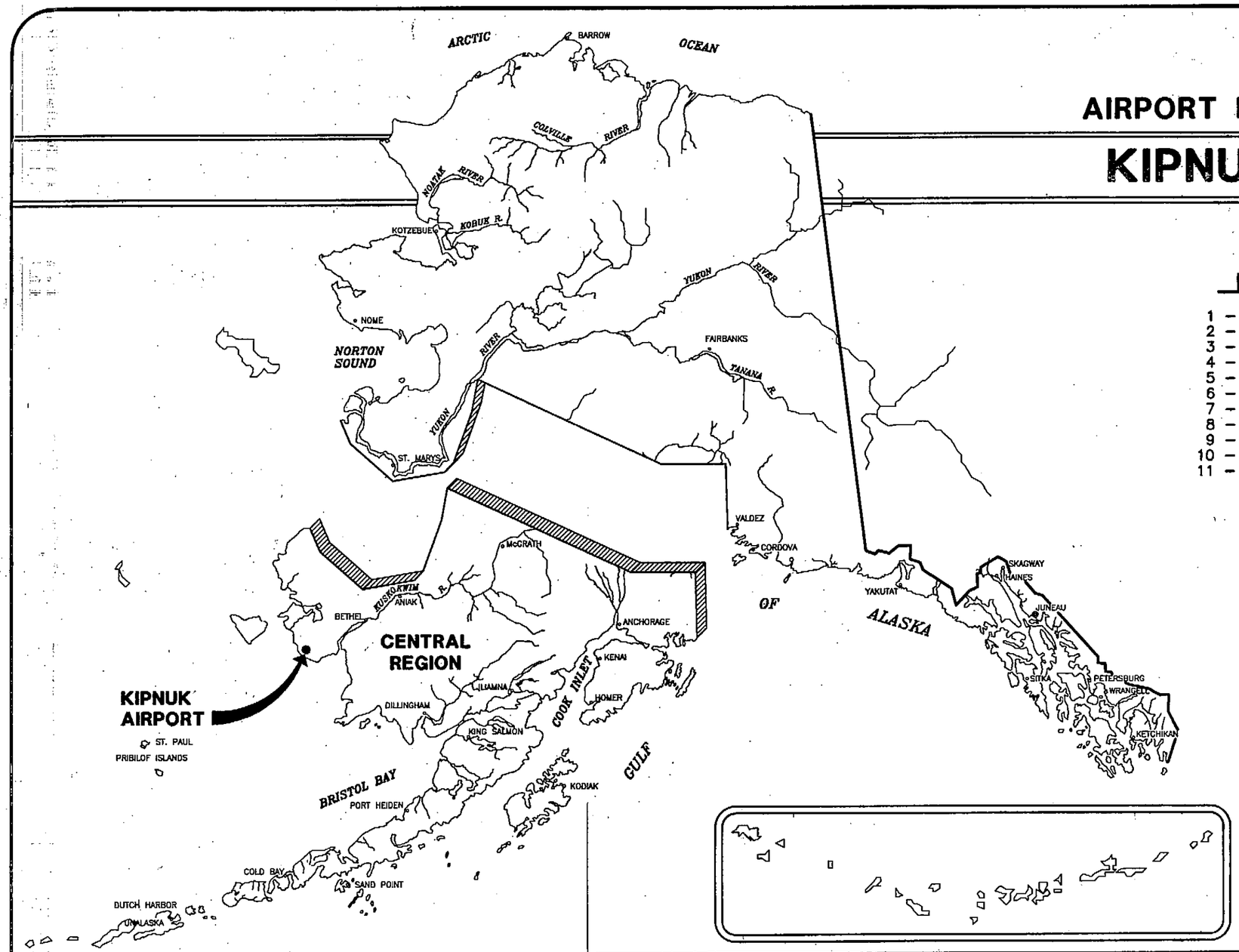
AIRPORT LAYOUT PLAN FOR

KIPNUK AIRPORT

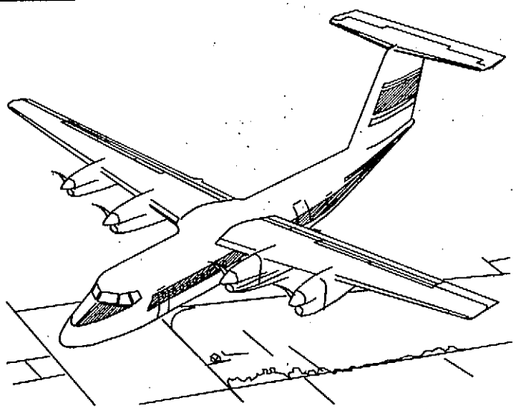
2000



DRAWING INDEX

1 – COVER SHEET AND INDEX
2 – VICINITY MAP AND DATA TABLES
3 – OVERVIEW PLAN
4 – PLAN AND PROFILE 17/35
5 – PLAN AND PROFILE 80/26
6 – INNER PORTION OF THE APPROACH SURFACE 17/35
7 – INNER PORTION OF THE APPROACH SURFACE 80/26
8 – F.A.R. PART 77 SURFACES
9 – PROPERTY PLAN
10 – PROPERTY PLAN
11 – NARRATIVE REPORT

METRIC



THIS A.L.P. SET SUPERCEDES A.L.P. DATED 3/11/86

SPONSORED BY
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES
CENTRAL REGION

CONCUR [signature] DATE 6/27/00
FOR DAVID R. EBERLE — CONSTRUCTION & OPERATIONS DIRECTOR

APPROVED [signature] DATE 6/27/00
STEVE HORN, P.E. — REGIONAL PRECONSTRUCTION ENGINEER

AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL SUBJECT TO ALP APPROVAL LETTER DATED 7/13/00
By: [signature] DATE: 7/13/00
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600

FAA AIRSPACE REVIEW NUMBER
99-AAL-046-NRA

KIPNUK AIRPORT
AIRPORT LAYOUT PLAN

SHEET 1 OF 11

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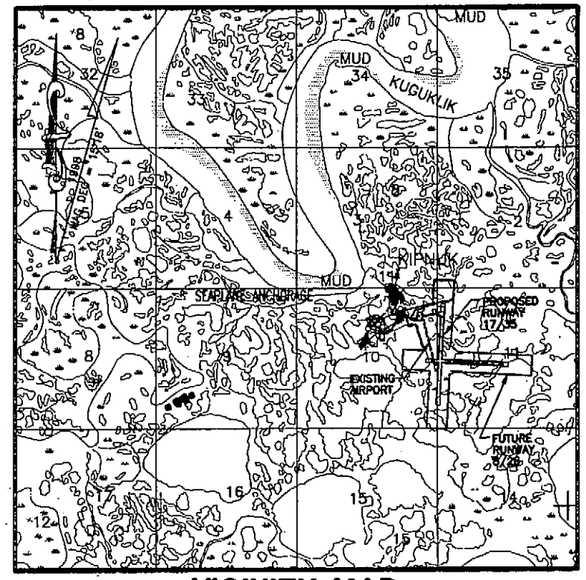
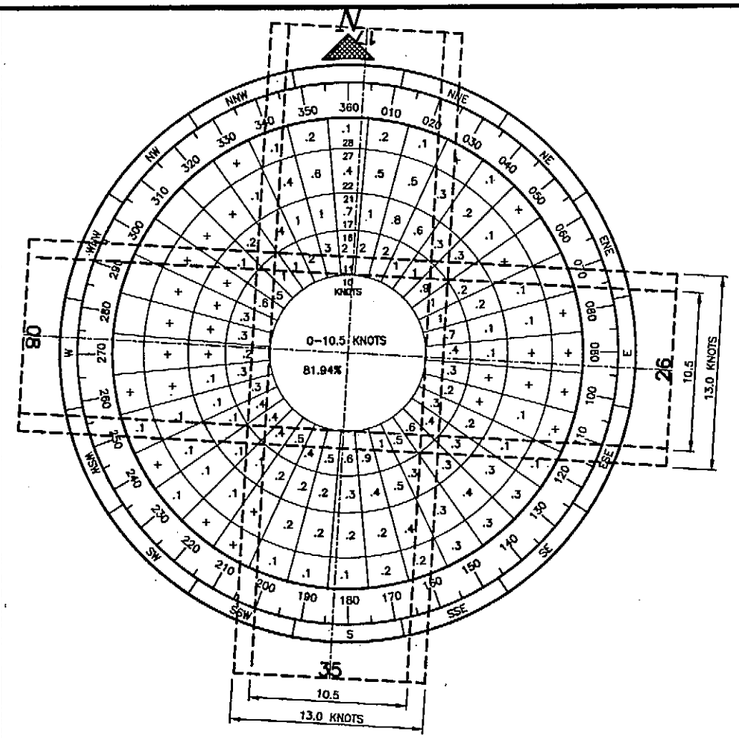


VICINITY MAP

25.4 mm = 1 MILE
T 3 S, R 86 W, SEC 10
T 3 S, R 86 W, SEC 11
SEWARD MERIDIAN
U.S.G.S. KUSHKOKWIM BAY (D-6), ALASKA
NOTE: ELEVATIONS SHOWN ON THIS MAP ARE IN FEET.

CONVERSION FACTORS FROM SI UNITS

TO CONVERT FROM	TO	MULTIPLY BY
STATION (1000 METERS)	FEET	3280.84
KILOMETER (km)	MILE	0.6214
METER (m)	MILE	0.00062137
METER (m)	FOOT	3.28084
MILLIMETER (mm)	FOOT	0.00328084
MILLIMETER (mm)	INCH	0.3937008
SQUARE METER (m^2)	SQUARE FOOT	10.76391042
SQUARE METER (m^2)	SQUARE YARD	1.19599
HECTARE	ACRE	2.4711
CUBIC METER (m^3)	CUBIC FOOT	35.3146667
CUBIC METER (m^3)	CUBIC YARD	1.3079506
CUBIC METER (m^3)	GALLON (US LIQUID)	264.17204
CUBIC METER (m^3)	M. GAL.	0.26417204
KILOGRAM (kg)	POUND-MASS (LBM)	2.2046225
MEGAGRAM (Mg)	TON (SHORT)	1.10231
NEWTON (n)	POUND-FORCE (LBF)	0.2248089
LUX (lx)	FOOTCANDLE	0.092903
DEGREE CELSIUS (°C)	DEGREE FAHRENHEIT (°F)	T°F=(1.8 x T°C)+32



WIND DATA

WIND COVERAGE:

SPEED	R/W 17/35	R/W 8/26	TOTAL
10.5 KNOTS	85.41%	63.46%	93.58%
13 KNOTS	91.19%	73.53%	96.60%
16 KNOTS	N/A		
20 KNOTS	N/A		

SOURCE: HDR ALASKA INC. IN CONJUNCTION WITH DRYDEN INSTRUMENTATION DATA IS FOR KIPNUK, ALASKA

PERIOD: OCT 1996 TO NOV 1998

NON-STANDARD CONDITIONS

ITEM	EXISTING	STANDARD	FUTURE
WIND COVERAGE (10.5 KNOTS) RUNWAY 17/35	80.74%	95.0%	85.41%
WIND COVERAGE (13 KNOTS) RUNWAY 17/35	N/A	95.0%	91.19%
WIND COVERAGE (10.5 KNOTS) RUNWAY 17/35 & 08/26 TOTAL	N/A	95.0%	93.58%

