

The information depicted hereon is for a graphical representation only of best available sources. The Kenai Peninsula Borough for any errors on this map assumes no responsibility

0 125 250 500 Feet



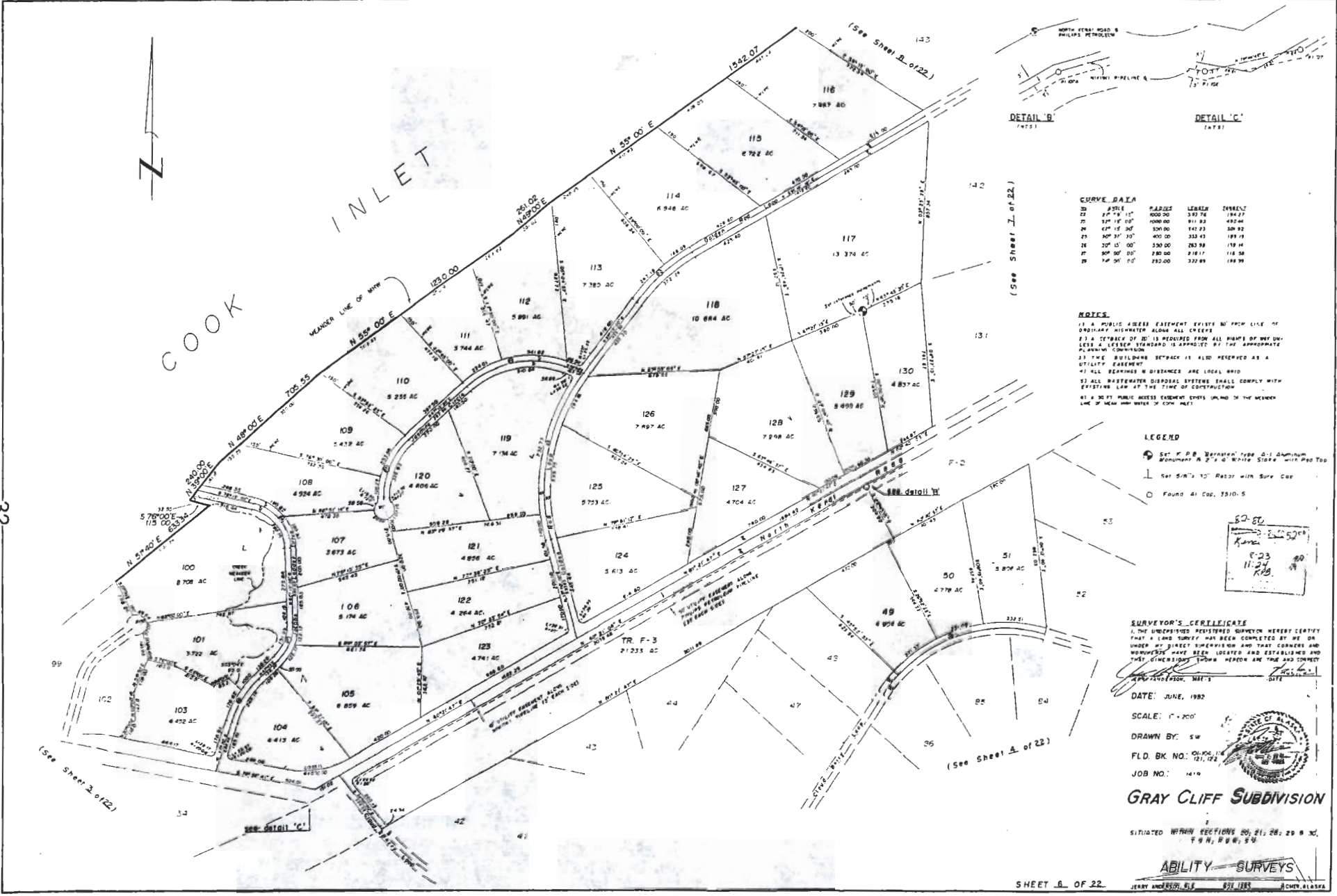
Kenai Peninsula Borough  
GIS Division

JACOBS LADDER DR.



