KOKHANOK AIRPORT RESURFACING AND FENCING

AIP NO. 3-02-0406-00X-202X

Project No. SFAPT00361

DRAFT ENGINEER'S DESIGN REPORT

Prepared For:

State of Alaska
Department of Transportation and Public Facilities
Southcoast Region
Aviation Design

Prepared By:

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August 2024

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STATE OF ALASKA

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES SOUTHCOAST REGION

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Prepared By:	
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NOTICE TO USERS

This report was prepared for the State of Alaska, Department of Transportation and Public Facilities, Preconstruction Division, Southcoast Region, 6860 Glacier Hwy, Juneau, Alaska, 99801. It reflects project design considerations and decisions as of the date of this report. The design may change over the course of project development. Users needing the most current information are encouraged to contact the State of Alaska, Department of Transportation and Public Facilities (DOT&PF), Southcoast Region, Preconstruction Design Section's Project Manager, David Epstein, at (907) 465-4483 for this project.

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ACRONYMS

AC ..... FAA Advisory Circular
ADF&G ..... Alaska Department of Fish and Game
ADG..... Airplane Design Group
AIP……Airport Improvement Program
ALP ..... Airport Layout Plan
APEB…… Aviation Project Evaluation Board
BMPs ..... Best Management Practices
CE ..... Categorical Exclusion
CSPP……Construction Safety and Phasing Plan
DOT&PF ..... State of Alaska, Department of Transportation and Public Facilities
ESCP…… Erosion and Sediment Control Plan
FAA ..... Federal Aviation Administration
FAR ..... Federal Aviation Regulation
GA ..... General Aviation
HNS ..... Haines Airport
LED …… Light Emitting Diode
MIRL……Medium Intensity Runway Lights
MITL……Medium Intensity Taxiway Lights
M&O…… Maintenance and Operations
NAVAID ..... Navigational Aids
PAPI……..Precision Approach Path Indicators
RDC ..... Runway Design Code
REIL ..... Runway End Identifier Lights
ROFA ..... Runway Object Free Area
ROFZ ..... Runway Object Free Zone
RSA ..... Runway Safety Area
SREB ..... Snow Removal Equipment Building
SWPPP…….. Storm Water Pollution Prevention Plan
TDG ..... Taxiway Design Group
USFWS ..... U.S. Fish and Wildlife Service

I. Introduction

Description of Project

The scope of this project includes the following:

- Rehabilitate Runway 07/25, taxiway, safety areas, and apron, including dust palliative
- Replace runway and taxiway edge lighting
- Improve drainage
- Replace aircraft tie-downs
- Construct approximately 1,075 linear feet of chain link fence
- Replace primary wind cone, and supplemental wind cone
- Upgrade electrical enclosure building components
- Clear vegetation on airport property and grub adjacent to runway

Purpose of Project

Purpose

The purpose of the proposed project is to improve safety for runway operations, preserve infrastructure, prolong the facility's service life, and reduce airport maintenance costs.

Need

Soft runway conditions at the Kokhanok Airport caused by poor drainage, particularly during spring months, often require the closure of Runway 07/25. The existing runway, taxiway, and apron surface materials have excessive fines, and some adjacent areas are not adequately drained. State-owned airport lighting and navigational aids have outlived their service lives. Vehicle traffic crossing the runway is a safety hazard for aircraft.

Project History

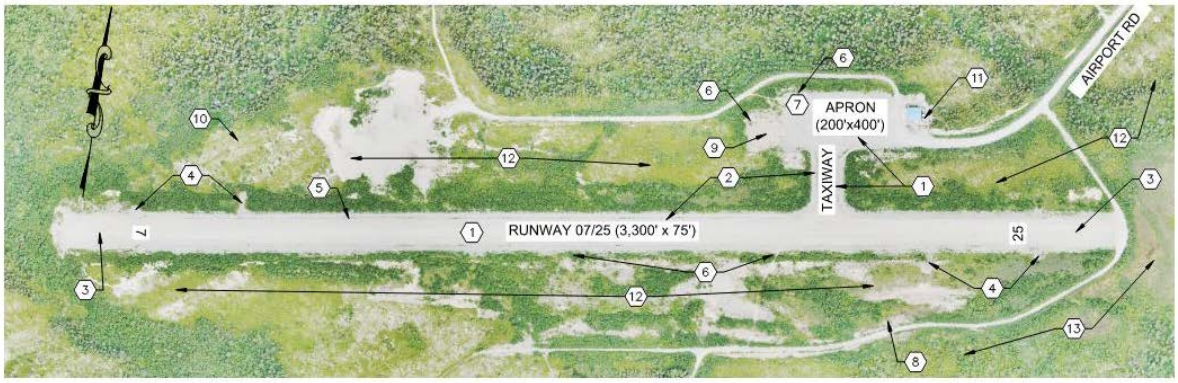
The Kokhanok Airport is located near the south bank of Iliamna Lake, approximately 1.5 miles west of the community of Kokhanok, Alaska. The airport was originally constructed in 1985 as a 2,900-foot gravel runway. At that point, the runway was 60 feet wide and had no lighting. In the mid-2000s, the runway was expanded to a 3,300-foot by 75-foot gravel runway. In the same project, a 44-foot by 50-foot heated Snow Removal Equipment Building (SREB) was built, lighting was added to the runway, and approximately 1,100 feet of fencing was installed to discourage all-terrain vehicle (ATV) traffic from crossing the runway. Also under that construction contract, Precision Approach Path Indicators (PAPIs) and Runway End Identifier Lights (REILs) were installed for the Federal Aviation Administration (FAA).

