| 12 | | | | | 271 31 15 | -15.0 | +70.1 | +55.1 | | | | 12 | | |
| 13 | | | | | | | | | | | | 13 | | |
| 14 | | | | | | | | | | | | 14 | | |
| 15 | | | | | | | | | | | | 15 | | |
| 16 | | | | | | | | | | | | 16 | | |
| 17 | | | | | | | | | | | | 17 | | |

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

140

40

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. _____ PAGE 32 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT HUSKY DATE 21 DY 4 MO 7 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 DJI | | RIGHT TURNED HORIZONTAL ANGLE | LINE |
| | | | SLOPE | HORIZ | | | | | INST | ROD | | | | | |
| 1 | | | | | | | | | | | | | 1 | | |
| 2 | | 1444 | T 13.10 | 1100 | | 91 36 47 | +15.0 | +61.9 | +76.9 | 1867.3 | | | 2 | | |
| 3 | | | C 2.00 | 2200 | | 268 23 04 | +15.0 | +62.0 | +77.0 | | | | 3 | | |
| 4 | | 1442 | 1980 | | | | | | | | | | 4 | | |
| 5 | | 1440 | 1760 | | | 22 03 45 | -4.0 | -63.3 | -67.3 | | 1800.0 | | 5 | | |
| 6 | | 1438 | 1540 | | | | | | | | | | 6 | | |
| 7 | | 1436 | 1320 | | | 22 10 49 | -4.0 | -50.2 | -54.2 | | 1813.1 | | 7 | | |
| 8 | | 1434 | 1100 | | | | | | | | | | 8 | | |
| 9 | | 1432 | 880 | | | 52 06 50 | -4.0 | -32.5 | -36.5 | | 1830.8 | | 9 | | |
| 10 | | 1430 | 660 | | | | | | | | | | 10 | | |
| 11 | | 1428 | 440 | | | 91 55 06 | -4.0 | -14.7 | -18.7 | | 1848.6 | | 11 | | |
| 12 | | 1426 | 220 | | | | | | | | | | 12 | | |
| 13 | | 1424 | 0 | | | 90 00 00 | -4.9 | - | -4.9 | | 1862.4 | | 13 | | |
| 14 | | 1422 | 220 | | | | | | | | | | 14 | | |
| 15 | | 1420 | 440 | | | 89 38 40 | -2.0 | +2.7 | +0.7 | | 1868.0 | | 15 | | |
| 16 | | 1418 | 660 | | | | | | | | | | 16 | | |
| 17 | | 1416 | 880 | | | 88 35 00 | -2.0 | +21.8 | +19.8 | | 1887.1 | | 17 | | |

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WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

41

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 40 OF 141
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT Husky DATE 21 BY 4 MO 7 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 | | | | | | | | | 1867.3 | | | | 1 | |
| 2 | | 1414 | 1100 | | | | | | | | | | 2 | |
| 3 | | 1412 | 1320 | | | 88 08 27 | 2.0 | + 42.8 | + 40.8 | | 1908.1 | | 3 | |
| 4 | | 1410 | 1540 | | | | | | | | | | 4 | |
| 5 | | 1408 | 1760 | | | 88 06 45 | 4.0 | + 58.0 | + 54.0 | | 1921.3 | | 5 | |
| 6 | | 1406 | 1980 | | | | | | | | | | 6 | |
| 7 | o | 1405 | 2090 ✓ | | | 88 10 00 | 7.5 | + 66.9 | + 59.4 | | 1926.30 | Adjusted | 7 | |
| 8 | o | | | | | 271 49 47 | 7.5 | + 66.7 | + 59.2 | | | | 8 | |
| 9 | | | | | | | | | | | | | 9 | |
| 10 | | | | | | | | | | | | | 10 | |
| 11 | | | | | | | | | | | | | 11 | |
| 12 | | | | | | | | | | | | | 12 | |
| 13 | | | | | | | | | | | | | 13 | |
| 14 | | | | | | | | | | | | | 14 | |
| 15 | | | | | | | | | | | | | 15 | |
| 16 | | | | | | | | | | | | | 16 | |
| 17 | | | | | | | | | | | | | 17 | |

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WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

142

42

GS1 AREA Howard Pass STATE/COUNTY ALASKA BOOK NO. _____ PAGE 40A OF _____

LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT Husky DATE 21 DY 7 MO 77 YR

SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

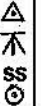








| LINE | <input type="checkbox"/> Δ <input type="checkbox"/> ↑ <input type="checkbox"/> SS <input type="checkbox"/> ⊙ | STATION | VERTICAL | | | | | | | HORIZONTAL | | LINE | REMARKS | |
|------|---|--------------|----------|---------------------|---------------------|---------------|-----------|----------------------|--------------------|------------|------------------------------|-----------|----------------|-------------------------------|
| | | | DISTANCE | | VERTICAL ANGLE OBS. | ROD RDG OR HI | ELEV DIFF | FINAL ELEVATION DIFF | ELEVATION | | L/R OR D/I | | | RIGHT TURNED HORIZONTAL ANGLE |
| | | | SLOPE | FET METERS HORIZ | | | | | INST | ROD | | | | |
| 1 | | | | | | | | | | | | 1 | WHEREIN DIVERS | |
| 2 | A | V.P. 1405 → | 6390.60 | | 87 36 58 | 5.8 | HT | 265.8 | | | 1930.2 | V.P. 1405 | 2 | RECIPROCAL ANGLES |
| 3 | B | B.M. 79365 | | | 272 23 01 | 6.0 | HT | 265.8 | | | | | 3 | ARE CAST TO FIX |
| 4 | | | | | | | | | | | | | 4 | A VERTICAL CLOSURE |
| 5 | | | | | | | | | | | | | 5 | UNTO B.M. 79365 |
| 6 | B | B.M. 79365 → | 6390.60 | | 92 23 52 | 4.9 | HT | 267.4 | | | | | 6 | AND BY THE GRACE |
| 7 | A | V.P. 1405 | | | 287 36 08 | 5.8 | HT | 267.4 | ELEV. DIFF. +267.3 | 2197.5 | | | 7 | OF GOD A TIE OF |
| 8 | | | | | | | | | | 2193.6 | REFERENCE 1 D.A.S. SURVEY | | 8 | + 3.9 FEET MATH |
| 9 | | | | | | | | | | +3.9 | MISCLOSURE | | 9 | BEEN GIVEN OVER. |
| 10 | | | | | | | | | | | (SEE ADJUSTMENTS MADE ABOVE) | | 10 | |
| 11 | | | | | | | | | | | | | 11 | |
| 12 | | | | | | | | | | | | | 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 PASS STATE/COUNTY ALASKA BOOK NO. 4 PAGE 143 OF 143
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT HUSKY DATE 23 DY 4 MO 12 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  | HORIZ  |  |  |  | | | | | | | |
| 1 | | | | | | | | | | | | | 1 | |
| 2 |  | 1403 | 2750 ✓ | | 89 34 57 | +3.0 | -20.0 | -17.0 | 1909.2 | | | | 2 | |
| 3 |  | | | | 270 25 12 | +3.0 | -20.2 | -17.2 | | | | | 3 | |
| 4 | | 1404 | 2640 | | 89 31 13 | +4.0 | +22.1 | +18.1 | | | | 1927.3 | 4 | |
| 5 | | 1402 | 2420 | | | | | | | | | | 5 | |
| 6 | | 1400 | 2200 | | 89 34 23 | +2.0 | +16.4 | +14.4 | | | | 1923.6 | 6 | |
| 7 | | 1398 | 1980 | | | | | | | | | | 7 | |
| 8 | | 1396 | 1760 | | 89 38 08 | +4.0 | +11.2 | +7.2 | | | | 1916.4 | 8 | |
| 9 | | 1394 | 1540 | | | | | | | | | | 9 | |
| 10 | | 1392 | 1320 | | 89 42 44 | +4.0 | +6.6 | +2.6 | | | | 1911.8 | 10 | |
| 11 | | 1390 | 1100 | | | | | | | | | | 11 | |
| 12 | | 1388 | 880 | | 89 27 34 | +4.0 | +5.7 | +1.7 | | | | 1910.9 | 12 | |
| 13 | | 1386 | 660 | | | | | | | | | | 13 | |
| 14 | | 1384 | 440 | | 90 00 50 | +2.0 | -0.1 | -2.1 | | | | 1907.1 | 14 | |
| 15 | | 1382 | 220 | | | | | | | | | | 15 | |
| 16 |  | 1380 | 0 | | 90 00 00 | +4.9 | - | -4.9 | | | | 1904.3 | 16 | |
| 17 | | 1378 | 220 | | | | | | | | | | 17 | |

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

SYMBOLS

 = BACKSIGHT

 = INSTRUMENT SET-UP

SS = SIDESHOT












 = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

104

44

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. _____ PAGE 12 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT Husky DATE 23 DY 4 MO 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 |
| | | | | SLOPE  | HORIZ  | | | | | | | | | | |
| 1 | | | | | | | | | | 1909.2 | | | 1 | | |
| 2 | | 1376 | 440 | | | 87 19 52 | -1.0 | +20.5 | +19.5 | | 1928.7 | | | 2 | |
| 3 | | 1374 | 660 | | | - | | | | | | | | 3 | |
| 4 | | 1372 | 880 | | | 87 17 27 | -4.0 | +41.6 | +37.6 | | 1946.8 | | | 4 | |
| 5 | | 1370 | 1100 | | | - | | | | | | | | 5 | |
| 6 | | 1368 | 1320 | | | 87 13 32 | -11.0 | +63.9 | +52.9 | | 1962.1 | | | 6 | |
| 7 |  | 1366 | 1540 ✓ | | | 87 17 42 | -15.0 | +72.7 | +57.7 | | 1966.9 | | | 7 | |
| 8 |  | | | | | 272 42 05 | -15.0 | +72.6 | +57.6 | | | | | 8 | |
| 9 | | | | | | | | | | | | | | 9 | |
| 10 | | | | | | | | | | | | | | 10 | |
| 11 |  | 1366 | 79.20 720 | 1434.8 | | 94 53 03 | +15.0 | +122.2 | +137.2 | 2104.1 | | | | 11 | |
| 12 |  | | 62.00 1440 ✓ | | | 265 06 49 | +15.0 | +122.2 | +137.2 | | | | | 12 | |
| 13 | | 1364 | 1210 | | | 95 54 56 | -4.0 | -124.7 | -128.7 | | 1975.4 | | | 13 | |
| 14 | | 1362 | 990 | | | - | | | | | | | | 14 | |
| 15 | | 1360 | 470 | 763.3 | | 97 33 15 | -4.0 | -100.3 | -104.3 | | 1999.8 | | | 15 | |
| 16 | | 1358 | 550 | | | - | | | | | | | | 16 | |
| 17 | | 1356 | 330 | 322.3 | | 102 22 43 | -4.0 | -69.1 | -73.1 | | 2031.0 | | | 17 | |

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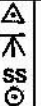





WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

45

GSI/AREA Howard Pass STATE/COUNTY ALASKA BOOK NO. 4 PAGE 43 OF 145
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT HURRY DATE 23 DY 4 MO 7 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 | | | | | | | | | | 2104.1 | | | 1 | |
| 2 | | 1354 | 110 | | | | | | | | | | 2 | |
| 3 | | 1253 | 0 | | | 90 00 00 | -4.9 | - | -4.9 | | 2099.2 | | 3 | |
| 4 | | 1352 | 110 | 109.3 | | 83 31 23 | 2.0 | +12.3 | +10.3 | | 2114.4 | | 4 | |
| 5 | o | 1350 | 7 11.36 336 | 332.8 | | 82 08 28 | -8.0 | +45.5 | +37.5 | | 2141.7 | | 5 | |
| 6 | o | | B 800 336 | | | 277 52 02 | -8.0 | +45.6 | +37.6 | | | | 6 | |
| 7 | | | | | | | | | | | | | 7 | |
| 8 | | | | | | | | | | | | | 8 | |
| 9 | Δ | 1350 | T 14.60 660 | | | 93 32 42 | +5.0 | +40.8 | +35.8 | | 2197.5 | | 9 | |
| 10 | Δ | | B 8.00 660 | | | 266 28 05 | +15.0 | +40.7 | +55.7 | | | | 10 | |
| 11 | | 1348 | 440 | | | 74 14 36 | -4.0 | -32.6 | -36.6 | | 2160.9 | | 11 | |
| 12 | | 1346 | 220 | | | | | | | | | | 12 | |
| 13 | ⊗ | 1344 | 0 | | | 90 00 00 | -4.9 | - | -4.9 | | 2192.6 | | 13 | |
| 14 | | 1342 | 220 | | | | | | | | | | 14 | |
| 15 | o | 1340 | T 7.40 440 | | | 88 17 18 | -3.0 | +12.9 | +9.9 | | 2207.4 | | 15 | |
| 16 | o | | B 3.00 440 | | | 271 40 53 | -3.0 | +12.9 | +9.9 | | | | 16 | |
| 17 | | | | | | | | | | | | | 17 | |

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WORKED BY _____ CHECKED BY 1ST _____ 2ND _____




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

HORIZONTAL AND VERTICAL SURVEY NOTES

146

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GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. _____ PAGE 44 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT Musky DATE 23 DY 4 MO 79 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

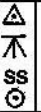







| LINE |  | STATION | VERTICAL | | | | | | ELEVATION | | LR OR DI | RIGHT TURNED HORIZONTAL ANGLE | LINE | REMARKS | |
|------|---|---------|----------|--|--|---------------------|---------------|-----------|----------------------|--------|----------|-------------------------------|------|---------|-----|
| | | | DISTANCE | <input type="checkbox"/> FEET <input type="checkbox"/> METERS | | VERTICAL ANGLE OBS. | ROD RDG OR HI | ELEV DIFF | FINAL ELEVATION DIFF | INST | | | | | ROD |
| | | | | SLOPE  | HORIZ  | | | | | | | | | | |
| 1 | | | | | | | | | | | | | 1 | | |
| 2 | Δ | 1340 | T 14.00 | 1100 | 90 00 00 | +13.7 | - | +13.7 | 2221.1 | | | | 2 | | |
| 3 | Δ | | B 3.00 | 1100 | 270 00 00 | +13.6 | - | +13.6 | | | | | 3 | | |
| 4 | | 1338 | 080 | | | | | | | | | | 4 | | |
| 5 | | 1336 | 660 | | 90 38 08 | -2.0 | -7.3 | -9.3 | | 2211.8 | | | 5 | | |
| 6 | | 1324 | 440 | | | | | | | | | | 6 | | |
| 7 | | 1332 | 220 | | 90 50 07 | -2.0 | -3.2 | -5.2 | | 2215.9 | | | 7 | | |
| 8 | π | 1330 | 0 | | 90 00 00 | +4.9 | - | +4.9 | | 2216.2 | | | 8 | | |
| 9 | | 1328 | 220 | | 21 36 59 | -2.0 | -6.2 | -8.2 | | 2212.9 | | | 9 | | |
| 10 | | 1326 | 440 | | | | | | | | | | 10 | | |
| 11 | | 1324 | 660 | | 91 26 42 | -2.0 | -16.6 | -18.6 | | 2202.5 | | | 11 | | |
| 12 | | 1322 | 880 | | | | | | | | | | 12 | | |
| 13 | | 1320 | 1100 | | 91 26 57 | -2.0 | -27.8 | -29.8 | | 2191.3 | | | 13 | | |
| 14 | | 1318 | 1320 | | | | | | | | | | 14 | | |
| 15 | | 1316 | 1540 | | 91 28 38 | -2.0 | -39.7 | -41.7 | | 2179.4 | | | 15 | | |
| 16 | | 1314 | 1760 | | | | | | | | | | 16 | | |
| 17 | 0 | 1313 | T 12.40 | 940 | 91 03 46 | -15.0 | -34.9 | -49.9 | | 2171.1 | | | 17 | | |

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____
 SYMBOLS Δ = BACKSIGHT π = INSTRUMENT SET-UP SS = SIDESHOT 0 = FORESIGHT





HORIZONTAL AND VERTICAL SURVEY NOTES

47

GSI AREA Howard Pass STATE/COUNTY Alaska BOOK NO. 4 PAGE 45 OF 147
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT Husky DATE 23 DY 4 MO 12 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 | | VERTICAL ANGLE OBS. | ROD RDG OR HI | ELEV DIFF | FINAL ELEVATION DIFF | INST | ROD | | | | | |
| | | | SLOPE  | HORIZ  | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | 1 | |
| 2 |  | IRON PIPE W/TAG 1313 | 710.95 | 995 | 89 15 56 | 1.0 | -12.8 | -11.8 | 2159.3 | | | | | 2 | INTERSECTION: LINE 613 V.P. 1313 & LINE 640 |
| 3 |  | INTERSECTION | 0 1.00 | 995 | 270 44 00 | 1.0 | -12.7 | -11.7 | | | | | | 3 | V.P. 1242 + 36' |
| 4 | SS | V.P. 1240, L- 640 | 110.50 | 950 | 89 34 17 | 1.0 | +7.1 | +6.1 | | 2165.4 | | | | 4 | MARKER PIPE |
| 5 | SS | | 0 1.00 | 950 | 270 25 45 | 1.0 | +7.1 | +6.1 | | | | | | 5 | |
| 6 | | 1312 | | 880 | 87 16 17 | 2.0 | +11.2 | +9.2 | | 2168.5 | | | | 6 | |
| 7 | | 1310 | | 660 | | | | | | | | | | 7 | |
| 8 | | 1308 | | 440 | 89 22 22 | 2.0 | +4.8 | +2.8 | | 2162.1 | | | | 8 | |
| 9 | | 1306 | | 220 | | | | | | | | | | 9 | |
| 10 |  | 1304 | | 0 | 90 00 00 | 4.9 | - | -4.9 | | 2154.4 | | | | 10 | |
| 11 |  | 1302 | 714.25 | 225 | 90 00 00 | 13.5 | - | -13.5 | | 2145.8 | | | | 11 | |
| 12 |  | | 0 12.00 | 225 | 270 00 00 | 13.5 | - | -13.5 | | | | | | 12 | |
| 13 | | | | | | | | | | | | | | 13 | |
| 14 | | | | | | | | | | | | | | 14 | |
| 15 | | | | | | | | | | | | | | 15 | |
| 16 | | | | | | | | | | | | | | 16 | |
| 17 | | | | | | | | | | | | | | 17 | |