11/04/05

32



DETAIL 'B'  
(PART 1)

DETAIL 'C'  
(PART 1)

**CURVE DATA**

NO	ANGLE	RADIUS	LENGTH	CHORD
20	27° 18' 15"	6000.00	347.74	184.17
21	27° 18' 00"	10000.00	611.83	482.44
24	42° 12' 00"	3000.00	142.23	304.92
25	60° 00' 00"	400.00	324.43	189.19
26	20° 15' 00"	500.00	263.98	119.14
27	30° 00' 00"	280.00	218.17	118.58
28	14° 00' 00"	250.00	322.89	158.99

**NOTES**

1. A PUBLIC ACCESS EASEMENT EXISTS 50' FROM EDGE OF ORDINARY HIGHWATER ALONG ALL CURVES.
2. A CERTIFICATE OF TITLE IS REQUIRED FROM ALL PARTIES OF ANY INTEREST IN THE PROPERTY PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
3. THE BUILDING SETBACK IS ALSO REFERRED AS A UTILITY EASEMENT.
4. ALL MEASUREMENTS IN DISTANCES ARE LOCAL DIALS.
5. ALL SEWERAGE DISPOSAL SYSTEMS SHALL COMPLY WITH EXISTING LAW AT THE TIME OF CONSTRUCTION.
6. A 50' FT. PUBLIC ACCESS EASEMENT EXISTS UNLESS OTHERWISE NOTED BY THE MEANER LINE OF HIGH WATER OR COOK INLET.

**LEGEND**

- Set 1" P.B. "Berkshire" type 2-1/2" Aluminum Monument A 2" x 4" White Stone with Red Top
- ┆ Set 5/8" x 10" Rebar with Sunk Cap
- Found At Cap, 3510-5

50-50  
Kramer  
8-23  
11-24  
R.B.

**SURVEYOR'S CERTIFICATE**

I, THE UNDERSIGNED REGISTERED SURVEYOR HEREBY CERTIFY THAT A LAND SURVEY HAS BEEN COMPLETED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT CORNERS AND MONUMENTS HAVE BEEN LOCATED AND ESTABLISHED AND THAT THE BOUNDARIES THEREIN ARE TRUE AND CORRECT.

*[Signature]*  
DATE: JUNE, 1982

SCALE: 1" = 200'  
DRAWN BY: SW  
F.L.D. BK. NO.: 20, 21, 22, 23, 24  
JOB NO.: 1419



**GRAY CLIFF SUBDIVISION**

SITUATED WITHIN SECTIONS 20, 21, 22, 23 & 24  
T 9 N, R 9 W, S 4

**ABILITY SURVEYS**

Exhibit B Jacobs Ladder Drive

TRAIL ASSESSMENT –JACOB’S LADDER TRAIL  
NPS-Rivers, Trails, and Conservation Assistance Program

On Friday, July 1, 2004, Kevin G. Meyer with the National Park Service’s Rivers, Trails and Conservation Assistance Program made a on-site inspection and assessment of the Jacob’s Ladder Trail located approximately 4 miles north of the Capt. Cook State Recreation Area. The work has completed at the request of Ms. Crista Cady, Planner for the Kenai Peninsula Borough. The purpose of the assessment was to make recommendations for improving the trail alignment to a sustainable condition. Those recommendations are as follows:

**Station 1 -junction of the trail with the pipeline corridor (MP 00), to Station 2 -a point approximately 371 feet along the trail to the west.**

Note: station locations are approximate –based upon GPS readings taken in the field with a recreational grade GPS receiver. In addition, Station locations are not marked by flagging or stakes.

This section of the trail is presently usable and appears to be in a sustainable condition as demonstrated by the good trail surface condition and absence of trail widening or braided trail conditions. The trail is well drained and the tread surface is mixed fine mineral and gravel. Trail grade is less than 10%.



Photo 1. Looking west along trail towards Station #2

Recommended action: Rough grade existing surface to width, top cap with 6 inches of crushed gravel, shape trail surface to crown and compact.

**Station 2 (MP 371), to Station 3 –a point approximately 459 feet along trail alignment. Total segment length: approx. 275 feet.**

This segment of the trail is showing indications of degradation. The surface has developed shallow depressions, is muddy and holds water on the surface along the alignment. Local soils are developed in deep layers of silt that are poorly to moderately well drained and do not support heavy trail use when wet. Trail grade is 1-3%.



Photo 2. Trail segment between Stations 1 and 2.

Recommended action: Rough grade existing surface to width, install geotextile separation layer, top cap with 8-10 inches of crushed gravel, shape trail surface to crown and compact.

**Station 3 (MP 459), to Station 4—a point approximately 1,295 feet along alignment.  
Total segment length: approximately 649 feet.**

This segment of the trail is severely degraded. It has developed deep bogholes, extremely muddy conditions and is severely braided. Braided areas are easily 40 feet wide in places along the alignment. Soil conditions are poorly drained to saturated deep layers of silt. Surface slope is 0-1%.