The topography of the airport property generally slopes down from south to north, and it is surrounded by alder and spruce forest. The area adjacent to the runway is essentially flat (i.e., very little topographic gradient) with grass and alders. There are wetlands to the east of the runway, and streams cross the airport property from south to north off both ends of the runway.

Annual snowfall averages approximately 59 inches (4.9 feet), with heavy snowfalls occurring between November and March. Because of Kokhanok's location near the coast, the climate is mild, with wintertime temperatures generally staying below freezing. Average wintertime temperatures vary from a high of 29.5° F to a low of 9.9° F.

On October 25, 2022, the Southcoast Region and HDL Engineering Consultants, LLC, signed a Professional Services Agreement (PSA 25233003) for HDL to provide design and survey for the airport rehabilitation project and assist with environmental services.

The existing airport configuration and proposed improvements are shown in Figure 1 below.



PROJECT TASKS:

1	REPLACE GRAVEL SURFACING OF RUNWAY, TAXIWAY, AND APRON WITH NEW CRUSHED AGGREGATE SURFACE COURSE AND APPLY DUST PALLIATIVE
2	REPLACE MEDIUM INTENSITY EDGE AND THRESHOLD LIGHTING INCLUDING CONDUIT, CONDUCTORS. REFLECTIVE CONES, AND MARKERS
3	REGRADE RUNWAY AND TAXIWAY SAFETY AREAS
4	PROTECT EXISTING FAA PAPI AND REIL LIGHTS TO REMAIN, MATCH EXISTING GRADES OF FOUNDATIONS AND JUNCTION BOXES.
5	MATCH SURROUNDING GRADES AT FAA PULL BOXES. INSTALL MARKERS AT EACH
6	CONSTRUCT DRAINAGE DITCH AND REGRADE FORESLOPES AS NECESSARY
7	REPLACE AIRCRAFT TIE-DOWNS
8	CONSTRUCT APPROXIMATELY 1,075 L.F. OF 8-FOOT, HIGH CHAIN LINK FENCE
9	REPLACE PRIMARY WIND CONE WITH INTERNALLY LIGHTED LED TYPE ON EXISTING FOUNDATION
10	REPLACE UNLIGHTED SUPPLEMENTAL WIND CONE IN NEW LOCATION
11	REMOVE AND REPLACE ELECTRICAL EQUIPMENT IN EXISTING ELECTRICAL ENCLOSURE BUILDING, SEE ELECTRICAL
12	CLEAR AND GRUB PROJECT OR SELECTIVE TREE CLEARING

Figure 1: Existing Airport Configuration and Proposed Improvements

Alternatives

No action: This alternative has no construction cost. The "No Action" alternative retains the airport runway, taxiway, and apron in the existing condition without resurfacing or fencing. Seasonal softening of the airport surface and the hazards of ATV incursions on the runway continue. Ditching or grading is not improved, and drainage issues continue to contribute to the softness of the operating surfaces and the frequency of runway closures. Electrical conduit and lighting, the beacon, and the wind cones continue to age, and these systems will require increased maintenance until their ultimate failure. Airfield lighting would not be updated to current FAA standards, and associated safety improvements would not be achieved.

Resurfacing and drainage repair to the runway, taxiway, and apron; electrical and navaid improvements; and increased fencing: This alternative rehabilitates the existing runway,

taxiway, and apron surface course material to meet the current FAA and DOT&PF standards and improves drainage to keep water from collecting on and along the embankments of the runway, taxiway, or apron. Runway and taxiway lighting, and wind cones are replaced to meet current standards, extend service life, improve the visibility of the runway to pilots, and increase the reliability of the electrical systems. Fencing is added beside the runway, reducing ATV crossings of the runway.

Photographs

Photos taken by Jackie LaBelle and Kayla Horning, HDL, September 2023, Kokhanok Airport

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Figure 13: Fencing Beside Runway, Looking South

II. Design Analysis

Airport Layout Considerations

As previously noted, this project will include rehabilitation of the existing runway, taxiway, and apron in their current configuration. The following subsections address the basis for the design, including airport layout, soils and grading, and drainage. All design criteria refer to FAA Advisory Circular (AC) 150/5300-13B Airport Design unless otherwise indicated.