BASIC DATA TABLE

RUNWAY DATA

ITEM		RUNWAY 15/33 EXISTING	RUNWAY 15/33 FUTURE	RUNWAY 17/35 EXISTING	RUNWAY 17/35 PROPOSED	RUNWAY 08/26 EXISTING	RUNWAY 08/26 FUTURE
EFFECTIVE GRADE		0.00%		–	0.00%	–	0.00%
% WIND COVERAGE	10.5 KNOTS	80.74%		–	85.41%	–	63.46
	13 KNOTS	N/A		–	91.19%	–	73.53
	16 KNOTS	N/A		–	N/A	–	N/A
	20 KNOTS	N/A		–	N/A	–	N/A
INSTRUMENT RUNWAY		NONE		–	NONE	–	NONE
RUNWAY SURFACE		GRAVEL		–	GRAVEL	–	GRAVEL
PAVEMENT STRENGTH	kg	N/A	B	–	N/A	–	N/A
	[lb.]	N/A	E	–	N/A	–	N/A
APPROACH SURFACES		20:1		–	34:1	–	34:1
VISIBILITY MINIMUM		1600m	B	–	1600m	–	1600m
		[1 MILE]		–	[1 MILE]	–	[1 MILE]
RUNWAY LIGHTING		M.I.	A	–	M.I.	–	M.I.
RUNWAY MARKING		NONE		–	NONE	–	NONE
RUNWAY NAVIGATION AIDS		NONE	O	–	PAPI	–	NONE
AIRCRAFT APPROACH CATAGORY		A	N	–	B	–	A
AIRCRAFT DESIGN GROUP		I	D	–	II	–	II
RUNWAY SAFETY AREA DIMENSION		25m x 685m		–	45m x 1155m	–	45m x 940m
		[82'x2,247']	A	–	[150'x3790']	–	[150'x3083']
RUNWAY DIMENSION		11m x 646m		–	23m x 975m	–	23m x 760m
		[36'x2119']	B	–	[75'x3200']	–	[75'x2493']
RUNWAY OBJECT FREE AREA DIMENSION		N/A		–	150m x 1155m	–	150m x 940m
		N/A	A	–	[500'x3790']	–	[500'x3083']
RUNWAY OBSTACLE FREE ZONE DIMENSION		N/A		–	120m x 1095m	–	120m x 880m
		N/A		–	[400'x3593']	–	[400'x2887']
GEODETIC POSITIONS (N.A.D. 83)							
THRESHOLD 17	LAT.	–		–	59°56'09.71" N		
	LONG.	–		–	164°01'39.63" W		
THRESHOLD 35	LAT.	–		–	59°55'35.82" N		
	LONG.	–		–	164°01'43.17" W		
THRESHOLD 08	LAT.					–	59°55'51.23" N
	LONG.					–	164°01'46.03" W
THRESHOLD 26	LAT.					–	59°55'49.94" N
	LONG.					–	164°00'57.17" W

AIRPORT DATA

ITEM		EXISTING	PROPOSED	FUTURE
AIRPORT ELEVATION (M.S.L.)		4.2	6.23m [20.44']	6.23m [20.44']
AIRPORT REFERENCE POINT (A.R.P.)	LAT.	–	59°55'52" N	
	LONG.	–	164°01'32" W	
TAXIWAY LIGHTING		NONE	M.I.	M.I.
RAMP LIGHTING		NONE	NONE	NONE
MEAN MAX. TEMPERATURE, HOTTEST MONTH (JULY)		13°C (55°F)	13°C (55°F)	13°C (55°F)
MAGNETIC DECLINATION, YEAR		15°18'E,1998	15°18'E,1998	15°18'E,1998
AIRPORT REFERENCE CODE		B-I UTILITY	B-II	A-II
AIRPORT AND TERMINAL NAVIGATION AIDS		VOR/DME	NONE	NONE
AIRPORT NAVIGATION AIDS		ROT. BEACON	ROT. BEACON	ROT. BEACON
		ODB	ODB	ODB

LEGEND

ITEM	EXISTING	FUTURE
PROPERTY LINE		
BUILDING RESTRICTION LINE		
AVIGATION & HAZARD EASEMENT		
AIRPORT REFERENCE POINT (A.R.P.)		
WIND CONE AND SEGMENTED CIRCLE		
CONTOURS	100	100
ROADWAYS		
BUILDINGS		
ROTATING BEACON		
SHORELINE		
ANTENNA		
VASI		
BLUFF		
FENCE	—X—X—X—	—X—X—X—
MALSF		
REIL		

THIS A.L.P. SET SUPERCEDES A.L.P. DATED 3/11/86

AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL SUBJECT TO ALP APPROVAL LETTER DATED 7/19/00
By: DATE: 7/19/00
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600

FAA AIRSPACE REVIEW NUMBER: 99-AAL-046-NRA

BY	DATE	REVISIONS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

APPROVED: STEPHEN M. RYAN, P.E. — DESIGN SECTION CHIEF
APPROVED: JOHN G. WAHL, P.E. — PROJECT MANAGER

DATE 06/22/00
DESIGN
DRAWN
CHECKED

KIPNUK AIRPORT

AIRPORT LAYOUT PLAN

VICINITY MAP AND DATA TABLES

SHEET 2 OF 11

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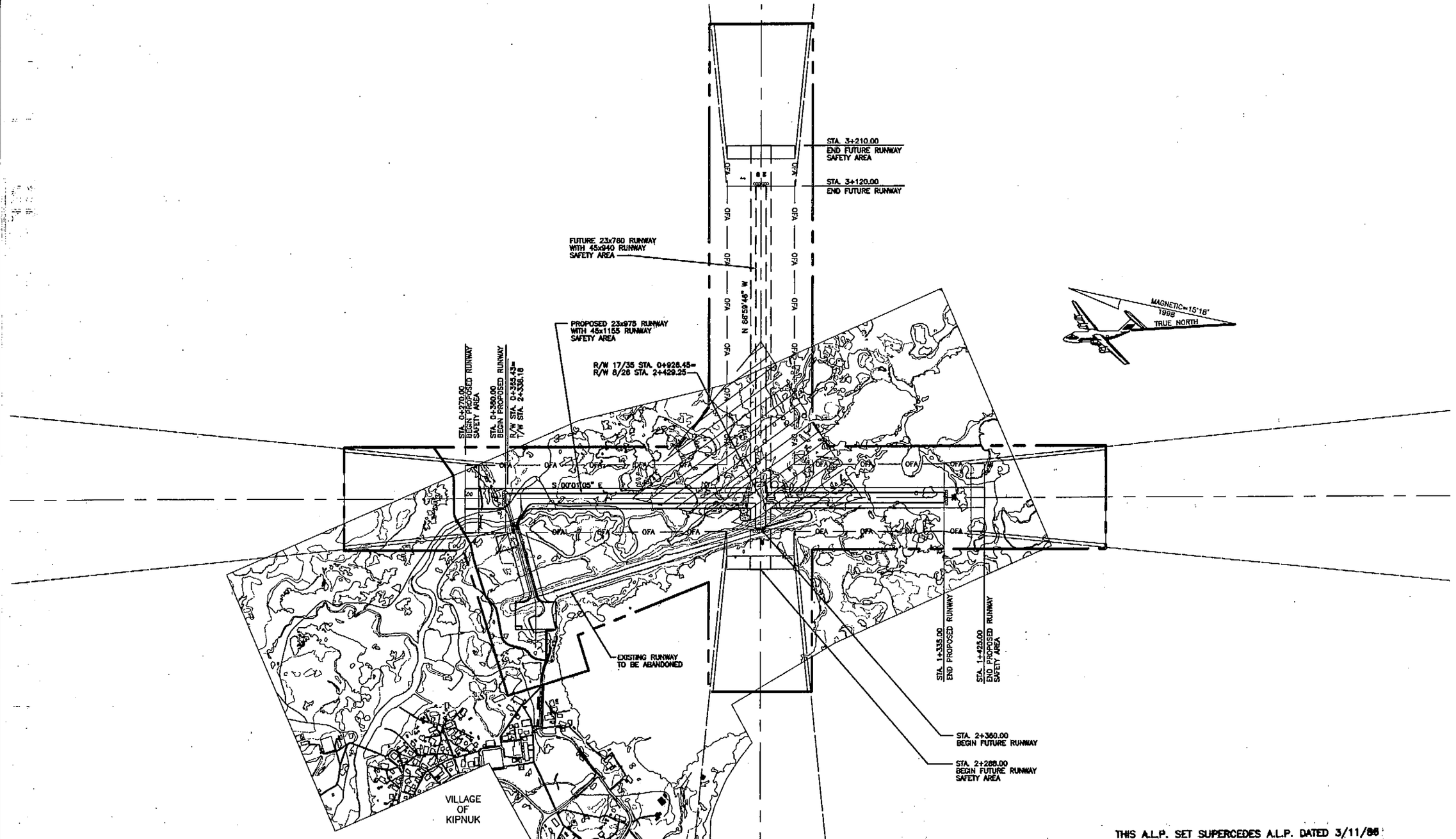

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AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL
SUBJECT TO ALP APPROVAL LETTER DATED 7/13/00
By: [signature] DATE: 7/13/00
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600

FAA AIRSPACE REVIEW NUMBER: 00-AAL-

BY	DATE	REVISIONS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

APPROVED: [signature]
STEPHEN M. RYAN, P.E. — DESIGN SECTION CHIEF
APPROVED: [signature]
JOHN G. WAHL, P.E. — PROJECT MANAGER

DATE 06/23/00
DESIGN [illegible]
DRAWN [illegible]
CHECKED [illegible]