**Photo 3. Severely degraded trail conditions between Station 3 and 4.**

**Recommended action:** Rough grade to width and fill in bogholes. Place geotextile separation fabric along alignment. Place 3-4 feet of rubble, cobble or course pit run material over geotextile. Rough grade surface and place another layer of separation fabric. Top cap with 8-10 inches of crushed gravel, shape trail surface to a crown and compact. Allow surrounding areas to naturally re-vegetate.

**Station 4 (MP 1,295), to Station 5 –a point approximately 1,358 feet along alignment, Segment length approximately 63’.**

This is a short segment of the trail between the end of the large boghole section to the beginning of the steep sloped section that runs to the beach. The trail here is in good condition and appears to be sustainable. Soils are silty with a gravel base. 0-1% slope.

**Recommended action:** Rough grade existing surface to width, top cap with 6 inches of crushed gravel, shape trail surface to crown and compact.

**Station 5 (MP 1,358), to Station 6 –a point approximately 1,533 feet along the alignment. Segment length approximately 175’.**

This segment begins the descent to the beach across some over steepened terrain. the trail grade is approximately 25% which exceeds the capacity of the site to support trail use without degradation –as indicated by erosion of the tread surface.

Soil conditions along the trail throughout the steep trail sections consist of alluvial gravel and sands.



Photo 4. Looking back on over steepened slope between Station 5 & 6.



Photo 5. Soil character along trail down steep slope sections.

Recommended action: Reduce trail grade to less than 20% by borrowing material from reshaped area between Stations 6 and 8. Utilize local material for tread surface. Grade to width, shape with 5% outslope, and compact.

**Station 6,(MP1,533)**

Station 6 is at the base of the sloped section described above. This is a fill section from a previous trail improvement effort. There is a 36" functional culvert at the base of the fill section. This area needs to be built up to help reduce the slope of the segment back to Station 5.

**Station 6 (MP 1,533), to Station 7 –a point approximately 1,608 along the trail alignment. Total segment length: 75 feet.**

This is another over steepened section of trail. It has a grade of approximately 30% but it does not display evidence of erosion and material displacement from traffic. This is probably due to the relatively high quality tread material and short slope length.



Photo 6. Steep grade between Stations 6 and 7.

Recommended action: Reduce trail grade to less than 20% by excavating material. Utilize local material for tread surface. Grade to width, shape with 5% outslope, and compact.

**Station 7 (MP 1,608), to Station 8 –a point approximately 1675 feet along the trail alignment. Total segment length: 67'.**

This segment is another over steepened 30% grade. Water is running on the lower section of the segment.



Photo 7. Looking down on upper section of the steep grade rising from the beach between Station 7 and 8. 30% grade. Note water on surface.

Recommended action: Reduce trail grade to less than 20% by cutting material from this segment and extending to west. Utilize local material for tread surface. Grade to width, shape with 5% outslope, and compact.

**Station 8 (MP 1,675), to Station 9 – a point approximately 1,785 feet along trail alignment. Approximate segment length: 110 feet.**

Lower section of the steep grade. Grade runs between 22 and 25%. Still oversteeped with evidence of erosion.





Photo 8. Lower section of steep grade. 22-25% grade.

Recommended action: Reduce trail grade to less than 20% by cutting and grading material and lengthening grade to west. Utilize local material for tread surface. Grade to width, shape with 5% outslope, and compact.

**Station 9 (MP 1,785), to Station 10 –a point approximately 1,951 feet along the trail alignment and where the trail joins the beach. Approximate segment length: 166 feet.**

Last run out to the beach. Good substrate. Intercepted water from upslope trail causing some erosion problems. Trail grade less than 10%.

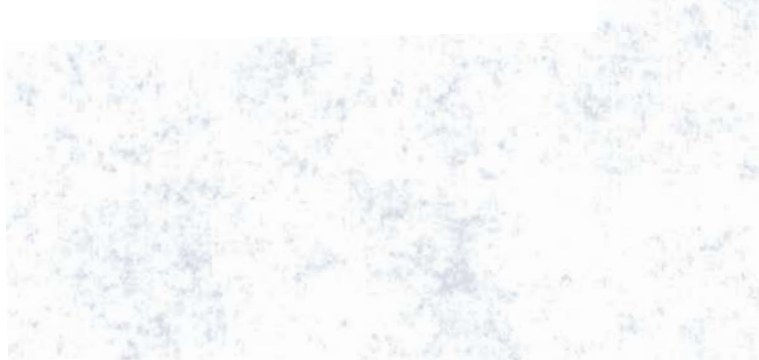




Photo 9. Last run out to the beach.

Recommended action: Buildup grade from materials borrowed from previous segment. Provide 10-15% grade approach to steeper upper trail section. Utilize local material for tread surface. Grade to width, shape with 5% outslope, and compact.



Photo 10. Scene on beach at end of trail.