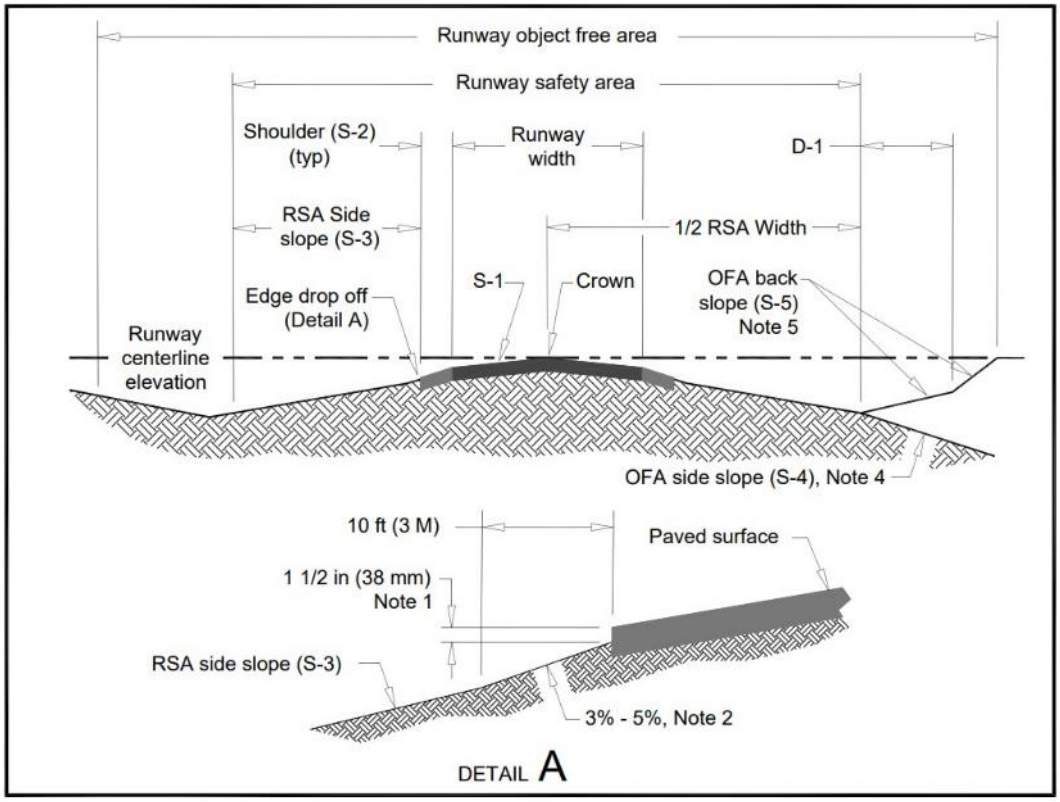
Design Standards

Runway

The Kokhanok Airport Runway (RW) 07/25 is 3,300-foot x 75-foot, oriented east/west, and located south of Iliamna Lake. Design Criteria for RW 07/25 are based on the Critical Aircraft, the Pilatus PC-12 (see Critical Aircraft for Design Subsection). The PC-12 is Approach Category A, Airplane Design Group (ADG) II, and weighs less than 12,500 lbs. Those factors combine for a Runway Design Code (RDC) of A-II (Small). Tables 1 and 2 and the figure below summarize the design criteria -- including the Runway Safety Area (RSA), Runway Object Free Area (ROFA), and Runway Object Free Zone (ROFZ) -- for RW 07/25 based on FAA guidance.

Table 1: Runway Design Criteria

Runway Design Criteria for A-II (Small) Critical Aircraft				
Dimension	A-II (Small)	Existing	Proposed	Design Considerations
Runway Width	75’	75’	75’	
Runway Shoulder Width	10’	10’	10’	
Runway Length	Varies	3,300’	3,300’	Adequate for Critical Aircraft
RSA Width	150’	150’	150’	
RSA Length Beyond Threshold	300’	300’	300’	
ROFA Width	500’	500’	500’	
ROFA Length Beyond Threshold	300’	300’	300	
ROFZ Width	250’	400’	250’	Hold to standard
ROFZ Length Beyond Threshold	200’	200’	200’	



Note 1: Construct a 1.5 inch (38 mm) ±1/2 inch (13 mm) drop between paved and unpaved surfaces.
Note 2: Maintain between a 3% -5% negative grade for 10 ft (3 m) of unpaved surface adjacent to the paved surface.
Note 3: Slope S-2 applies when paved shoulders are present.
Note 4: S-4 is 0% or negative (unlimited) to drain water away from the RSA to the edge of the ROFA.
Note 5: Exception: A back slope (e.g., positive grade) is acceptable on the far side of the ROFA provided adequate wingtip clearance is available for ½ of the maximum wingspan of the critical aircraft.

Figure 14: Runway Transverse Grade Limitations (FAA AC 150-5300-13B; Figure 3-34)

Table 2: Transverse Grades (FAA AC 150-5300-13B; Tables 3-6 and 3-7)

Runway Transverse Gradients Design Criteria for A-II Critical Aircraft				
Area	A-II	Existing	Proposed	Design Considerations
Runway (S-1)	1.0% – 2.0%	2%	2%	Maximum allowable to promote drainage
Shoulder (S-2)	1.5% - 5.0%	3%	4%	Slight increase to promote drainage
RSA Side Slope (S-3)	1.5% - 5.0%	3%	4%	Slight increase to promote drainage
ROFA Side Slope (S-4)	≤ 0%	0% - (-20%)	0% - (-25%)	Area includes foreslopes and some ditching
ROFA Back Slope (S-5)	12.5%	Varies	25% max	Acceptable in ROFA if beyond and below RSA

The intent of this project is to rehabilitate the existing runway in its current configuration. It was determined that rehabilitation will include the replacement of the existing surface course due to the geotechnical investigation showing that the material does not meet DOT&PF and FAA standards – see Soils and Grading section below. Transverse slopes outside the 75-foot-wide

runway will be increased to promote drainage. Porous backfill will be placed to protect side slopes. A drainage ditch will be constructed on the south side of the runway to promote drainage.

Taxiway

Although the Pilatus PC-12 is the Critical Aircraft for RW 7/25, the taxiway design criteria are based on the Douglas DC-3 to accommodate emergency use by oversize aircraft and maintain the existing taxiway width. The DC-3 is in ADG III and Taxiway Design Group (TDG) 3. TDG 3 design criteria provide adequate space to allow aircraft in that TDG to safely maneuver based on their wheelbase and distance between the main wheels and the nose gear of aircraft. The taxiway design criteria for this project are in accordance with AC 150/5300-13B Tables 4-1 and 4-2 and are shown in Table 3 below.