KIPNUK AIRPORT

AIRPORT LAYOUT PLAN

OVERVIEW PLAN

SHEET 3 OF 11

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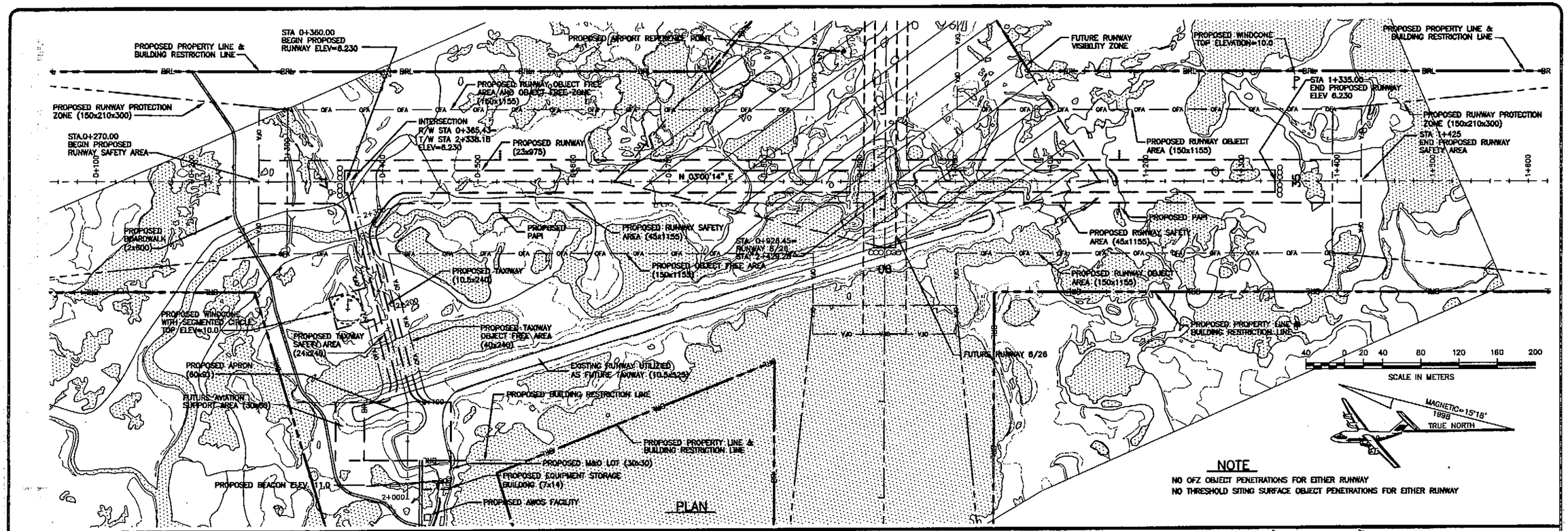
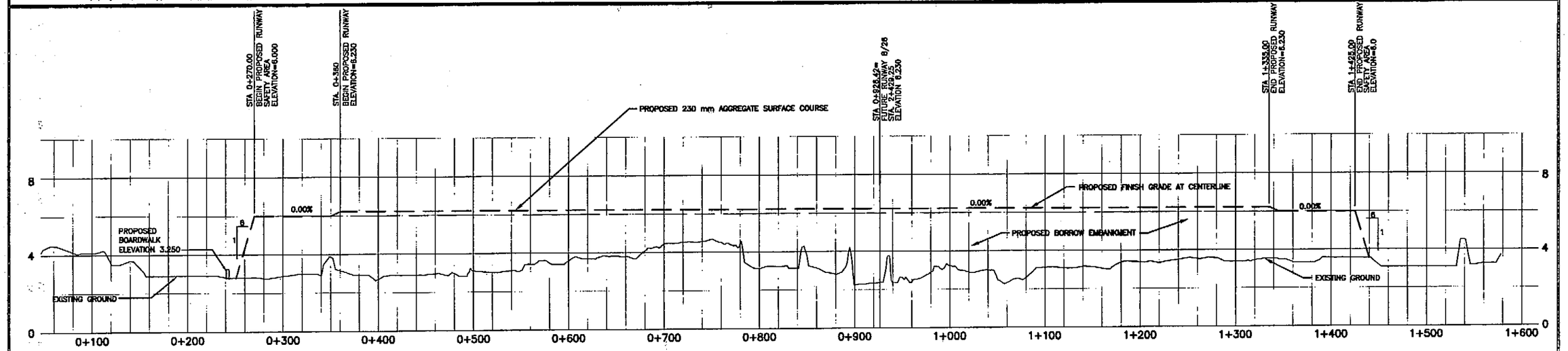


NOTE

NO OFZ OBJECT PENETRATIONS FOR EITHER RUNWAY
NO THRESHOLD SITING SURFACE OBJECT PENETRATIONS FOR EITHER RUNWAY



PROFILE

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AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL SUBJECT TO ALP APPROVAL LETTER DATED 7/12/00
BY: DATE: 7/13/00
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600

FAA AIRSPACE REVIEW NUMBER: 99-AAL-046-NRA

BY	DATE	REVISIONS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

APPROVED: STEPHEN M. RYAN, P.E. — DESIGN SECTION CHIEF
APPROVED: JOHN G. WAHL, P.E. — PROJECT MANAGER

DATE 6/27/00
DESIGN
DRAWN
CHECKED

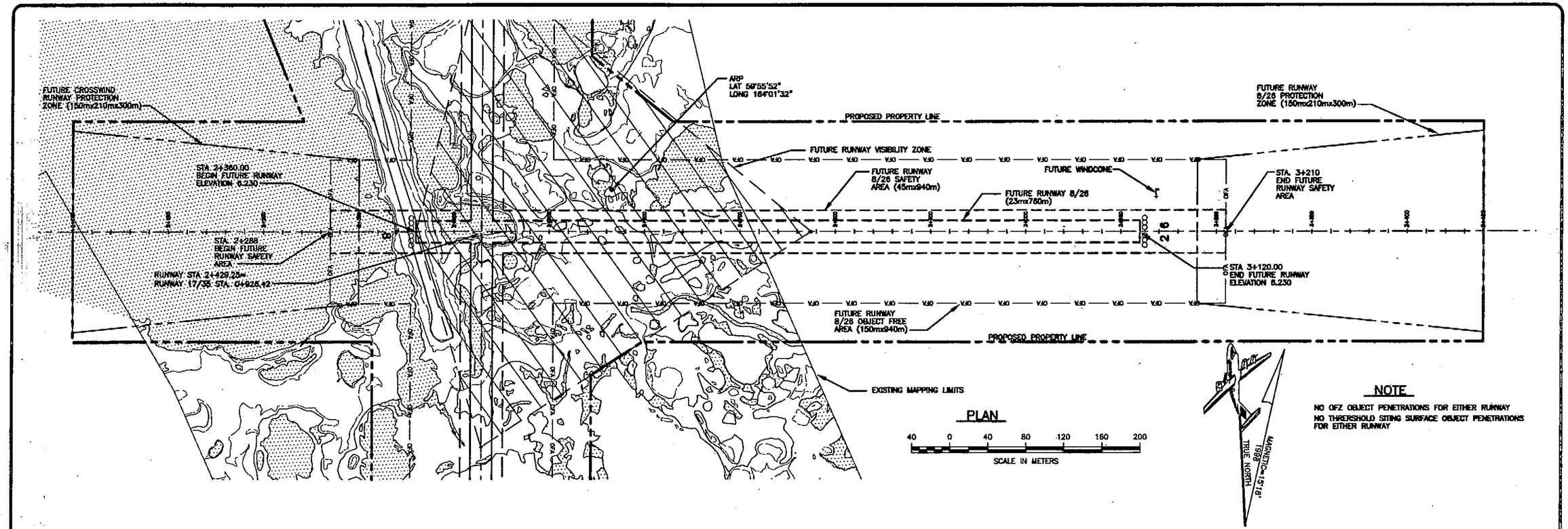
KIPNUK AIRPORT

AIRPORT LAYOUT PLAN

RUNWAY 17/35 PLAN AND PROFILE

SHEET 4 OF 11

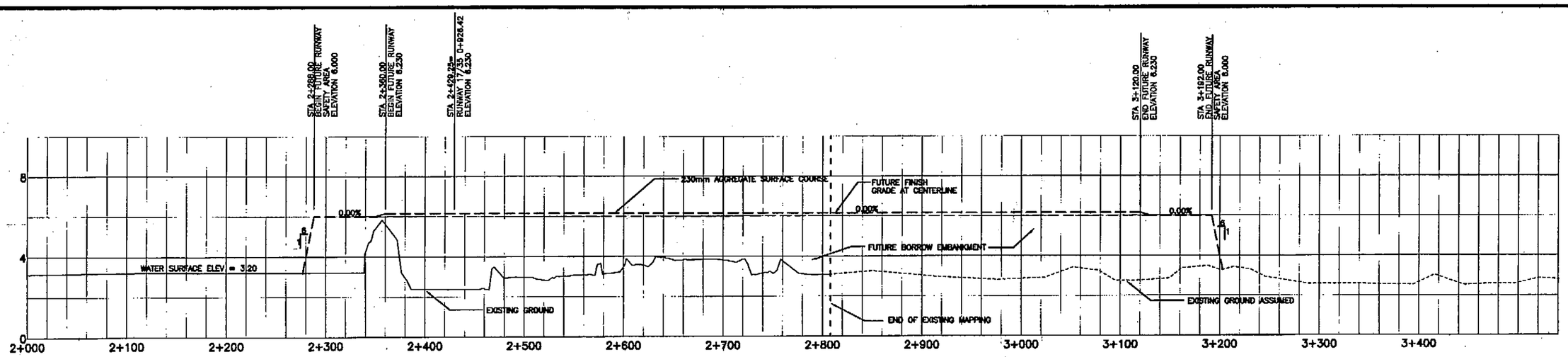
Mon Jun 26 09:09:17 2000



NOTE

NO OFZ OBJECT PENETRATIONS FOR EITHER RUNWAY

NO THRESHOLD SITING SURFACE OBJECT PENETRATIONS FOR EITHER RUNWAY



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AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL SUBJECT TO ALP APPROVAL LETTER DATED 7/12/00
BY: [signature] DATE: 7/12/00
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600

FAA AIRSPACE REVIEW NUMBER: 99-AAL-046-NRA

BY	DATE	REVISIONS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

APPROVED: [signature] STEPHEN M. RYAN, P.E. — DESIGN SECTION CHIEF
APPROVED: [signature] JOHN C. WAHL, P.E. — PROJECT MANAGER

DATE 6/27/00
DESIGN [signature]
DRAWN [signature]
CHECKED [signature]

