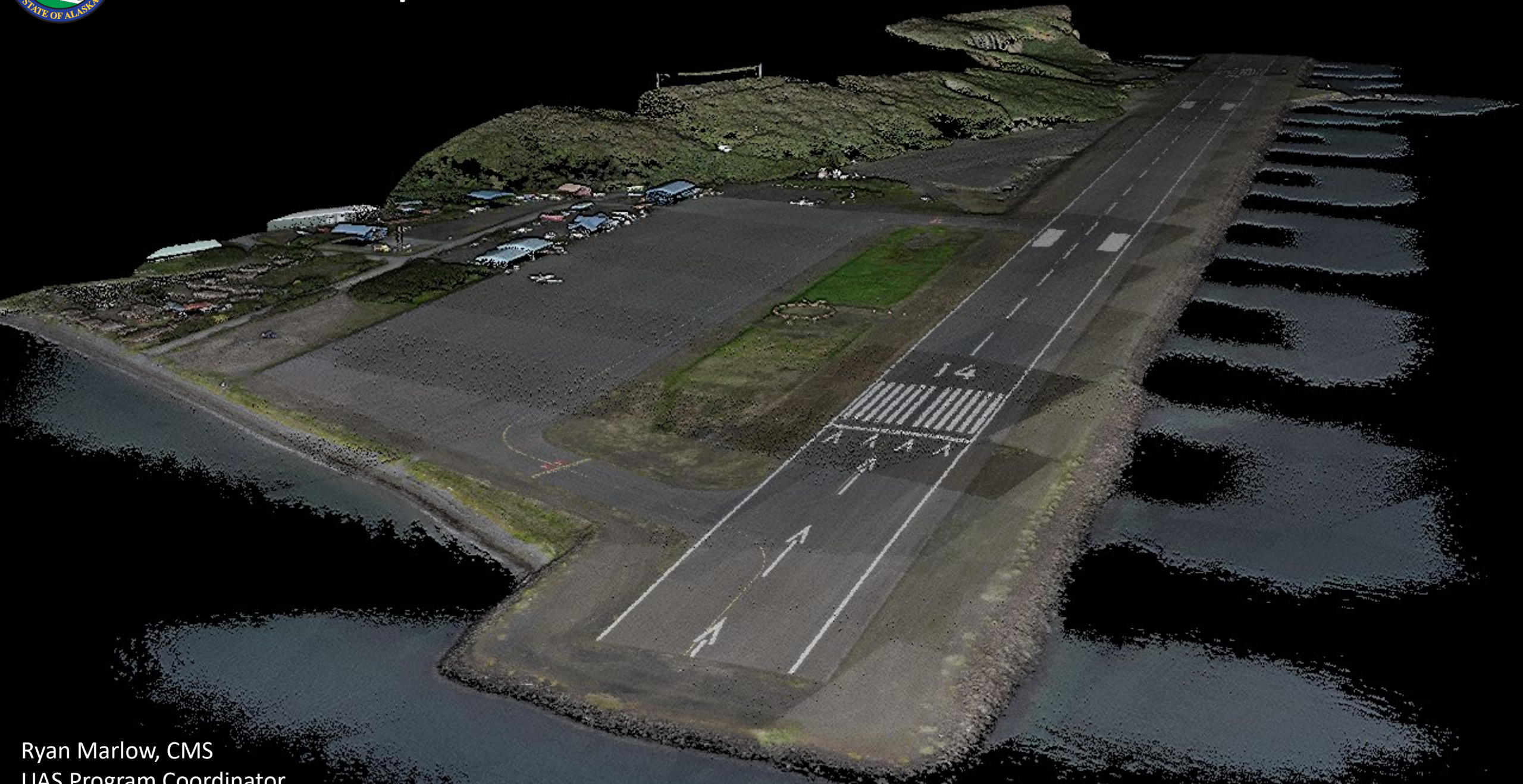




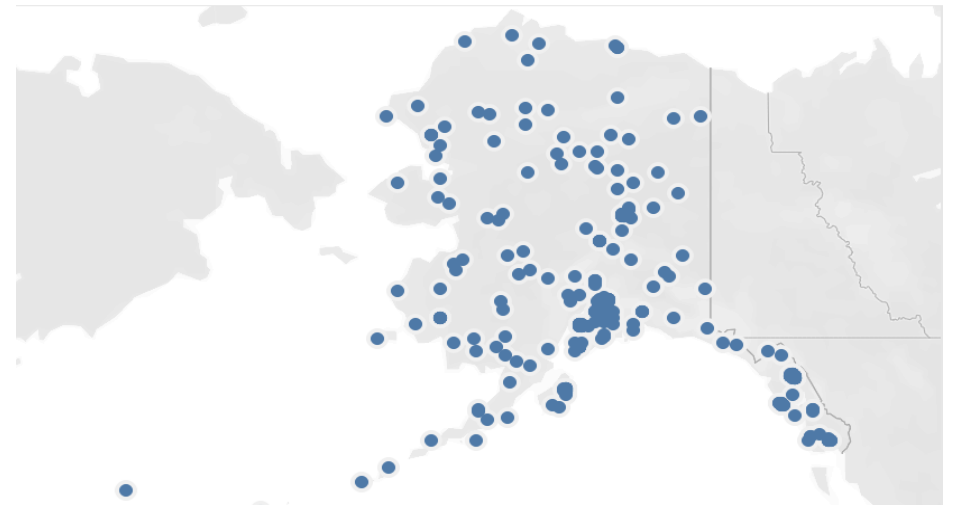
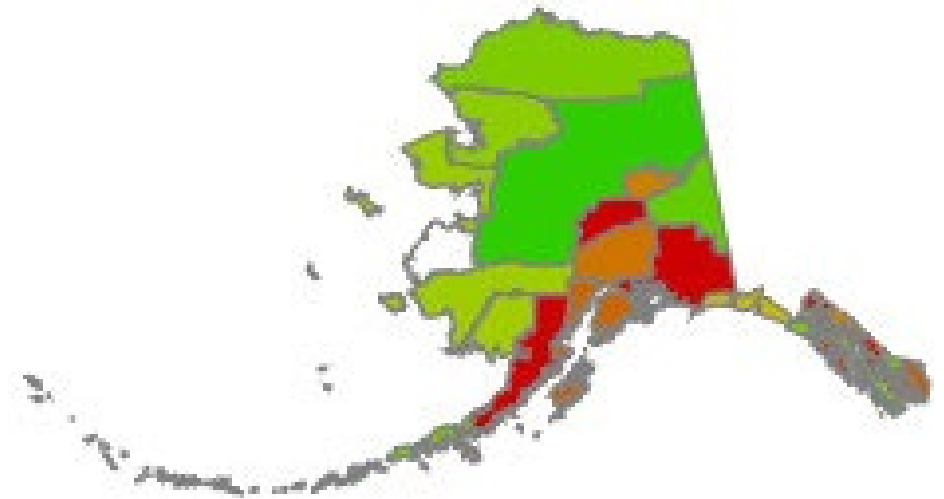
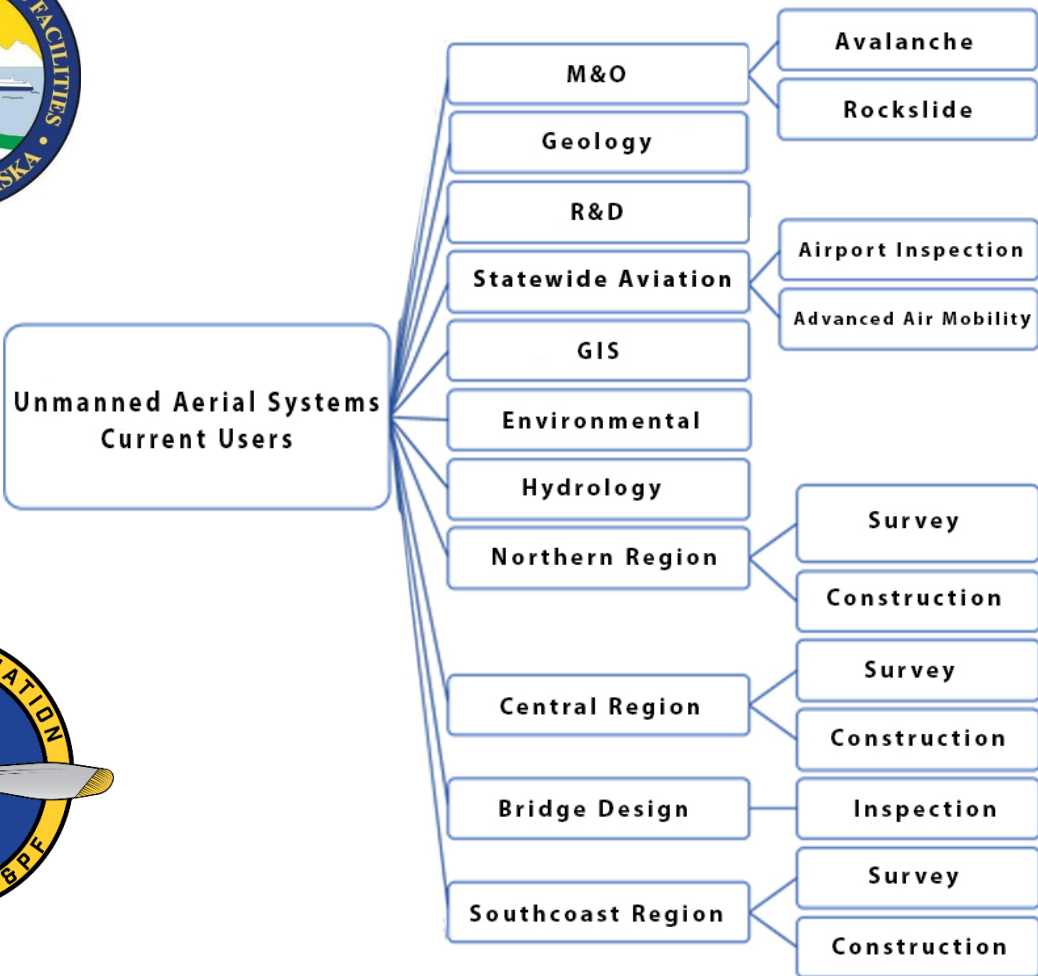