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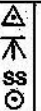





WORKED BY _____ CHECKED BY 1ST _____ 2ND _____
 SYMBOLS  = BACKSIGHT  = INSTRUMENT SET-UP  = SIDESHOT  = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

148

48

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. _____ PAGE 46 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT MUSKY DATE 23 DY 4 MO 19 YR
 SURVEYOR J. ANDERSON INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

| LINE |  | STATION | VERTICAL | | | | | | | ELEVATION | | LR OR DR | RIGHT TURNED HORIZONTAL ANGLE | LINE | REMARKS |
|------|---|----------------------------|----------|-------|---------------------|---------------|-----------|----------------------|--------|-----------|--------|----------|-------------------------------|---|---------|
| | | | DISTANCE | | VERTICAL ANGLE OBS. | ROD RDG OR HI | ELEV DIFF | FINAL ELEVATION DIFF | INST | ROD | | | | | |
| | | | SLOPE | HORIZ | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | 1 | | |
| 2 |  | 1282 | 78.10 | 710 | 86 24 12 | +1.0 | -44.5 | | 2101.3 | | | | 2 | | |
| 3 |  | | 81.00 | 710 | 273 35 20 | +1.0 | -44.4 | | | | | | 3 | | |
| 4 | | 1300 | 440 | | 86 26 63 | -2.0 | +27.2 | | | | 2128.5 | | 4 | | |
| 5 | | 1298 | 220 | | - | | | | | | | | 5 | | |
| 6 |  | 1236 | 0 | | 90 00 00 | -2.9 | - | -4.9 | | | 2096.4 | | 6 | | |
| 7 | | 1294 | 220 | | - | | | | | | | | 7 | | |
| 8 | | 1292 | 440 | | 94 00 23 | -4.0 | -31.5 | -35.5 | | | 2065.8 | | 8 | | |
| 9 | | 1290 | 660 | | - | | | | | | | | 9 | | |
| 10 |  | 1288 | 8.80 | 880 | 93 52 19 | -4.0 | -59.4 | -63.4 | | | 2037.8 | | 10 | | |
| 11 |  | NO 20" I.D. PIPE INSTALLED | 4.00 | 880 | 216 07 33 | -4.0 | -59.5 | -63.5 | | | | | 11 | NO PIPE INSTALLED BECAUSE OF OTHER MARKERS IN CLOSE PROXIMITY | |
| 12 | | | | | | | | | | | | | 12 | | |
| 13 | | | | | | | | | | | | | 13 | EAST END OF | |
| 14 | | | | | | | | | | | | | 14 | LINE 613 | |
| 15 | | | | | | | | | | | | | 15 | | |
| 16 | | | | | | | | | | | | | 16 | - TAIL SPREAD - | |
| 17 | | | | | | | | | | | | | 17 | | |

TI-23471B

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

149

49

GSI AREA HOWARD PASS STATE/COUNTY _____ BOOK NO. 4 PAGE 47 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT _____ DATE 23 DY 4 MO 79 YR
 SURVEYOR _____ 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 | | | | | | | | | | |
| 1 | | | RECIPROCAL ANGLE 772 INTO BAS 79442 | | | | | | | | | | 1 | |
| 2 | | | | | | | | | 2171.1 | | REFERENCE: P. 49 LINE 17, THIS BOOK | | 2 | |
| 3 | | 1313 | | | 89-27-34 | 5 ⁵ | HI | | | | | | 3 | |
| 4 | | BAS 79442 | 4495 ¹⁰ | | 270-32-17 | 6 ⁰ | HT | | | | | | 4 | |
| 5 | | | | | | | | | | | | | 5 | |
| 6 | | | | | | | | | | | | | 6 | |
| 7 | | 79442 | | | 90-32-52 | 5 ³ | HI | | | | | | 7 | |
| 8 | | 1313 | 4495 ¹⁰ | | 269-26-52 | 5 ⁰ | HT | | | | | | 8 | |
| 9 | | | | | | | | | | | | | 9 | |
| 10 | | | | | | | | FINAL DIFF | +42.33 | | | | 10 | |
| 11 | | | | | | | | | | | | | 11 | |
| 12 | | | | | | | | | 2213.43 | | | | 12 | |
| 13 | | | | | TRUE ELEV BAS 79442 | | | | 2212.60 | | MISCELLANEOUS + 0.83 | | 13 | |
| 14 | | | | | | | | | | | REFERENCE: BAS SURVEY | | 14 | |
| 15 | | | | | | | | | | | | | 15 | |
| 16 | | | | | | | | | | | | | 16 | |
| 17 | | | | | | | | | | | | | 17 | |