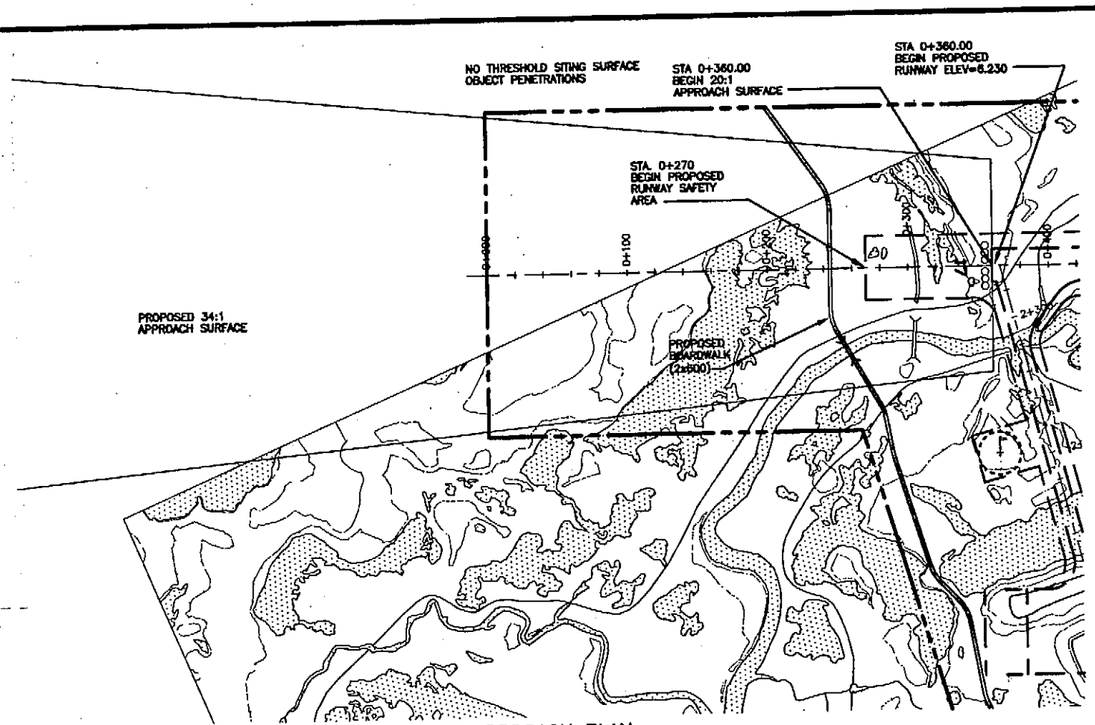
KIPNUK AIRPORT

AIRPORT LAYOUT PLAN

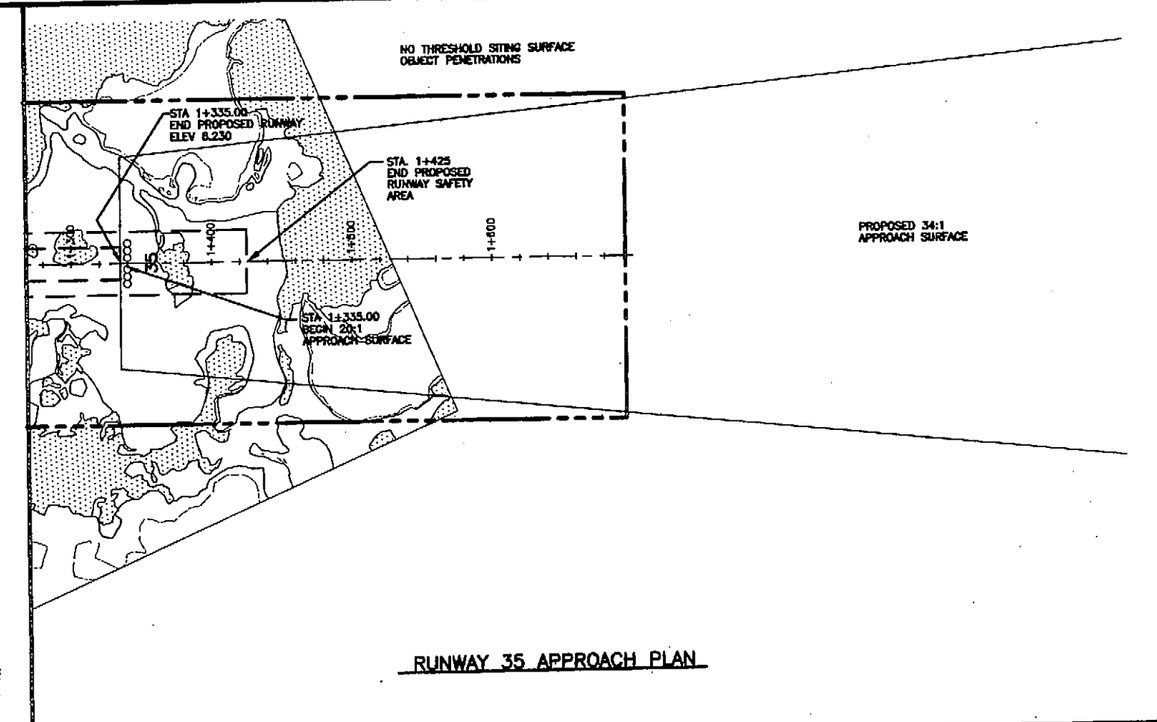
RUNWAY 8/26 PLAN AND PROFILE

SHEET 5 OF 11

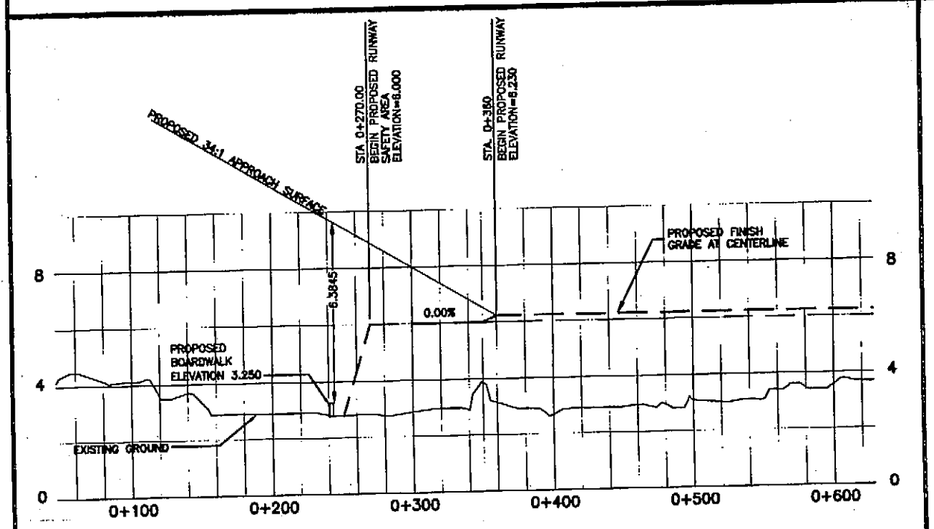
Jun 26 09:07:37 2000



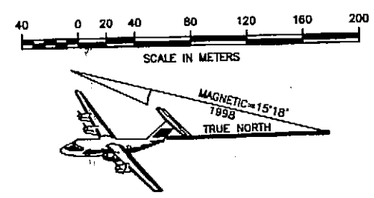
RUNWAY 17 APPROACH PLAN



RUNWAY 35 APPROACH PLAN

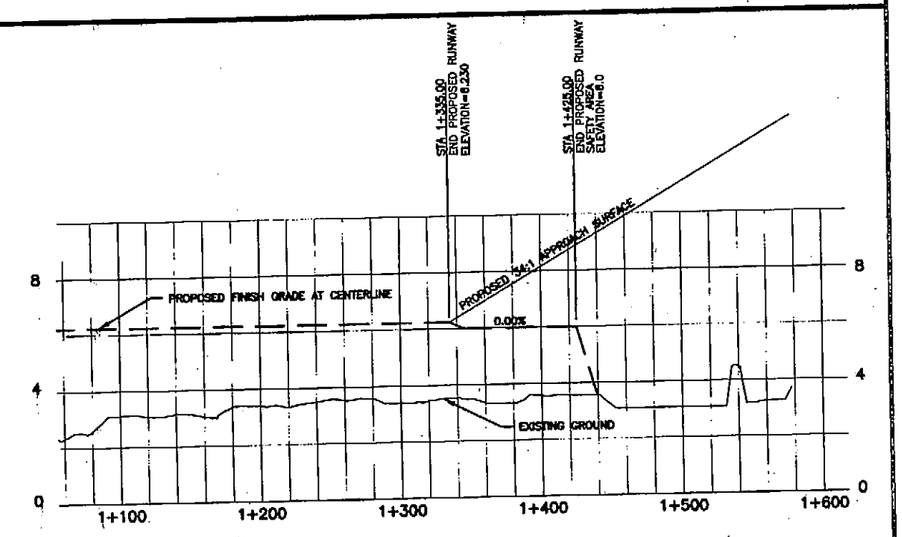


RUNWAY 17 APPROACH PROFILE



NOTE:

NO PENETRATIONS TO RUNWAYS
17 AND 35 APPROACH SLOPES



RUNWAY 35 APPROACH PROFILE

THIS A.L.P. SET SUPERCEDES A.L.P. DATED 3/11/86

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AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL
SUBJECT TO ALP APPROVAL LETTER DATED 7/12/00

By: [signature] DATE: 7/13/00
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600

FAA AIRSPACE REVIEW NUMBER: 99-AAL-046-NRA

BY	DATE	REVISIONS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

APPROVED: [signature] DESIGN SECTION CHIEF
STEPHEN M. RYAN, P.E.
APPROVED: [signature] PROJECT MANAGER
JOHN G. WAHL, P.E.