Table 3: Taxiway Design Criteria

Taxiway Design Criteria for Taxiway Design Group 3 (TDG 3) and ADG III				
Dimension	TDG-3	Existing	Proposed	Design Considerations
Taxiway Width	50’	60’	50’	This is a nominal width and does not include fillet widening
Taxiway Shoulder Width	20’	15’	20’	
Taxiway Safety Area	118’	118’	118’	
Taxiway Object Free Area	171’	131’	171’	There are no objects in the proposed TOFA

The intent of this project is to rehabilitate the existing taxiway in its current configuration. However, the existing taxiway width and its shoulder width are not consistent with current guidance. This project will bring the taxiway and shoulder widths up to standards, including replacing taxiway radii with fillets per AC150/5300-13B. The fillets on the runway end of the taxiway will be according to TDG 3 for the DC-3. The fillets on the apron end of the taxiway will be according to TDG 2A for the PC-12 to provide edge lights indicating the taxiway entrance without increasing the footprint.

To match the new runway grade to the apron grade, the existing taxiway longitudinal slope of 1.5% will be increased to 1.7%. A maximum of 2% is allowed for aircraft weighing under 30,000 pounds, such as the DC-3.

Similar to the runway, the taxiway rehabilitation will include replacing the existing taxiway surface course to meet DOT&PF and FAA standards. Transverse slopes outside the nominal 50-foot-wide taxiway will be increased to promote drainage. Porous backfill will be placed to protect side slopes.

Apron

The existing apron was constructed to be 200 feet by 400 feet with a cross slope of 1%. Similar to the runway, the apron rehabilitation will include replacing the existing surface course to meet DOT&PF and FAA standards. To promote drainage, the slope will be increased to generally 1.5% with a maximum of 2.0% as allowed for aircraft weighing under 30,000 pounds, such as the DC-3. Tie-downs that are driven duck-bill anchors will be replaced with buried-plate-type anchors. Wear and/or erosion have reduced the apron area and worn ruts in the side slopes. These areas will be repaired, and porous backfill will be placed to protect side slopes.

Conformance with Airport Layout Plan

This project is consistent with the Ultimate Layout of the current Airport Layout Plan (ALP), except the nominal width of the taxiway will be reduced from the existing 60 feet to 50 feet, and an additional 1,075 feet of fence will be constructed. The ALP is to be updated before this rehabilitation project is bid. The ALP update will show the 2005 project improvements (runway expansion, etc.) as existing and will also show the proposed changes for the taxiway and fence in this project.

Analysis of Alternatives and Preferred Alternative

Through discussions and coordination with the DOT&PF Design, Planning, Materials, and Maintenance & Operations (M&O), DOT&PF determined the scope of the project will include: rehabilitation of the runway, taxiway, apron, and lighting; improvements to drainage; clearing and grubbing; replacement of the primary (lighted) wind cone, and supplemental wind cone; and the construction of approximately 1,025 feet of new fencing (see Figure 1). This scope is the preferred alternative to improve safety, reliability of service, and service life of the airport.

Environmental Considerations

The environmental document for this project is expected to be a Categorical Exclusion (CE). Analysis of environmental and cultural impacts, records of agency coordination, and a public involvement summary will be included in the CE.

Airport improvements will be primarily performed in previously disturbed areas on airport property. Disturbance of vegetated areas is anticipated to be limited to clearing and grubbing within airport property, development of a material source, and staging areas necessary to support construction operations. Clearing within wetlands and stream buffer zone will only be permitted by hand.

The contractor shall be responsible for selecting and permitting material and water sources according to their selected means and methods, following State and Federal regulations.

Storm Water

Coverage under the Alaska Pollutant Discharge Elimination System Construction General Permit and implementation of a Storm Water Pollution Prevention Plan (SWPPP) outlining Best Management Practices (BMPs) will be required for construction. A project-specific Erosion and Sediment Control Plan (ESCP) will be prepared with the contract documents to provide contractor guidance for SWPPP development. Recommended BMPs and temporary erosion control measures to be implemented during construction will be shown in the ESCP.

Water Quality

The project area is within the drinking water protection areas (DWPA) serving the surface water intakes for the public water systems of Kokhanok and Igiugig. Procedures and BMPs relevant to work within a DWPA will be implemented as part of the project SWPPP. There are no impaired waters near the project area.

Wetlands/Waters of the U.S.

Selective hand cutting of trees that are identified as obstructions to approach and departure surfaces will be performed within wetlands. Additional project work in waters of the U.S., including wetlands, is not anticipated.

Flood Zones

The project is not within a Federal Emergency Management Agency-mapped area. Work within unmapped floodplains is not anticipated.

Historic or Cultural Resources

Archaeological surveys and initiation of the Section 106 process have identified areas containing cultural resources. No work will be permitted in these areas. The project will continue to follow the 106 process, which is anticipated to result in a finding of no historic properties affected.

Section 4(f) and 6(f) Resources

There are no historic sites, local, state, or federal Recreation Areas, Wildlife Refuges, Critical Habitat Areas, or public parks in the vicinity of the proposed project. A review of Land and Water Conservation Fund grants indicates there are no recreational facilities in the project area that have received grant assistance. The project is not anticipated to involve permanent incorporation, adverse temporary occupancy, or constructive use of a Section 4(f) or 6(f) property.