TI-23471B

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

HORIZONTAL AND VERTICAL SURVEY NOTES

50

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. _____ PAGE 1 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT +26° CALM, HAZY DATE 18 DY 4 MO 79 YR
 SURVEYOR HELANDER/BENEDICT 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 | | | | |
| | | | SLOPE | HORIZ | | | | | | | | | | |
| 1 | | | START CONTROL FOR L-613 | | | | | | | | | | 1 | |
| 2 | | | | | | | | | | | | 2 | | |
| 3 | | 79426 | | | | | | | | | V. | 21 | 3 | |
| 4 | | | | | | | | | | | D | 124-11-19 | 4 | |
| 5 | | 79385 | | | | 6.1 | | | | | | 124-10-58 | 5 | |
| 6 | | 2296 L-613 | 4572.20 | | 90-20-30 | 6.0 | | | 4572.20 | | V. | 180-00-18 | 6 | |
| 7 | | | | | 269-39-39 | | | | 220 72 | | R | 304-11-15 | 7 | |
| 8 | | | | | | | | | 483 74 | | | 124-10-57 | 8 | 124-10-57 |
| 9 | | | | | | | | | | | | | 9 | |
| 10 | | 79385 | | | 89-36-46 | 9.0 | | | | | V. | 26 | 10 | |
| 11 | | | | | 270-23-19 | | | | 08 | | D | 314-02-18 | 11 | |
| 12 | | 2296 | | | | 5.4 | | | 81 | | | 314-01-52 | 12 | |
| 13 | | 2222 | 3140° | 8125 ⁷⁰ | 87-11-50 | 6.0 | | | 12 | | V. | 180-00-19 | 13 | |
| 14 | | | | | 272-48-12 | | | | 2.5 | | R | 134-02-15 | 14 | |
| 15 | | | | | | | | | 5.70 | | | 314-01-56 | 15 | 314-01-54 |
| 16 | | | | | | | | | | | | | 16 | |
| 17 | | | | | | | | | | | | | 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 2 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT _____ DATE 18 DY 4 MO 79 YR
 SURVEYOR HSLANDER / BENEDICT 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 | | | | | | | | | | |
| 1 | | 2296 | | | 92 49 12 | 6 | | | 6909.75 | | Y 00 00 21 | 1 | | |
| 2 | - | | | | 267 12 13 | | | | 775 | | L 180 05 52 | 2 | 180-05-31 | |
| 3 | | 2222 | | | - | 58 | | | 800 | | Y 180 00 13 | 3 | | |
| 4 | | 2159 | 6930.00 | 6909.75 | 89 34 30 | 6 | | | 690 | | R 00 05 50 | 4 | 180-05-37 | |
| 5 | - | | | | 270 27 00 | | | | | | | 5 | 180-05-34 | |
| 6 | | | | | | | | | | | | 6 | | |
| 7 | | | | | | | | | | | | 7 | INT - MARKER PIPE | |
| 8 | | | | | | | | | | | | 8 | L-613 VP 2196+52' | |
| 9 | | 2222 | | | 90-27-40 | 6.0 | | | | | V 35 | 9 | L-47X3 VP 434+90' | |
| 10 | | | | | 269-33-26 | | | | | | D 180-07-43 | 10 | | |
| 11 | | 2159 | | | | 5.8 | | | 10 | | 180-07-07 | 11 | | |
| 12 | | 2061 | 10.780' | 10.781' | 90-31-25 | 6.0 | | | 07 | | V 180-00-33 | 12 | | |
| 13 | | | | | 269-29-40 | | | | | | R 00-07-40 | 13 | | |
| 14 | | | | | | | | | 78 | | 180-07-07 | 14 | 180-07-07 | |
| 15 | | | | | | | | | 81 | | | 15 | | |
| 16 | | | | | | | | | 1.85 | | | 16 | | |
| 17 | | | | | | | | | | | | 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 3 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT _____ DATE 18 DY 4 MO 79 YR
 SURVEYOR HELANDER/BENEDICT 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 D/I | RIGHT TURNED HORIZONTAL ANGLE | | LINE |
| | | | SLOPE | HORIZ | | | | | FEET | METERS | | | | |
| 1 | | 2296 | | | | | | | | | | 1 | | |
| 2 | - | | | | | | | | | | | 2 | | |
| 3 | | 2222 | | | | | | | | | | 3 | | |
| 4 | | 2218 | | | | | | | | | | 4 | | |
| 5 | - | | | | | | | | | | | 5 | | |
| 6 | | | | | | | | | | | | 6 | | |
| 7 | | 2222 | | | 93 28 20 | -0° | | | | | V 00 00 22 | 7 | | |
| 8 | - | | | | | | | | | | L 180 13 09 | 8 | 180-12-47 | |
| 9 | | 2218 | | | | | | | | | | 9 | | |
| 10 | | 2201 + 80 | 1790 | | 93 28 20 | -0° | | | | | | 10 | | |
| 11 | - | | | | | | | | | | | 11 | | |
| 12 | | | | | | | | | | | | 12 | | |
| 13 | | | | | | | | | | | | 13 | | |
| 14 | | | | | | | | | | | | 14 | | |
| 15 | | | | | | | | | | | | 15 | | |
| 16 | | | | | | | | | | | | 16 | | |
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TI-234718

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 4 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT _____ DATE 19 DY 4 MO 79 YR
 SURVEYOR HELANDER / BENEDICT 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 | LINE |
| | | | SLOPE | <input type="checkbox"/> FEET <input type="checkbox"/> METERS HORIZ | | | | | INST | ROD | | | | |
| 1 |  | 2218 | | | | | | | | | V | 00 00 20 | 1 | |
| 2 | - | | | | | | | | | | L | 180 07 08 | 2 | 180-06-48 |
| 3 |  | 2201 + 80 | | | 95 24 00 | 6 | | | | | | | 3 | |
| 4 |  | 2196 + 52 | | | | | | | | | | | 4 | |
| 5 | - | | | | | | | | | | | | 5 | |
| 6 | | | | | | | | | | | | | 6 | |
| 7 | | | | | | | | | | | | | 7 | |
| 8 |  | 2201 + 80 | | | | | | | | | V | 00 00 11 | 8 | |
| 9 | - | | | | | | | | | | L | 104 23 20 | 9 | 104-23-09 |
| 10 |  | 2196 + 52 | | | | | | | | | | | 10 | |
| 11 |  | 424 | | | | | | | | | | | 11 | |
| 12 | - | | | | | | | | | | | | 12 | INTERSECTION |
| 13 | | | | | | | | | | | | | 13 | L-613 VP 2196 + 52 |
| 14 | | | | | | | | | | | | | 14 | L-478X5 VP 434 + 90 |
| 15 | | | | | | | | | | | | | 15 | MARKER PINS |
| 16 | | | | | | | | | | | | | 16 | |
| 17 | | | | | | | | | | | | | 17 | |