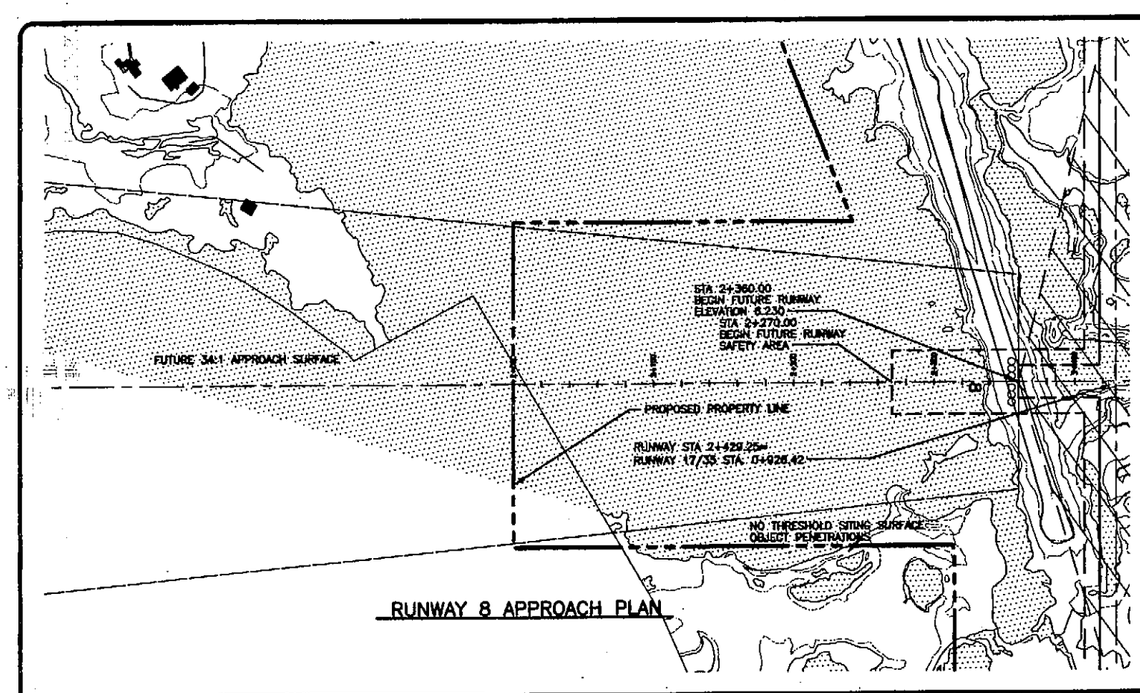
DATE 6/27/00
DESIGN
DRAWN
CHECKED

KIPNUK AIRPORT

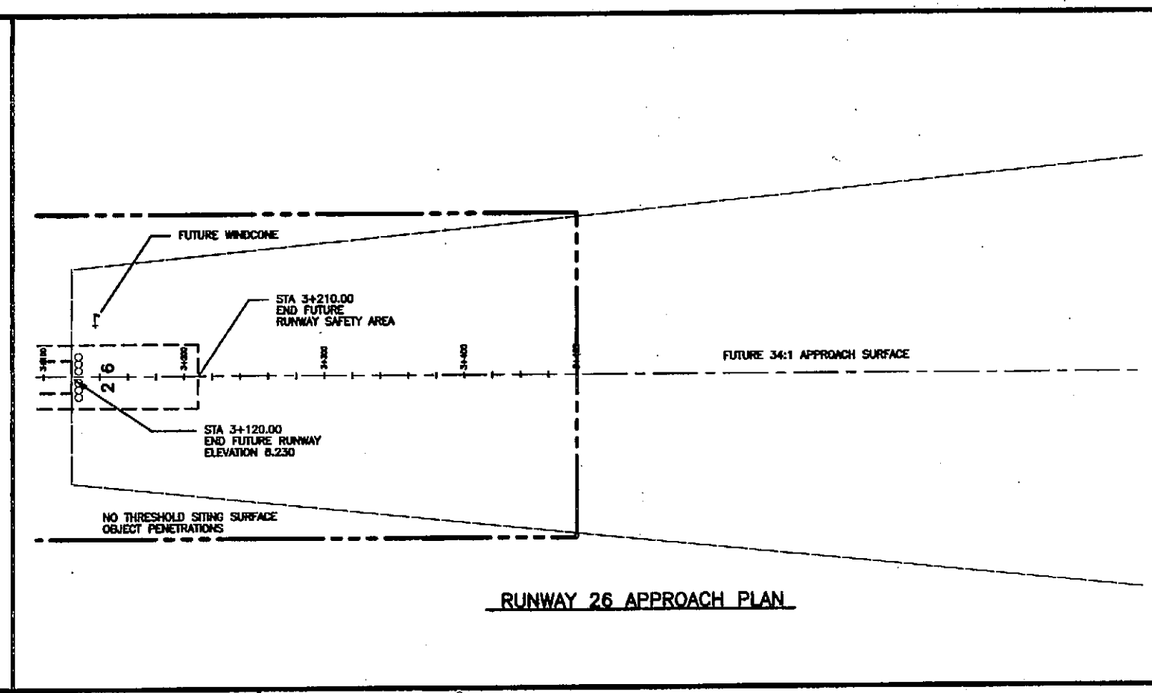
AIRPORT LAYOUT PLAN
RUNWAY 17/35 INNER APRROACH SURFACE
PLAN AND PROFILE

SHEET 6 OF 11

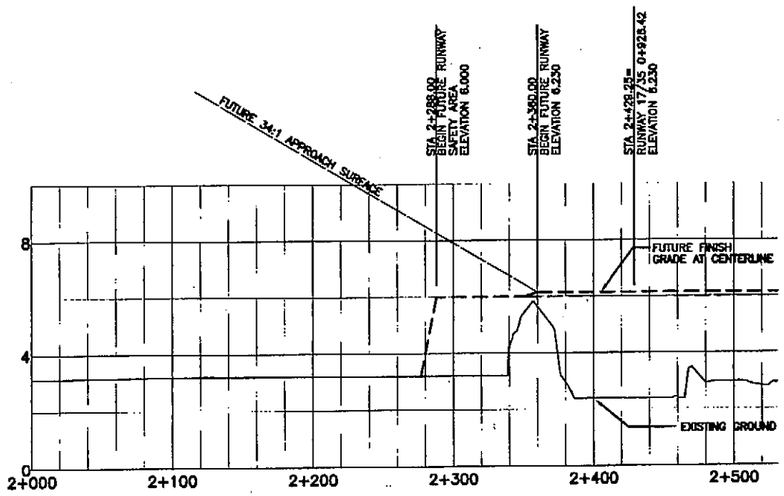
Mon Jun 26 09:09:07 2000



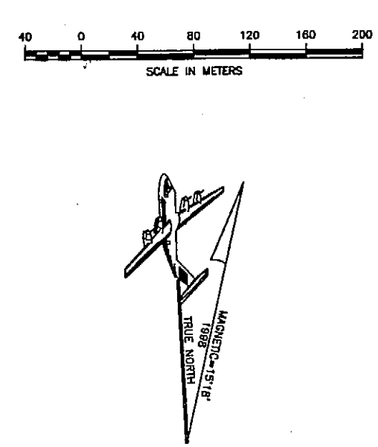
RUNWAY 8 APPROACH PLAN



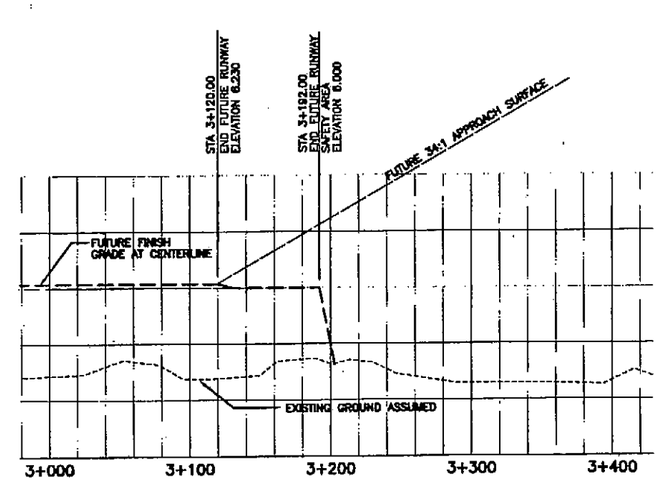
RUNWAY 26 APPROACH PLAN



RUNWAY 8 APPROACH PROFILE



NOTE:
NO PENETRATIONS TO RUNWAYS
08 AND 26 APPROACH SLOPES



RUNWAY 26 APPROACH PROFILE

THIS A.L.P. SET SUPERCEDES A.L.P. DATED 3/11/86

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AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL
SUBJECT TO ALP APPROVAL LETTER DATED 7/19/00
By: [signature] DATE: 7/19/00
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600

FAA AIRSPACE REVIEW NUMBER: 99-AAL-046-NRA

BY	DATE	REVISIONS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

APPROVED: [signature] STEPHEN M. RYAN, P.E. — DESIGN SECTION CHIEF
APPROVED: [signature] JOHN G. WAHL, P.E. — PROJECT MANAGER

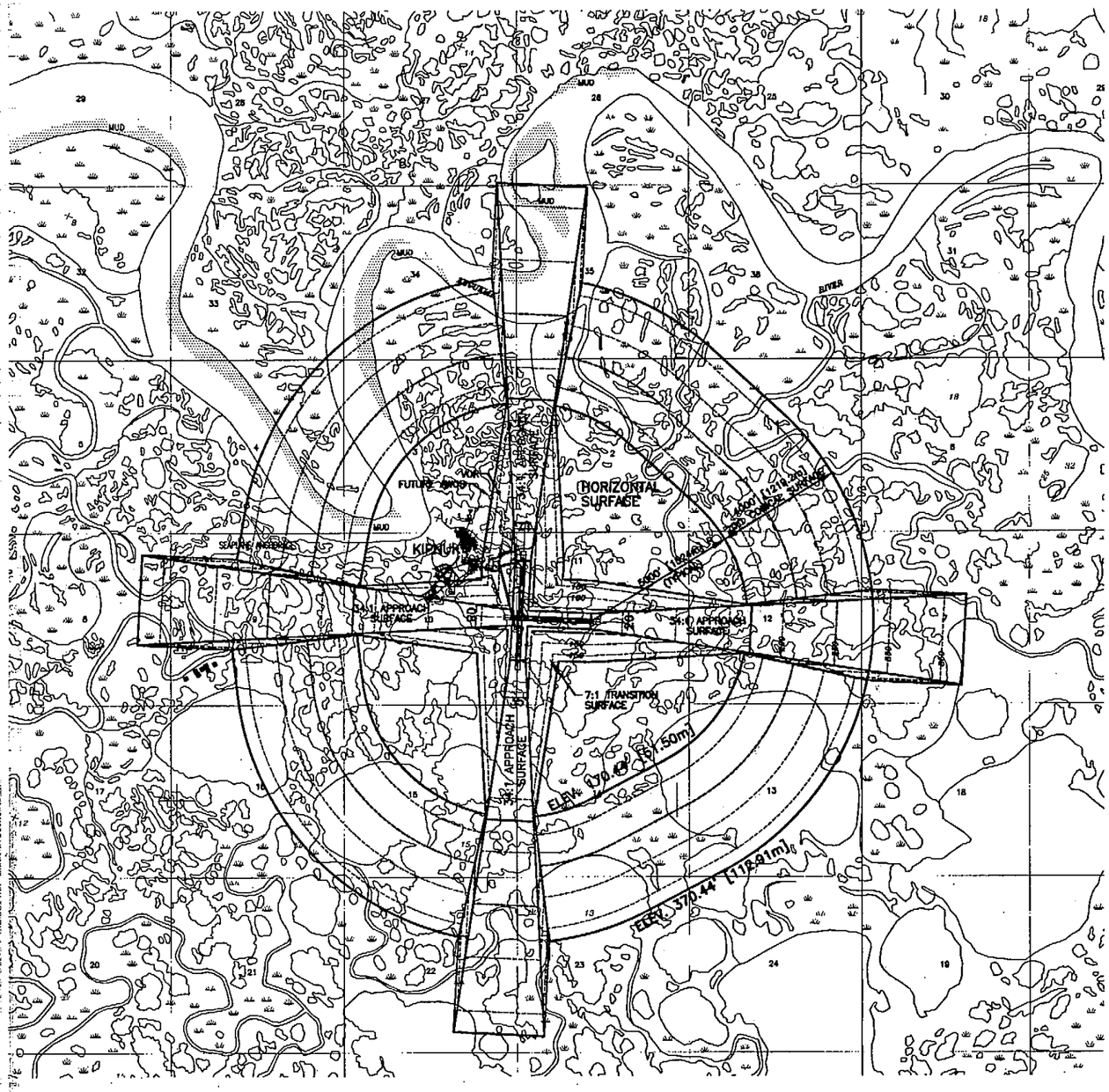
DATE 6/27/00
DESIGN GP
DRAWN BRJ
CHECKED [signature]

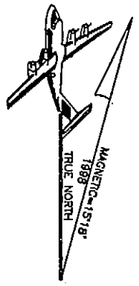
KIPNUK AIRPORT

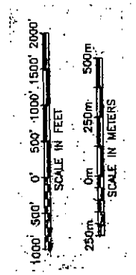
AIRPORT LAYOUT PLAN
RUNWAY 8/26 INNER APPROACH SURFACES

SHEET 7 OF 11

Ion Jun 26 09:09:36 2000







LEGEND

WATER SURFACE

× Feet SPOT ELEVATIONS

NOTES

1. AIRPORT AND RUNWAY ELEVATIONS ARE 20.44' [6.230m].

OBSTRUCTION DATA TABLE

NUMBER	PENETRATION DISTANCE (FEET) (METERS)	DESCRIPTION	DISPOSITION
NONE	NONE	NONE	NONE

THIS A.L.P. SET SUPERCEDES A.L.P. DATED 3/11/86

F.A.A. AIRSPACE REVIEW NUMBER: 99-AAL-046-NRA

AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL SUBJECT TO ALP APPROVAL LETTER DATED 7/13/00

By: Barbara Gibbens DATE: 7/13/00
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600