Anadromous and Resident Fish Streams and Essential Fish Habitat

Two unnamed tributaries of Iliamna Lake flow through airport property, neither of which is classified as anadromous waters by the Alaska Department of Fish and Game (ADF&G). Proposed improvements are not anticipated to require work below the ordinary high water mark of streams.

Threatened and Endangered Species

According to the U.S. Fish and Wildlife Service (USFWS) website, there are no listed threatened or endangered species or designated critical habitat near the Kokhanok Airport.

Eagles and Eagle Nests

There are no known eagle nests within 660 feet of the project area. In accordance with the USFWS letter to DOT&PF dated Oct 3, 2019, a ‘take’ permit is not required.

Migratory Bird Habitat

Migratory birds are likely to inhabit vegetated areas of airport property. The project would comply with the provisions of the Migratory Bird Act. Clearing and grubbing activities will occur outside of the bird window currently specified for this area as May 1 to July 15.

Hazardous Materials

There are no known hazardous material sites within or in the vicinity of the project area.

Other Environmental Factors of No Concern

The following environmental impact categories do not have protected or potentially impacted resources present in the vicinity of the project area or are no longer in effect:

- Air Quality: Kokhanok is not in a non-attainment or maintenance area for National Ambient Air Quality Standards.
- Visual Effects: No changes to the intensity of existing airfield lighting are anticipated.
- Coastal Zone Management Program: The program is no longer in effect in Alaska.
- Coastal Resources: There are no designated coastal resources near the project.
- Farmlands: There are no designated Prime or Unique Farmlands near the project.
- Noise and Land-Use: There will be no change to the configuration of the airfield, and no change in existing noise levels is anticipated.

Construction Impacts

Construction impacts are anticipated to include water quality, air quality, noise, and aircraft traffic. Temporary increases in dust, emissions, and noise may result from the operation of construction equipment. Dust will be mitigated with water during construction and application of a dust palliative after construction. Storm water discharges from construction areas may temporarily impact water quality within receiving waters. Aircraft operations will be temporarily impacted during construction activity on the runway, taxiway, and apron.

FAA FAR Part 77 Clearance

This rehabilitation and lighting project will not permanently affect the existing Part 77 surfaces. A Construction Safety and Phasing Plan (CSPP) will be provided with the contract documents specifying allowable heights and location of equipment and material stockpiles to provide temporary staging below existing Part 77 surfaces. Temporary construction activities performed within the Part 77 surfaces will be addressed in the CSPP, and limited closures of the runway and taxiway will be necessary to facilitate construction. To the greatest extent possible, work in proximity to the runway or temporary runway will be performed outside peak operating hours to minimize the impact on airport users. A 7460-1 “Notice of Proposed Construction or Alteration” will be prepared with the CSPP for DOT&PF and FAA review and approval. Submittal of Form 6000-26 to the FAA will also be required to notify the Air Traffic Organization of the planned impact and strategic event occurring at the airport. Half-width runway operations are planned.

Critical Aircraft for Design

The Critical Aircraft for Runway 07/25 design is the Pilatus PC-12, which has an RDC of A-II (Small) and TDG 2. Although it has less than 500 operations per year, the PC-12 is the aircraft with the greatest number of operations at the Kokhanok Airport. The Cessna C206/207 Stationair, an A-I (Small), is second in number of operations. Other less frequent A-IIs include the Cessna 208 Caravan and the Casa C212 Aviocar. Medevacs and other occasional operations by AAC B aircraft include Beech 200 Super Kings and King Air 100, as well as Piper Navajo PA-31s.

For purposes of determining the temporary runway dimensions necessary during construction, the needs of the PC-12 will drive design. Table 4 below summarizes data from reported operations about the fleet mix of aircraft with operations at Kokhanok Airport for the base year (2022) of the aviation forecast.

Table 4: Base Year (2022) Aircraft Operations

CESSNA C206/207 STATION AIR	A-I	322
DEHAVILL AND DHC2 BEAVER	A-I	5
CESSNA C208 CARAVAN	A-II	176
PILATUS PC-12	A-II	416
PIPER NAVAJO PA-31	B-I	8
BEECH AIRLINER 99	B-I	4
BEECHCRAFT KING AIR 100	B-II	2
BEECH 200 SUPER KING	B-II	24
CESSNA CONQUEST	B-II	2
BOMBARDIER CHALLENGER 600	C-II	2

Interviews showed that the Illiamna Air Taxi is the carrier with the greatest number of PC-12 and 206/207 operations. It appears that Lake and Pen has the greatest number of C208 operations – possibly over 200 – but they are unreported in the FAA data of scheduled service and filed flight plans. Lake Clark Air occasionally operates the Navajo and Beech 99. Dena'ina Air flew the Navajo there, and they own a Douglas DC-3 but were not sure if they had flown it to Kokhanok. Most of the medivacs were on the Beech 200.

Soils and Grading

HDL performed geotechnical investigations at the Kokhanok Airport between September 18, 2023, and September 25, 2023 and between December 5, 2023 and February 19, 2024. HDL advanced 15 hand augers in Runway 07/25, 1 hand auger in the taxiway, and 2 hand augers in the apron. The purpose of the hand augers was to provide geotechnical information about the existing surface course and embankment material for the determination of the structural section. HDL performed Dynamic Cone Penetrometer (DCP) testing at the hand auger locations to provide strength data for the airport structural section.