TI-29471B

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

SYMBOLS

 = BACKSIGHT

 = INSTRUMENT SET-UP

SS = SIDESHOT

 = FORESIGHT

HORIZONTAL AND VERTICAL SURVEY NOTES

54

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. _____ PAGE 5 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT _____ DATE 19 DY 4 MO 79 YR
 SURVEYOR BENEDICT / HELANDER INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

| LINE | | STATION | VERTICAL | | | | | | ELEVATION | | LR OR DR | RIGHT TURNED HORIZONTAL ANGLE | LINE | REMARKS |
|------|----------|---------|---------------------|----------|---------------------|---------------|-----------|----------------------|-----------|-----|----------------|-------------------------------|------|---------|
| | | | DISTANCE | | VERTICAL ANGLE OBS. | ROD RDG OR HI | ELEV DIFF | FINAL ELEVATION DIFF | INST | ROD | | | | |
| | | | SLOPE | HORIS | | | | | | | | | | |
| 1 | | | | | | | | | | | | 1 | | |
| 2 | A | 2159 | | | 29-30-58 | | | | | | V ₁ | 31 | 2 | |
| 3 | | | | | 270-29-53 | 6.0 | | | | | D | 172-17-28 | 3 | |
| 4 | π | 2061 | | | | | 5.8 | | | | | 172-16-57 | 4 | |
| 5 | ⊙ | 1864 | 21,670 ² | 21645.70 | 90-47-22 | 6.0 | | | 21645.70 | | V ₂ | 180-00-22 | 5 | |
| 6 | | | | | 267-13-37 | | | | 570 | | R | 352-17-20 | 6 | |
| 7 | | | | | | | | | 45 | | | 172-16-58 | 7 | |
| 8 | | | | | | | | | 16 | | | | 8 | |
| 9 | | | | | | | | | 21 | | | | 9 | |
| 10 | | | | | | | | | | | | | 10 | |
| 11 | | | | | | | | | | | | | 11 | |
| 12 | | | | | | | | | | | | | 12 | |
| 13 | | | | | | | | | | | | | 13 | |
| 14 | | | | | | | | | | | | | 14 | |
| 15 | | | | | | | | | | | | | 15 | |
| 16 | | | | | | | | | | | | | 16 | |
| 17 | | | | | | | | | | | | | 17 | |

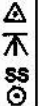











WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

55

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. _____ PAGE 6 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT _____ DATE 19 DY 4 MO 79 YR
 SURVEYOR HELANDER/BENEDICT INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

| LINE |  | STATION | VERTICAL | | | | | | ELEVATION | | LR OR DI | HORIZONTAL RIGHT TURNED HORIZONTAL ANGLE | LINE | REMARKS |
|------|---|----------------|--|--|------------------------|------------------------|--------------|----------------------------|-----------|-----|----------|---|------|-------------------|
| | | | DISTANCE | | VERTICAL ANGLE OBS. | ROD RDG OR HI | ELEV DIFF | FINAL ELEVATION DIFF | INST | ROD | | | | |
| | | | SLOPE  | <input type="checkbox"/> FEET <input type="checkbox"/> METERS HORIZ  | | | | | | | | | | |
| 1 | | | | | | | | | | | | 1 | | |
| 2 |  | 2159 | | | | | | | | | V. | 28 | 2 | |
| 3 |  | 2061 | | | | | | | | | D | 172-05-35 | 3 | |
| 4 |  | 2056 | 550° | | 92-51-42 | 6.0 | | | | | | 172-05-07 | 4 | |
| 5 | | | | | | | | | | | | | 5 | |
| 6 | | | | | | | | | | | | | 6 | |
| 7 |  | 2061 | | | | | | | | | V. | 35 | 7 | |
| 8 |  | 2056 | | | | | | | | | D | 180-04-11 | 8 | |
| 9 |  | INT - 2040+100 | 1660° | | 98-33-05 | 6.0 | | | | | | 180-03-36 | 9 | |
| 10 | | | | | | | | | | | | | 10 | INTERSECTION |
| 11 | | | | | | | | | | | | | 11 | L-613 UP 2040+100 |
| 12 |  | 2056 | | | | | | | | | V. | 22 | 12 | L-46XS UP 1739+30 |
| 13 |  | INT | | | | | | | | | D | 103-54-30 | 13 | MARKER PIPE |
| 14 |  | DOWN L-46XS | | | | | | | | | | 103-54-08 | 14 | |
| 15 | | TO NORTH | | | | | | | | | | | 15 | |
| 16 | | | | | | | | | | | | | 16 | |
| 17 | | | | | | | | | | | | | 17 | |

TI-23471B

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 7 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT +45° PTLY CLOUDY DATE 20 DY 4 MO 79 YR
 SURVEYOR HELANDER / BENEDICT INSTRUMENT DESC/SERIAL NO. 30 MPH WIND SSW CREW NO. 1184

| LINE | | STATION | VERTICAL | | | | | | ELEVATION | | UR 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 | | | | | | | | | | | | 1 | | |
| 2 | | 2061 | | | 89 16 29 | 6 | | | 84 | | V | 00 00 37 | 2 | |
| 3 | | | | | 270 44 41 | | | | 45 | 1787 | D | 180 15 25 | 3 | |
| 4 | | 1864 | | | | 5 4 | | | 54 | | | 180-14-48 | 4 | |
| 5 | | | | | | | | | 4.05 | BAS 79368 | D | 207 59 26 | 5 | |
| 6 | | 1787 | 8470° | 8454° | 89 06 36 | 6 | | | | | | 207-58-51 | 6 | |
| 7 | | | | | 270 54 42 | | | | 06 | | | | 7 | |
| 8 | | BAS 79368 | 6783 1/2° | | 89 21 13 | 6 | | | 67 | | V | 180 00 33 | 8 | |
| 9 | | | | | 270 40 00 | | | | 78 | 1787 | R | 00 15 23 | 9 | |
| 10 | | | | | | | | | 83 | | | 180-14-50 | 10 | 180-14-49 |
| 11 | | | | | | | | | 315 | BAS 79368 | R | 27 59 22 | 11 | |
| 12 | | | | | | | | | | | | 207-58-49 | 12 | 207-58-50 |
| 13 | | | | | | | | | | | | | 13 | |
| 14 | | | | | | | | | | | | | 14 | |
| 15 | | | | | | | | | | | | | 15 | |
| 16 | | | | | | | | | | | | | 16 | |
| 17 | | | | | | | | | | | | | 17 | |