BY	DATE	REVISIONS

DATE 6/27/00
DESIGN
DRAWN
CHECKED

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

APPROVED: STEPHEN M. RYAN, P.E.
APPROVED: JOHN G. WAHL, P.E.
DESIGN SECTION CHIEF
PROJECT MANAGER

KIPNUK AIRPORT

AIRPORT LAYOUT PLAN

SHEET 8 OF 11

FILE: g:\data\kipnuk\alp_03-00\part77
DATE: 05/26/00 1=1 daveb

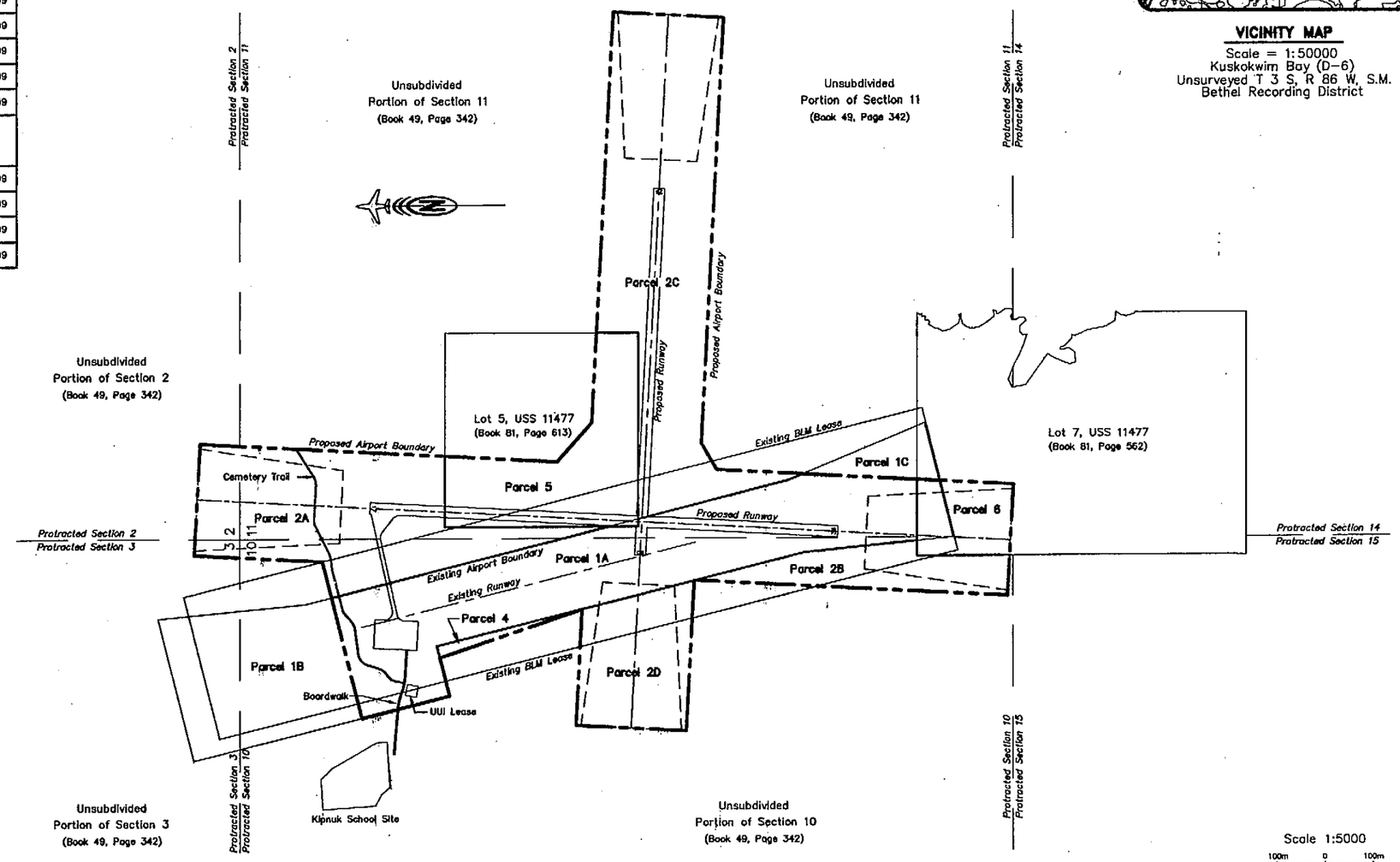
Mon Jun 26 11:34:02 2000

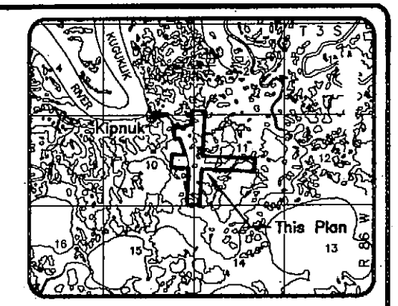
PROPERTY STATUS

Parcel Number	Area	Grantor	DOT & PF Interest	Date Acquired	Acquired Under A.I.P. No.
1A	20.516 ha± 50.697 Ac.±	AK DOT&PF	Fee (Surface)	10/22/1982	
1B	10.043 ha± 24.817 Ac.±	AK DOT&PF	Fee (Surface)	10/22/1982	
1C	1.324 ha± 3.271 Ac.±	AK DOT&PF	Fee (Surface)	10/22/1982	
2A	14.311 ha± 35.38 Ac.±	Native Village of Kipnuk	Fee (Surface)	2/08/2000	3-02-0150-0299
		Calista Corp.	Fee (Subsurface)	2/28/2000	3-02-0150-0299
2B	4.314 ha± 10.66 Ac.±	Native Village of Kipnuk	Fee (Surface)	2/08/2000	3-02-0150-0299
		Calista Corp.	Fee (Subsurface)	2/28/2000	3-02-0150-0299
2C	20.998 ha± 51.887 Ac.±	Native Village of Kipnuk	Fee (Surface)	2/08/2000	3-02-0150-0299
		Calista Corp.	Fee (Subsurface)	2/28/2000	3-02-0150-0299
2D	6.381 ha± 15.767 Ac.±	Native Village of Kipnuk	Fee (Surface)	2/08/2000	3-02-0150-0299
		Calista Corp.	Fee (Subsurface)	2/28/2000	3-02-0150-0299
3	D E L E T E D				
4	0.389 ha± 0.962 Ac.±	Native Village of Kipnuk	Fee (Surface)	2/08/2000	3-02-0150-0299
		Calista Corp.	Fee (Subsurface)	2/28/2000	3-02-0150-0299
5	8.340 ha± 20.610 Ac.±	Patty D. Paul	Fee	6/12/00	3-02-0150-0299
6	2.976 ha± 7.35 Ac.±	Julia Ayaprun	Fee	6/12/00	3-02-0150-0299

NOTES

1. Field survey performed by Alaskan Consulting Surveyors 10/97 through 6/98.
2. Project bearings are local bearings oriented to the NAD83 geodetic mean bearing of the runway centerline. The mean geodetic bearing of the runway was determined from ties to found monuments at BLM Geo Station "KTC 1998" and at the Witness Corner to Corner 3, Lot 5, U.S. Survey No. 11477.
3. The Bearings shown are local plane bearings as oriented to the basis of bearings, and distances shown are reduced to horizontal ground distances.
4. The Basis of Coordinates is BLM Geo Station "KTC 1996" as shown on the plat of USS 11477.
5. All dimensions are shown in meters unless otherwise noted. Meter to Foot conversion factor is 3937/1200.
6. Stationing shown is Runway 17/35 stationing unless otherwise specified.
7. The minimum closure of field traverses exceeds 1:10,000.
8. See Book 33, Pages 185 through 190, Bethel Recording District, for Parcels 1A, 1B, and 1C Deeds.
9. See Property Plan Sheet 2 of 2 for information on adjoining lands.





VICINITY MAP
Scale = 1:50000
Kuskokwim Bay (D-6)
Unsurveyed T 3 S, R 86 W, S.M.
Bethel Recording District

THIS PROPERTY PLAN SUPERCEDES PROPERTY PLAN DATED 3/18/99

AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL
SUBJECT TO ALP APPROVAL LETTER DATE:
DATE:
BY:
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600
DATE: 7/13/00
FAA AIRSPACE REVIEW NUMBER: 99-AAL-048-NRA

BY	DATE	REVISIONS
plh	6/22/00	Revised Property Status Table
plh	6/12/00	Revised Property Status Table

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION
APPROVED: STEPHEN M. RYAN, P.E. — DESIGN SECTION CHIEF
APPROVED: JOHN G. WAHL, P.E. — PROJECT MANAGER

DATE: 6/27/00
DESIGN:
DRAWN: GJR
CHECKED: LGR

KIPNUK AIRPORT
AIRPORT LAYOUT PLAN
PROPERTY PLAN
SHEET 1 of 2

SHEET 9 OF 11

FILE: P:\02172.01\SAMOAD-KS\CIVIL\WPS\AIRPORT.DWG
DATE: 6/27/00
XREFS: P1

Line Table

Line	Direction	Distance
L1	N 03°00'14" E	100.000m [328.08']
L2	N 03°00'14" E	250.000m [820.21']
L3	N 03°00'14" E	77.296m [253.60']
L4	N 03°00'14" E	88.799m [291.33']
L5	N 03°00'14" E	402.966m [1322.06']
L6	N 03°00'14" E	480.939m [1577.88']
L7	N 03°00'14" E	100.400m [329.40']
L8	N 03°00'14" E	39.600m [129.92']
L9	N 03°00'14" E	155.000m [508.53']
L10	N 86°59'46" W	40.000m [131.23']
L11	N 86°59'46" W	50.000m [164.04']
L12	N 86°59'46" W	50.000m [164.04']
L13	N 86°59'46" W	50.000m [164.04']
L14	N 86°59'46" W	50.000m [164.04']
L15	N 86°59'46" W	50.000m [164.04']
L16	N 86°59'46" W	50.000m [164.04']
L17	N 86°59'46" W	50.000m [164.04']
L18	N 86°59'46" W	50.000m [164.04']
L19	N 86°59'46" W	50.000m [164.04']
L20	N 86°59'46" W	310.000m [1017.06']
L21	N 86°59'46" W	100.000m [328.08']
L22	N 16°56'49" E	68.209m [223.78']
L23	N 11°07'39" E	22.860m [75.00']
L24	N 78°52'21" W	22.860m [75.00']

Line Table

Line	Direction	Distance
L25	S 11°07'39" W	22.860m [75.00']
L26	S 78°52'21" E	22.860m [75.00']
L34	N 41°12'28" W	23.043m [75.60']
L34(R1)	N 41°11'00" W	23.043m [75.60']
L35	N 60°23'28" W	27.728m [90.97']
L35(R1)	N 60°22'00" W	27.728m [90.97']