Six test pits were dug at each of four potential material sources for a total of 24 test pits. Two of the potential material sources are composed primarily of sand and gravel, and two are bedrock sources.

HDL advanced 13 borings on the runway, taxiway, and apron; five at the onsite material source 03 (MS-03); and 16 at MS-04.

The following sections summarize information collected during the geotechnical investigations. See the Geotechnical Data Report (GDR), dated May 2024, in Appendix A for additional information.

Soils and Profile

Surficial deposits near the Kokhanok Airport generally consist of glacial deposits and lake terrace deposits. The glacial deposits are generally comprised of gravels, cobbles, and boulders within a silt and sand matrix. The lake terrace deposits generally consist of relatively clean sand and gravel overlain by peat and silt.

Hand augers performed in the airport embankments generally encountered between 1 and 2 feet of aggregate surface course underlain by sand and gravel embankment material. The aggregate surface course sampled generally had fines contents ranging from 9.9% to 19.1% and moisture contents ranging from 4.2% to 8.3%. The underlying embankment material generally had fines contents ranging from 3.0% to 21.0% and moisture contents ranging from 4.0% to 10.1%. See the GDR in Appendix A for more detailed information.

Internal Drainage and Frost Conditions

The runway, taxiway, and apron surfaces reportedly become soft during spring break-up, significant rain events, and mid-winter thaw events, resulting in DOT&PF restricting aircraft on the runway. Over 50% of the surface course samples tested showed signs of degradation based on the increased fines content and sand content relative to the requirements of DOT&PF Standard Specifications for Airport Construction Item P-299, Aggregate Surface Course (P-299). The percent fracture generally met the requirements of P-299; however, field personnel noted that the course aggregate fractured and broke down with minimal effort during hand auger excavation. Laboratory testing performed on aggregate from MS-01 indicates that the material does not meet the material quality requirements of P-299. The existing surface course is likely sensitive to moisture and responsible for the reported performance issues.

The granular embankment material and subgrade appeared to be well drained and ranged from non-frost susceptible to moderately frost susceptible. HDL did not observe signs of frost-related movement during the initial site visit or geotechnical investigation.

Cut and Fill, Borrow, and Waste

We anticipate the project will use locally sourced aggregate to support construction, as detailed in the Material Sources section of this report. A material disposal site will be required after excavation of the existing surface course. Currently, the airport property does not have a designated waste area. However, the excavated portion of MS-01 may serve as an on-site waste disposal site. An additional disposal site may be where a new taxiway is shown on the Ultimate scenario of the ALP. Excavation and grubbing waste will be disposed of in a contractor-provided

waste disposal area off the airport property. If the contractor chooses to dispose of waste off the airport property, then haul and access routes shall be defined in the approved Traffic Control Plan (TCP) provided by the contractor.

Material Sources

HDL identified 4 potential material sources, designated MS-01 through MS-04, during the geotechnical investigation. The potential material sources are shown in Figure 2 below.

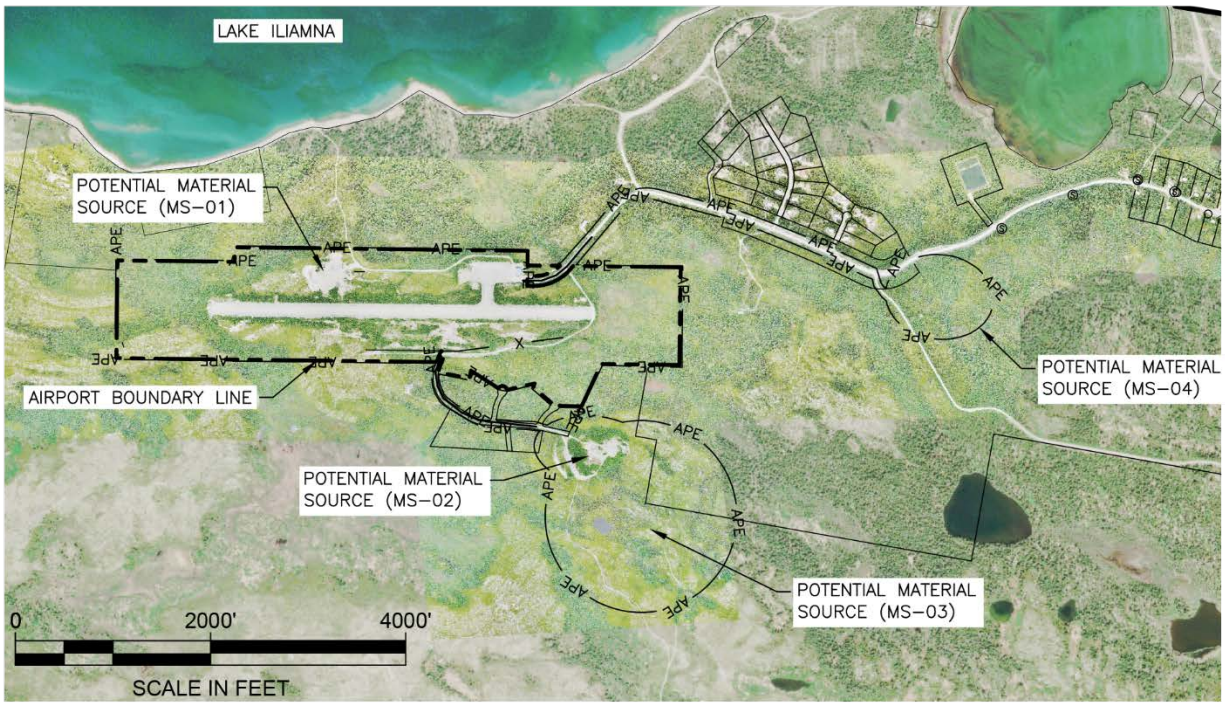


Figure 2: Potential Material Sources

Test pits performed at MS-01 encountered a 2-foot-thick organic mat underlain by clean sand with varying amounts of gravel and cobbles. The material encountered generally met the requirements for Item P-152 but did not have a significant enough quantity of gravel and cobbles for production of P-299.