TI-29471B

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 8 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT _____ DATE 20 BY 4 MO 79 YR
 SURVEYOR HELANDER / BENEDICT 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 D/I | RIGHT TURNED HORIZONTAL ANGLE | | LINE |
| | | | SLOPE | HORIZ | | | | | INST | ROD | | | | |
| 1 | | | | | | | | | | | | 1 | | |
| 2 | Δ | 1864 | | | 90 56 22 | 4 | | | | | V ₁ | 00 00 20 | 2 | |
| 3 | | | | | 269 04 49 | | | | | | D | 189 05 45 | 3 | |
| 4 | π | 1787 | | | | | | | | | | 189-05-25 | 4 | |
| 5 | \odot | 1709 | 8580° [⊙] | 8543° [⊙] | 90 32 54 | 6 | | | 8543.01 | | V ₂ | 180 00 16 | 5 | |
| 6 | | | | | 269 28 16 | | | | | | R | 09 05 39 | 6 | |
| 7 | | | | | | | | | | | | 189-05-23 | 7 | 189-05-24 |
| 8 | | | | | | | | | | | | | 8 | |
| 9 | | | | | | | | | | | | | 9 | |
| 10 | Δ | 1787 | | | 89-28-15 | 7.0 | | | | | V ₁ | 30 | 10 | |
| 11 | | | | | 270-33-00 | | | | 17 | | D | 194-18-04 | 11 | |
| 12 | π | 1709 | | | | 5.5 | | | 71 | | | 194-17-34 | 12 | |
| 13 | \odot | 1553 | 17.160° [⊙] | 17.133° [⊙] | 91-27-07 | 7.0 | | | | 13 | V ₂ | 180-00-18 | 13 | |
| 14 | | | | | 268-34-00 | | | | | 33 | R | 14-17-50 | 14 | |
| 15 | | | | | | | | | | 3.90 | | 194-17-32 | 15 | 194-17-33 |
| 16 | | | | | | | | | | | | | 16 | |
| 17 | | | | | | | | | | | | | 17 | |

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

58

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. _____ PAGE 9 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT +40°, 40 mph WIND, S DATE 21 DY 4 MO 19 YR
 SURVEYOR HELANDER / BENEDICT INSTRUMENT DESC/SERIAL NO. OVERCAST, MELTING CREW NO. 1124

| LINE | | 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 | | | | | | | | | | |
| | | | <input type="checkbox"/> FEET <input type="checkbox"/> METERS | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | 1 | |
| 2 | | 1709 | | | 88-35-21 | 6° | | | 16 | | V ₁ | 25 | 2 | |
| 3 | | | | | 271-26-00 | | | | 62 | | D | 183-05-00 | 3 | |
| 4 | | 1553 | | | | | | | 24 | | | 183-04-35 | 4 | |
| 5 | | 1405 | 16.280 [⊙] | 16.244 ²⁵ ⊙ | 88-36-27 | 5 ^T | | | 44 | | V ₂ | 180-00-20 | 5 | |
| 6 | | | | | 271-24-50 | 6° | | | 4.25 | | R | 03-05-03 | 6 | |
| 7 | | | | | | | | | | | | 183-04-43 | 7 | 183-04-39 |
| 8 | | | | | | | | | | | | | 8 | |
| 9 | | | | | | | | | | | | | 9 | |
| 10 | | | | | | | | | | | | | 10 | |
| 11 | | | | | | | | | | | | | 11 | |
| 12 | | | | | | | | | | | | | 12 | |
| 13 | | | | | | | | | | | | | 13 | |
| 14 | | | | | | | | | | | | | 14 | |
| 15 | | | | | | | | | | | | | 15 | |
| 16 | | | | | | | | | | | | | 16 | |
| 17 | | | | | | | | | | | | | 17 | |







WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

59

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. _____ PAGE 10 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT _____ DATE 21 DY 4 MO 79 YR
 SURVEYOR BENEDICT/HELANDER INSTRUMENT DESC/SERIAL NO. _____ CREW NO. 1184

| LINE |  | STATION | VERTICAL | | | | | | | HORIZONTAL | | LINE | 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 |  | 1553 | | | 91 25 42 | 6 | | | | | V | 00 00 16 | 1 | |
| 2 | - | | | | 268 34 15 | - | | | | | V | 180 00 12 | 2 | |
| 3 |  | 1405 | | | | 58 | | | | | | 179 59 56 | 3 | |
| 4 | | Bm 79365 | 6390.60 | | 87 36 58 | 6 | | | 6390.60 | | L | 149 00 00 | 4 | |
| 5 | | | | | 272 29 01 | - | | | 9060 | | R | 328 59 57 | 5 | 148-59-45 |
| 6 | | | | | | | | | 39 | | | 179 59 57 | 6 | 179 59 57 |
| 7 |  | 1340 | 7133.83 | | 87 45 47 | 6 | | | 6306 | | L | 165 22 22 | 7 | |
| 8 | | | | | 272 14 12 | - | | | | BAS | R | 345 22 18 | 8 | 165-22-05 → 1340 |
| 9 | | | | | | | | | 7133.83 | | | | 9 | |
| 10 | | | | | | | | | 383 | | | | 10 | |
| 11 | | | | | | | | | 33 | | | | 11 | |
| 12 | | | | | | | | | 13 | | | | 12 | |
| 13 | | | | | | | | | 71 | | | | 13 | |
| 14 | | | | | | | | | 07 | | | | 14 | |
| 15 | | | | | | | | | | | | | 15 | |
| 16 | | | | | | | | | | | | | 16 | |
| 17 | | | | | | | | | | | | | 17 | |