NOTES

1. Field survey performed by Alaskan Consulting Surveyors 10/97 through 8/98.
2. Project bearings are local bearings oriented to the NAD83 geodetic mean bearing of the runway centerline. The mean geodetic bearing of the runway was determined from ties to found monuments at BLM Geo Station "KTC 1996" and at the Witness Corner to Corner 3, Lot 5, U.S. Survey No. 11477.
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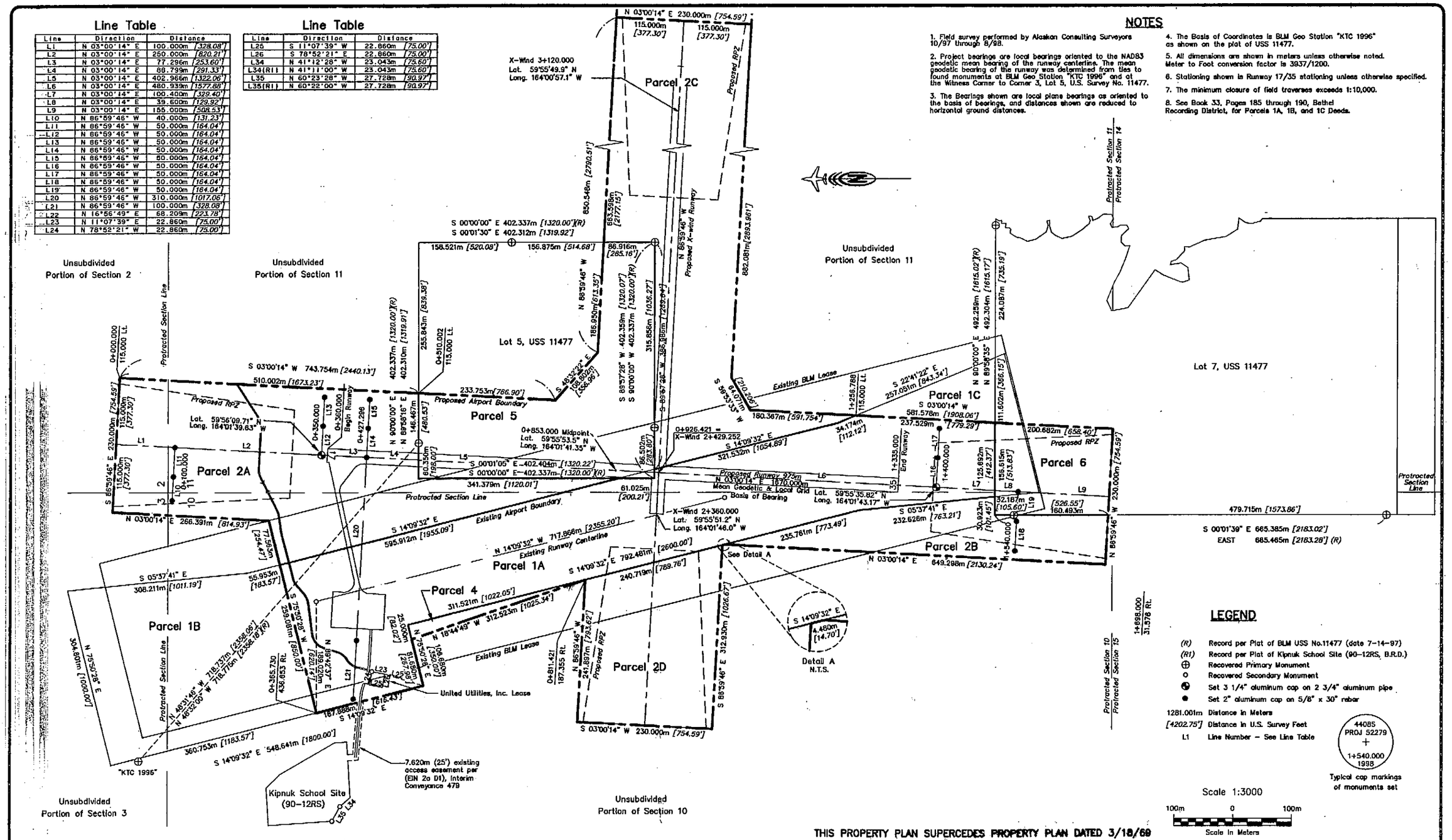

LEGEND

(R)	Record per Plat of BLM USS No.11477 (date 7-14-97)
(R1)	Record per Plat of Kipnuk School Site (90-12RS, B.R.D.)
⊕	Recovered Primary Monument
○	Recovered Secondary Monument
	Set 3 1/4" aluminum cap on 2 3/4" aluminum pipe
●	Set 2" aluminum cap on 5/8" x 30" rebar
1281.001m	Distance in Meters
[4202.75']	Distance in U.S. Survey Feet
L1	Line Number – See Line Table

44085 PROJ 52279 + 1+540.000 1998

Typical cap markings of monuments set

THIS PROPERTY PLAN SUPERCEDES PROPERTY PLAN DATED 3/18/69

AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL
SUBJECT TO ALP APPROVAL LETTER DATE:
DATE: 7/18/83
BY: Robert Nylen
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600

DATE: 7/18/00
FAA AIRSPACE REVIEW NUMBER: 99-AAL-046-NRA

BY	DATE	REVISIONS
plh	6/22/00	Expanded decimal places of Lat/Long. on runway

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION

APPROVED: Stephen M. Ryan, P.E. — DESIGN SECTION CHIEF
APPROVED: John C. Wahl, P.E. — PROJECT MANAGER

DATE: 6/27/00
DESIGN: JLC
DRAWN: GJR/JK
CHECKED: LGR

KIPNUK AIRPORT

AIRPORT LAYOUT PLAN
PROPERTY PLAN
SHEET 2 of 2

SHEET 10 OF 11

FILE: \KIPNUK\ROW\APY ALS.DWG
DATE: 6/22/00
VPORT: P2

A. Purpose

This Narrative Report is included with the Airport Layout Plan (ALP) for Kipnuk, Alaska, in accordance with Federal Aviation Administration (FAA) Airport Design Advisory Circular (AC) 150/5300-13, Change (CHG) 5, Appendix 7. The design of this project is being conducted in SI (metric) units and all construction items are in accordance with FAA AC 150/5300-13 CHG5. English dimensions are approximate except where used to describe existing conditions, and are for information only. The rationale for improvements to the Kipnuk Airport is outlined in this narrative report.

B. Introduction

Kipnuk is located on the west bank of the Kuguklik River in the Yukon-Kuskokwim Delta. It is approximately 137 km (85 mi) by air southwest of Bethel and 6 km (4 mi) inland from the Bering Sea Coast at latitude 59°56' N and longitude 164°03' W.

Kipnuk is an unincorporated community and is governed by a traditional village council. Yupik Eskimos have inhabited the region for thousands of years, attracted by the abundance of subsistence resources. Existence of the modern community dates back to 1922 (Bureau of Indian Affairs, September 1993).

Kipnuk is a predominantly Native community (97.4% of population). In 1990 Kipnuk had a population of 470 people (U.S. Census, 1990). The population has grown steadily since 1940 and as of July 1997, residents numbered 567 (Department of Community and Regional Affairs, 1997).

The current culture of the community is linked to Eskimo tradition. Residents maintain a subsistence lifestyle, but commercial fishing and trapping are also sources of income. One hundred and twenty four residents hold commerical fishing permits. The Kipnuk Traditional Council owns the majority of land in the project area.

C. Airport Usage and Forecasts

The Alaska Aviation System Plan (AASP) classifies Kipnuk Airport as a "community class" airport. A community class airport is defined as the "primary land or water access point to a small rural community of at least 25 permanent year-round residents without other reliable year-round access." This classification is not expected to change in the 20-year planning period.

Aircraft operations at the airport support passenger traffic, medical evacuations, school activities, and mail and cargo distribution. The taxi operators listed in Table 1 provide air service to the airport.

Table 1
Air Taxi Operators Serving Kipnuk

Arctic Circle Air Service	Peninsula Airway's, Inc.
Cape Smyth Air Services	Village Aviation, Inc.
ERA Aviation, Inc.	Yute Air, Inc.
Grant Aviation, Inc.	Arctic Transportation Service
Hagelund Aviation Services, Inc.	Kuskokwim Aviation
Larry's Flying Services, Inc.	Camai Air, Inc.

Passenger enplanement (the total number of people departing the airport by plane) reported between 1986 and 1998 ranged between 1,334 and 4,506, averaging 3,747.

Clinic personnel report that air medical evacuations (medevacs) to Bethel occur three to four times per year. An estimated three to five non-emergency patients fly to Bethel by regular air service each week. Kipnuk relies on air transportation to medevac emergency patients, such as accident victims or mothers in premature labor, to Bethel. The Yukon Kuskokwim Health Corporation contracts with one of the local air taxi operators for medevac services.

Travel to other communitites for school activities is an important component of the school district's program in Kipnuk. The school, which is a kindergarten through grade 12 facility, has 176 students and 10 certified personnel (DCRA 1995). The school relies heavily on air transportation to shuttle students to sporting competitions and field trips around the district.

Mail and freight volumes are reported to the US Department of Transportation. Mail is carried on scheduled services to the community. The amount of mail delivered has increased steadily since 1990, growing from 263,845 kg (581,678 lbs) in 1990 to over 350,353 kg (772,397 lbs) in 1998. Air cargo shipped to Kipnuk has fluctuated between 59,277 kg (130,684 lbs) and 108,159 kg (238,450 lbs) since 1990. The average for the 1990-98 period is 85,634 kg (188,768 lbs). One explanation for the fluctuation is that reporting of volumes shipped is voluntary; not all carriers necessarily report all freight shipped every year. Construction projects may also influence cargo figures.

The FAA categorizes five types of operations: air taxi, commuter, general aviation (local or itinerant), air carrier, and military. No air taxis are based at Kipnuk; the community is served by air taxis based in Bethel. Locally based operators are not anticipated to establish in the near future and no air carriers or military aircraft currently use or are expected to use the airport during the planning period. The fleet mix currently used by air taxi operators, their design group category, and approach speed are listed in Table 2.

Table 2
Kipnuk Airport Fleet Mix

Design Group	Aircraft	Approach Speed (knots)
A-I	Cessna 172,185,208,207 Piper Chieftain	75-80 90
A-II	Cessna 208 (Caravan) DeHavilland Twin Otter	75-80 75
B-I	Piper Navaja	100

Forecasts are based on a combination of factors including past airport activity, available information about aircraft operations, socio-economic factors, and demographics. With a larger and longer runway, the Kipnuk Airport will be able to accommodate larger and faster twin engine planes more safely. It is possible that the number of operations will not increase as rapidly as the number of enplanements because some of the aircraft will be carrying more passengers per flight than the aircraft serving the community today. With a longer runway, air freight will also likely increase. Table 3 provides an estimate of aircraft operations (the number of aircraft landing at the airport) 5, 10, and 20 years into the future.

Table 3
Kipnuk Air Operations Forecasts

Activity	1995 (Estimated)	2000 (Projected)	2010 (Projected)	2020 (Projected)
Operations	5,100	5,790	7,219	8,648

As listed in Table 2 above, the fleet mix that serves Kipnuk includes design group A-I aircraft, design group A-II aircraft, and design group B-I aircraft. For the 20-year planning period, consideration must be given to the airport's ability to accommodate both the existing fleet mix, as well as aircraft that will potentially use the airport. Runway design standards are related to aircraft approach speed, aircraft wingspan and designated planned visibility minimums for approaches. Taxiway design standards are related to aircraft wingspan. The aircraft forecast to use the airport that place the greatest demand on the design dimensions are designated the "critical aircraft." These are determined from general trends in fleet mix upgrades of Bethel-based operators and responses received to a survey of operators. Based on these considerations, the DeHavilland Twin Otter is considered the critical aircraft for airport design. To accommodate the anticipated change in fleet mix over the next 20 years, design group B-II aircraft are the critical design aircraft for ultimate or long-term facility development.