Test pits performed at MS-02, located near the Alaska Peninsula Corporation (APC) gravel pit, generally encountered a 2.5-foot thick organic mat underlain by sand and gravel. Similar to MS-01, the material encountered in MS-02 is generally suitable for Item P-152 but does not contain enough gravel and cobbles to efficiently produce Item P-299.

Test pits performed on the western portion of MS-03 generally encountered bedrock between 2.5 feet and 6.5 feet below the ground surface. Borings performed on the western portion of MS-03 generally encountered bedrock between 4.6 feet and 9 feet below the ground surface. Aggregate quality testing performed on samples recovered from MS-03 indicates the material meets the requirements for Item P-299.

Test pits performed on the western portion of MS-04 generally encountered bedrock between 1 foot and 2.5 feet below the ground surface. Borings performed on the western portion of MS-04

generally encountered bedrock between 2 feet and 24 feet. Aggregate quality testing performed on samples recovered from MS-04 indicates the material meets the requirements for Item P-299.

While the material at MS-03 and MS-04 is indicative of meeting the requirements for Item P-299 the material will need to be mined and processed to meet the gradation requirements of Item P-299

Drainage

There are no culverts in Runway 07/25 or the taxiway. There are existing culverts along the access road near the east end of Runway 07/25. The Runway 07/25 embankment lies at or near the adjacent grade on the east end with little to no existing ditching. Snowmelt likely ponds adjacent to the runway during spring thaw, which may result in saturation of the embankment material. The proposed project will include a rock-lined ditch along the south side of the runway embankment to improve snow storage, promote infiltration, and provide positive drainage away from the runway embankment.

Rainfall

Kokhanok does not have rainfall monitoring capabilities, but Iliamna Airport, 22 miles north-northwest of Kokhanok airport, has an average of 25.56 inches of precipitation per year and 59.2 inches of annual snowfall (Western Regional Climate Center, 2016). An average total of 2.97 inches of precipitation is recorded during the design 10-year, 24-hour storm event (National Oceanic and Atmospheric Administration (NOAA) Precipitation Frequency Data Server).

Capacity and Structure Design

The project includes ditching along the south side of the runway, which will improve drainage away from the runway, increase potential snow storage, and improve infiltration.

Ponding and Erosion Control

The project will maintain the existing drainage patterns in and around the project area. The lack of ditching on the east end of the runway likely results in ponding during midwinter thaw events and spring thaw. The proposed project will include a rock-lined ditch along the south side of the runway embankment to improve snow storage, promote infiltration, and provide positive drainage away from the runway embankment.

A site-specific ESCP will be included in the project specifications for the contractor's use in developing the SWPPP. Storm Water BMPs will be employed during construction for temporary erosion and sediment control.

Surfacing

Existing Surfacing

The project will rehabilitate the existing surfaces of the runway, taxiway, and apron. In general, hand augers encountered 1 to 1.5 feet of aggregate surface course on the airport embankments. Over 50% of the surface course samples tested showed signs of degradation based on the increased fines content and sand content relative to the Item P-299 specification. The existing surface course is likely sensitive to moisture and responsible for the reported performance issues.

Design Loading Basis

There are no changes forecasted for aircraft demand, and the project area is anticipated to serve the fleet mix currently utilizing the apron, taxiway, and Runway 07/25. The Draft Geotechnical Recommendations were developed for the critical aircraft with a maximum takeoff weight not greater than 12,500 pounds.

Recommendations

HDL recommends removing 18 inches of the runway and taxiway, and 15 inches of the apron, existing surface course to improve the overall performance at Kokhanok Airport. The proposed structural section was developed based on FAA guidance and past experience and meets the 10-year design life. The proposed structural section for the resurfacing of Runway 07/25 and the taxiway includes installing 9 to 15 inches of Item P-299, with 15 inches at the crown and 9 inches at the shoulder. Place Item P-152 beneath the surface course, as needed, to achieve final grades. The apron structural section will include 9 inches of Item P-299, overlaying Item P-152, as needed, to achieve final grades. See the Geotechnical Recommendations, dated May 2024, in Appendix B for additional information.

Lighting and NAVAIDs

Runway 07/25 has medium intensity runway lighting (MIRL), and the taxiway is equipped with medium intensity taxiway lighting (MITL). The taxiway and runway edge lights are at the end of their useful life and need to be replaced with a new medium intensity lighting system. The threshold lights are installed in two groups of three lights located symmetrically about the extended runway centerline. Groups of four lights are required by AC 150/5340-30J 2.3.2.2.1 for non-precision instrument runways. The new runway lighting layout will be very similar to the existing lighting except for two groups of four threshold lights.

A primary lighted wind cone and segmented circle are located west of the apron. An unlighted supplemental wind cone is located near the west end. The wind cones have reached the end of their useful lives and will be replaced. The existing concrete foundation will be re-used.