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

60

GS1 AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. _____ PAGE 11 OF _____

LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT +27°, 20 MPH WIND, E, DATE 23 DAY 4 MO 79 YR

SURVEYOR HELANDER/BENEDICT INSTRUMENT DESC/SERIAL NO. OVERCAST 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 | LINE |
| | | | SLOPE | HORIZ | | | | | INST | ROD | | | | |
| 1 | | | | | | | | | | | | 1 | | |
| 2 | | 1405 | | 92 14 54 | 6 | | | | | ✓ | 00 00 21 | 2 | | |
| 3 | - | | | 267 44 46 | | | | | | L | 179 55 53 | 3 | | |
| 4 | | 1340 | | | 5 ^b | | | | | | 179-55-32 | 4 | | |
| 5 | | 1390 | 1100° | 89 32 50 | 6 | | | | | ✓ | 180 00 17 | 5 | | |
| 6 | - | | | 270 27 05 | | | | | | R | 359 55 51 | 6 | | |
| 7 | | | | | | | | | | | 179-55-34 | 7 | 179-55-33 | |
| 8 | | | | | | | | | | | | 8 | | |
| 9 | | | | | | | | | | | | 9 | INTERSECTION | |
| 10 | | 1340 | | 90-24-57 | 6 ² | | | | | V. | 36 | 10 | L-613 VP 1313 | |
| 11 | - | | | 269-34-47 | | | | | | D | 165-39-35 | 11 | L-640 VP 1242+36 ² | |
| 12 | | 1330 | | | 5 ^b | | | | | | 165-39-05 | 12 | IRON PIPE | |
| 13 | | 1313 | 1870° | 91-22-01 | 6 ² | | | | | ✓ | 180-00-08 | 13 | | |
| 14 | | | | 268-37-44 | | | | | | R | 345-39-30 | 14 | | |
| 15 | | | | | | | | | | | 165-39-22 | 15 | 165-39-14 | |
| 16 | | | | | | | | | | | 165-39-14 | 16 | | |
| 17 | | | | | | | | | | | | 17 | | |

TI-23471B

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

61

GSI AREA ALASKA-HOWARD PASS STATE/COUNTY BOOK NO. _____ PAGE 13 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT _____ DATE 23 DY 4 MO 79 YR
 SURVEYOR HELANDER / BENEDICT 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 | | | | |
| | | | | SLOPE | | | | | | | | | | |
| 1 | | | | | | | | | | | | 1 | | |
| 2 | | 1313 | | | 88-53-55 | 3 ² | | | | | V | 27 | 2 | |
| 3 | | | | | 271-05-50 | | | | | | D | 180-21-45 | 3 | |
| 4 | | 1302+04 | 1544' [⊙] | | | 5 ² | | | | | | 180-21-18 | 4 | |
| 5 | | | | | | | | | | | V ₂ | 180-00-38 | 5 | |
| 6 | | 1288 e.o.l. | | | 93-56-05 | 4 ² | | | | | R | 00-21-35 | 6 | |
| 7 | | | | | 266-03-48 | | | | | | | 180-20-57 | 7 | 180-21-07 |
| 8 | | | | | | | | | | | | | 8 | |
| 9 | | | | | | | | | | | | | 9 | |
| 10 | | | | | | | | | | | | | 10 | |
| 11 | | | | | | | | | | | | | 11 | |
| 12 | | | | | | | | | | | | | 12 | |
| 13 | | | | | | | | | | | | | 13 | |
| 14 | | | | | | | | | | | | | 14 | |
| 15 | | | | | | | | | | | | | 15 | |
| 16 | | | | | | | | | | | | | 16 | |
| 17 | | | | | | | | | | | | | 17 | |

TI-23471B

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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

HORIZONTAL AND VERTICAL SURVEY NOTES

62

GSI AREA HOWARD PASS STATE/COUNTY ALASKA BOOK NO. _____ PAGE 12 OF _____
 LINE/LOOP NO. 613 TYPE SURVEY _____ CLIENT _____ DATE 23 DY 4 MO 79 YR
 SURVEYOR HELANDER / BENEDICT 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 | ELEVATION | | | | | | |
| | | | SLOPE | HORIZ | | | | INST | ROD | | | | | | |
| 1 | | | | | | | | | | | | | 1 | | |
| 2 | | 1330 | | | 88-36-54 | 6° | | | | | | V | 12 | 2 | |
| 3 | | | | | 271-23-09 | | | | | 1302+04 | | D | 174-20-52 | 3 | |
| 4 | | 1313 | | | HI | 5° | | | | | | | 174-20-40 | 4 | |
| 5 | | | | | | | | | | 79442 | | R | 233-36-38 | 5 | |
| 6 | SS | 1302+04 | 1206° | | 91-09-30 | 6° | | 04 | | | | D | 233-36-26 | 6 | |
| 7 | | | | | 268-49-54 | | | | 44 | L-640 | | D | 281-14-05 | 7 | |
| 8 | | | | | | | | | 49 | | | | 281-13-53 | 8 | |
| 9 | | BAS 79442 | 4495° | | 89-27-34 | 6° | | | 95 | | | | | 9 | |
| 10 | | | | | 270-32-17 | | | | | 5.10 | | V | 180-00-18 | 10 | |
| 11 | | | | | | | | | | 1302+04 | | R | 354-20-48 | 11 | |
| 12 | SS | VP 1322 L-640 | | | | | | | | | | | 174-20-30 | 12 | |
| 13 | | | | | | | | | | 79442 | | R | 53-36-32 | 13 | |
| 14 | | | | | | | | | | | | | 233-36-14 | 14 | |
| 15 | | | | | | | | | | L-640 | | R | 101-14-05 | 15 | |
| 16 | | | | | | | | | | | | | 281-13-51 | 16 | |
| 17 | | | | | | | | | | | | | | 17 | |

WORKED BY _____ CHECKED BY 1ST _____ 2ND _____

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