D. Staged Development

Development of Kipnuk Airport for the 20-year planning period will be in two stages: near-term (0-3 years) and long term (4-20 years). The primary objectives of the current (near-term) airport development are relocating the airport to provide adequate separation between the apron and runway and upgrading airport features to Category B-II standards. The long-term development will upgrade the airport by constructing an A-II crosswind runway, if warranted.

Near-Term Development (0-3 years)

Near-term development will construct a new airport on and adjacent to (east of) the existing airport. The new airport will be constructed to B-II standards. Components that will be constructed by the project include a new runway, taxiway, apron, navigational aids, maintenance area and boardwalk. Construction costs are estimated to be $4,691,100.

1. Construct a new embankment for a safety area 45 m (150 ft) wide and extending 90 m (300 ft) beyond the runway ends. Gravel a runway landing surface 23 m (75 ft) wide and 975 m (3,200 ft) long with 3 m (10 ft) wide shoulders.

2. Construct a new embankment for a taxiway safety area 24 m (79 ft) wide by 220 m (722 ft) long. Gravel a taxiway surface 10.5 m (35 ft) wide by 230 m (754 ft) long from the face of the apron to the edge of the runway.

3. Construct a new embankment for an apron 5,574 m² or 60 m by 91 m (60,000 ft² or 200 ft by 300 ft), an aviation support area 1,800 m² or 30 m by 60 m (19,376 ft² or 100 ft by 200 ft), and a pad for the segmented circle 1,025 m² (11,030 ft²).

4. Construct a new embankment for a maintenance and operations lot, 30 m by 30 m (100 ft x 100 ft) contiguous to the apron and adjacent to the aviation support area.

5. Construct a new boardwalk, approximately 600 m (1970 ft) long, to provide access to the cemetery.

6. Other work will include installation of medium intensity runway lighting (MIRL) along the runway, construction of a new snow removal equipment building, installation of a rotating beacon, installation of a segmented circle with one unlighted wind cone, and purchase of a new piece of snow removal/runway maintenance equipment.

Long-Term Development (4-20 years)

Long-term development will improve Kipnuk Airport's wind coverage and poor weather operability. A Category A-II crosswind runway will be built. The existing runway will be converted for use as a parallel taxiway. An aviation support area will be constructed. Estimated cost in 1998 dollars is $4,000,000.

1. Construct a crosswind runway 23 m (75 ft) wide and 760 m (2,493 ft) long with 3 m (10 ft) wide shoulders.

2. Convert the existing runway 11 m (35 ft) wide for use as a parallel taxiway to provide direct access from the apron to the 08 end of the crosswind runway.

3. Construct an aviation support area with two 30x30 m (100x100 ft) lease lots.

E. Design Rationale

1. Airport Reference Code

Near-term development at the new airport will be to Category B-II design standards. If the forecast changes in the fleet mix occur, long-term development will improve the airport with the construction of a crosswind runway to A-II standards. Existing, proposed and future airport design dimensions are summarized in Table 4.

2. Wind Coverage

Instrumentation to record wind data was installed at Kinpnuk in October 1996, and the collection of two years of data was completed in November 1998. The wind data indicates prevailing winds are out of the north-northwest, with some strong winds out of the southeast. The existing runway alignment is N 14°13' W. Based on the data collected, the existing runway has 81% coverage. The runway orientation for optimal wind coverage is N 3° E. FAA's recommended wind coverage for an airport is 95%.

The new primary runway, (17/35), is oriented to maximize wind coverage at the site. At a width of 18 m (60 ft), the runway will yield 82.3% wind coverage (10.5-knot crosswind component). By widening the landing surface of the runway to 23 m (75 ft), 88.98% of coverage is attainable (13-knot crosswind component). This is still 7% less than FAA's recommended minimum. Further improvements in wind coverage can only be obtained by constructing a crosswind runway. An A-II crosswind runway would increase coverage to 96.32%.

3. Runway

According to the FAA AC 150/5325-4, the following dimensions and components are needed to construct a new airport that meets current FAA standards and DOT&PF recommendations for a B-II airport. The runway must be 975 m (3,200 ft) long and 23 m (75 ft) wide with a 3 m (10 ft) wide shoulder. The safety area must be 45 m (150 ft) wide and extend 90 m (300 ft) beyond the runway ends. There must be a runway protection zone (RPZ) at both runway ends. The RPZ must be 300 m (1,000 ft) long by 150 m (500 ft) wide at the inner end and 210 m (700 ft) wide at the outer end. The runway obstacle free zone (OFZ) must be 120 m (400 ft) wide and extend 60 m (200 ft) beyond each end of the runway. To provide a safer landing surface during crosswind and icy conditions, surfacing and installing lights to a 23 m (75 ft) width is proposed.

4. Taxiways

The runway must be connected to the apron and aviation support area by a taxiway. The taxiway must be 10.5 m (25 ft) wide for a B-II airport. In the near term, a new taxiway would be built 230 m (754ft) long from the face of the apron to the edge of the runway. The taxiway safety area must be 24 m (79 ft) wide by 220 m (722 ft) long from its intersection with the runway safety area to the face of the apron. Long term, the existing runway would be utilized to serve as a taxiway from the apron to crosswind runway.

5. Apron

There is no FAA standard for apron size, however, AASP guidelines recommend a minimum area of 5,574 m² (60,000 ft²) with dimensions of 60 m by 91 m (200 ft by 300 ft). An aviation support area 1,800 m² (19,400 ft²) or 30 m by 60 m (100 ft by 200 ft) would be constructed adjacent to the apron. The aviation support area would be large enough to accommodate two lease lots 30 m by 30 m (100 ft by 100 ft). The lease lots would also include an additional 15 m (50 ft) on the airside of the building restriction line (BRL), bringing the total lot size to 45 m by 30 m (150 ft by 100 ft).
A maintenance and operations lot 30 m by 30 m (100 ft by 100 ft), for a snow removal equipment (SRE) building would be constructed on the village side of and adjacent to the apron on the existing M & O site.

This apron configuration is adequate for small, rural airports where one apron serves all the airport needs and is based on DOT&PF layout and construction guidelines. The two lease lots would be available for local use or future development.

6. Airport Access

Access to the airport will be by existing boardwalk.

Table 4
Kipnuk Airport Design Standards
Existing Runway 15/33, New Primary Runway 17/35, and Crosswind Runway 08/26

Item	Existing Conditions 15/33	Standard (B-II)	Proposed (17/35)	Future (Crosswind Runway 08/26)
Runway Length	646 m (2,120 ft)	975 m (3,200 ft)	975 m (3,200 ft)	760 m (2,493 ft)
Runway Width	11 m (35 ft)	23 m (75 ft)	23 m (75 ft)	23 m (75 ft) (A-II)
Runway Safety Area Width	27 m (90 ft)	45 m (150 ft)	45 m (150 ft)	45 m (150 ft) (A-II)
Runway Safety Area Length	685 m (2,250 ft)	1,155 m (3,790 ft)	1,155 m (3,790 ft)	940 m (3,083 ft)
Taxiway Width	n/a	10.5 m (35 ft)	10.5 m (35 ft)	n/a
Taxiway Safety Area Width	n/a	24 m (79 ft)	24 m (79 ft)	n/a
Taxiway Object Free Area Width	n/a	40 m (131 ft)	40 m (131 ft)	n/a
Runway Centerline to Edge of Aircraft Parking	n/a	75 m (250 ft)	230 m (754 ft)	n/a
RPZ Length	n/a	300 m (1,000 ft)	300 m (1,000 ft)	300 m (1,000 ft)
RPZ Inner Width	n/a	150 m (500 ft)	150 m (500 ft)	150 m (500 ft)
RPZ Outer Width	n/a	210 m (700 ft)	210 m (700 ft)	210 m (700 ft)
Approach Slope Angle	20:1	34:1	34:1	34:1

F. Property Status

The State of Alaska owns the existing airport. Land ownership at the new airport is a combination of lands owned by the state, Kipnuk Traditional Council, and Native allotees. Two Native allotments overlap the airport property to the south and east. The Kipnuk Traditional Council owns all other lands surrounding the airport, including the cemetery that is located east of the airport. Access to the cemetery will be maintained through construction of new boardwalk around the north end of the runway. A property plan has been completed for the new airport is Sheet 9 of this ALP. DOT&PF will acquire the property fee-simple.

G. Kipnuk Waste Disposal Facilities

The airport will have a separation distance from the landfill and honeybucket lagoon greater than the 1,524 m (5,000 ft) recommended the FAA. The distance to the landfill and honeybucket lagoon would be approximately 1,760 m (5,760 ft) and 1,634 m (5360 ft) respectively. Both facilities are northwest of the airport. A wildlife hazard mitigation plan will be developed for this airport which will include meetings between village representatives and responsible government agencies, and recommendations from a site specific Wildlife Assessment.

H. Community Involvement

The Alaska DOT&PF Planning Section have informed and updated the residents of Kipnuk of the proposed airport development through written correspondence, and community meetings held in Kipnuk. The project included preparation of an environmental assessment (EA) and issuance from FAA of a finding of no significant impact (FONSI). The EA and permitting process provided additional opportunity for community involvement and comment. Correspondence from residents is on file with the DOT&PF at their Central Region office in Anchorage, Alaska.

I. Non-standard Conditions

Wind coverage for the new B-II runway will be less than 95%. To improve safety during crosswind conditions and icy conditions, the MIRL will be installed and the runway will be surfaced to a width of 23 m (75 ft).

J. Encroachments into Part 77 Surface

There are no encroachments in the FAR Part 77 imaginary surface.

K. Future Land Development

The local government is encouraged to limit land uses in the vicinity of the airport to protect from operational impacts and to protect the health, safety, and welfare of its citizens. Noise is one of the most common impacts encountered in the vicinity of an airport. Aviation noise typically extends beyond the boundary of the airport into areas over which the airport has no authority. Noise problems can develop around airports if adequate limitations on incompatible uses are not taken. Land in the vicinity of the airport should not be used in such a manner as to create electrical interference with navigational signals or radio communication between the airport and aircraft, make it difficult for pilots to distinguish between airport lights and others, resulting as glare in the eyes of the pilot using the airport, impair visibility in the vicinity of the airport, create bird strike hazards, create obstructions to air navigation, or otherwise in any way endanger or interfere with the landing, takeoff, or maneuvering of aircraft intending to use the airport.

THIS A.L.P. SET SUPERCEDES A.L.P. DATED 3/11/86

FILE: g:\data\kipnuk\alp_03-00\narrative
DATE: 05/26/00 1=1 dave

AIRPORT LAYOUT PLAN CONDITIONAL APPROVAL SUBJECT TO ALP APPROVAL LETTER DATED 7/19/00
By: [signature] DATE: 7/19/00
FAA, AIRPORTS DIVISION
ALASKAN REGION, AAL-600

FAA AIRSPACE REVIEW NUMBER: 99-AAL-046-NRA

BY	DATE	REVISIONS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
CENTRAL REGION
APPROVED: STEPHEN M. RYAN, P.E. — DESIGN SECTION CHIEF
APPROVED: JOHN G. WAHL, P.E. — PROJECT MANAGER

DATE 6/27/00
DESIGN
DRAWN
CHECKED

KIPNUK AIRPORT
AIRPORT LAYOUT PLAN
NARRATIVE SHEET

SHEET 11 OF 11

Mon Jun 26 09:14:40 2000