A rotating airport beacon is located at the northwest corner of the SREB on a tip-down pole. The tip-down pole and beacon were recently replaced on the existing concrete foundation. No impacts to the beacon are anticipated in this project.

The Electrical Equipment Building (EEB) is in good overall condition, but some repairs need to be made inside. The interior light fixtures are obsolete compact fluorescents and are failing. The strip heater in the lighting control panel has failed, and the wires connecting it have burned. The output wiring terminals in the constant current regulator (CCR) are showing signs of overheating, and the output current is out of spec. Otherwise, the CCR appears to be in good condition. One of the tie-downs at the EEB skid base has failed. The coax cable for the radio controller antenna has failed, and a temporary antenna has been installed. These items will be repaired or replaced, and a surge protective device will be provided for the radio controller.

The FAA owns and operates Precision Approach Path Indicators (PAPIs) and Runway End Identifier Lights (REILs) at Kokhanok Airport. The PAPI and REIL handholes may need to be adjusted to match the new finished grade, and the counterpoise guard wire may need to be repaired in select areas after the re-grading process. No other impacts to approach or navigational aids are anticipated.

Utilities

The airport is served by an overhead utility line from the east. The SREB, EEB, and FAA facilities are fed by overhead service drops. No utility work is anticipated.

Building Demolition

No buildings are proposed to be demolished with this project.

Fencing and Gates

This project includes adding approximately 1,100 linear feet of fencing east of the existing fencing south of the runway. The fencing will run approximately parallel to the runway and is designed to discourage ATV traffic from crossing the runway.

III. MODIFICATIONS OF AGENCY AIRPORT DESIGN

No modifications are expected.

IV. COST ESTIMATES

Engineer's Estimate

A detailed cost estimate is presented in Appendix I. The estimate is rounded and summarized in Table 5 below:

Table 5: Engineer Estimate

Basic Bid		$REDACTED
Contingency	10%	$REDACTED
ICAP	7.03%	$REDACTED
Construction Administration	20%	$REDACTED
	Total	$REDACTED

Special Considerations

Project construction will likely require night closures, half-width runway operations, brief daytime runway closures, taxiway closures, and closures to portions of the apron. The project will be sequenced such that it is constructed in multiple phases to limit the impact of runway closures. No special considerations for fuel contamination or other items apply.

Additive Alternates

No additive alternates are planned for this project.

V. PROJECT SCHEDULE

General: The project is scheduled for anticipated delivery for contingent funding in 2025 and construction in 2025 and 2026.

Time Constraints: Time constraints for this project are linked to the funding timeline and availability in the AIP funding schedule.

Estimated Schedule:

25% Review:	Dec 5, 2023
Environmental Document (Cat Ex)	Sept 2, 2024
75% PIH Review:	Sept 17, 2024
95% PS&E Review:	Dec 11, 2024
Final PS&E	Jan 24, 2025
Project Advertise	Spring, 2025 (Contingent)
FAA Grant Application Submission:	Spring, 2025

Construction funding for the Kokhanok Airport Rehabilitation Project is contingent in 2025 and expected in 2026. Practical time constraints are imposed on the schedule by logistics of mobilization and the weather. The CSPP will restrict the duration of work in each work area to ensure the work is safely and expeditiously completed and that portions of the airfield are not closed for unnecessary durations.

VI. SAFETY PLAN

A Construction Safety and Phasing Plan (CSPP) will be prepared as part of the project construction documents. A CSPP is an FAA-approved plan that establishes contractor requirements for maintaining safe airport operational areas during construction, stipulates construction timelines and phasing requirements, provides safe and secure contractor access, and minimizes disruption to airport operations. The CSPP will require the contractor to hold safety meetings, contractor workforce training, and coordinate with DOT&PF and the Airport Manager.

Conditions for runway closures and the requirements for vehicle markings will also be outlined in the CSPP.

The primary goal of the CSPP is to maintain airport safety during construction and phase work to minimize the impact on airport users and airport-based businesses. The CSPP will be tailored to the needs of the Kokhanok Airport to minimize disruption to air and ground operations from construction activities.

Operations at Kokhanok Airport are comprised of scheduled air service activity and general aviation (GA) activity. The fleet mix is mainly single-engine small GA aircraft with some twin-engine operations.

Construction will be phased to allow daytime operation of the airport through a combination of nighttime runway and taxiway closures and half-width operations. Runway lights and visual aids will be turned off during construction, and temporary markings and lighting on the half-width runway will be utilized.

VII. UTILITY AND STORM DRAIN CONFLICT SUMMARY

Telecommunications, Electrical, and FAA facilities exist within the footprint of the project. FAA has been contacted, and a reimbursable agreement for the design phase was drafted.

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APPENDIX A
GEOTECHNICAL DATA REPORT

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APPENDIX B

GEOTECHNICAL RECOMMENDATIONS

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APPENDIX C

HYDRAULICS AND HYDROLOGICAL REPORT

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APPENDIX D
UTILITY CONFLICT REPORT

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APPENDIX E
ENVIRONMENTAL
(Reserved)

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APPENDIX F
CONTAMINATED SOILS
(Reserved)

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APPENDIX G
HAZARDOUS MATERIALS
(Reserved)

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APPENDIX H

CONSTRUCTION SAFETY AND PHASING PLAN

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APPENDIX I
ENGINEER'S ESTIMATE

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APPENDIX J
ENGINEERING CALCULATIONS

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