Alaska Department of Transportation & Public Facilities Infrastructure Inspection



Ryan Marlow, CMS
IIAS Program Coordinator

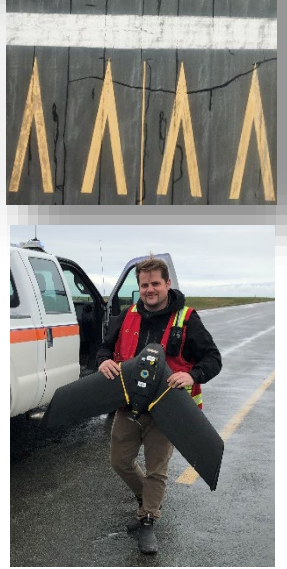
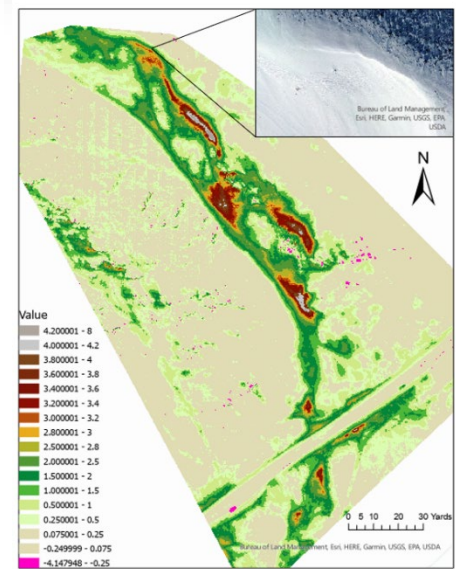
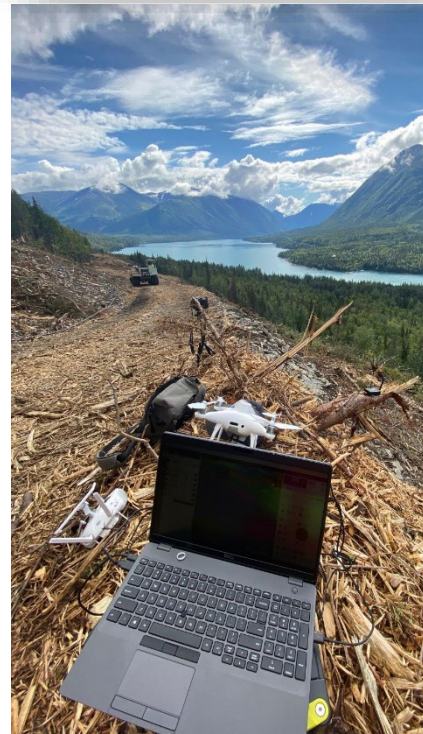
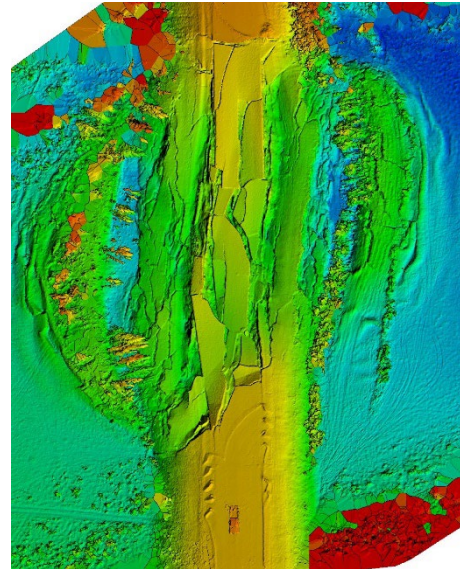
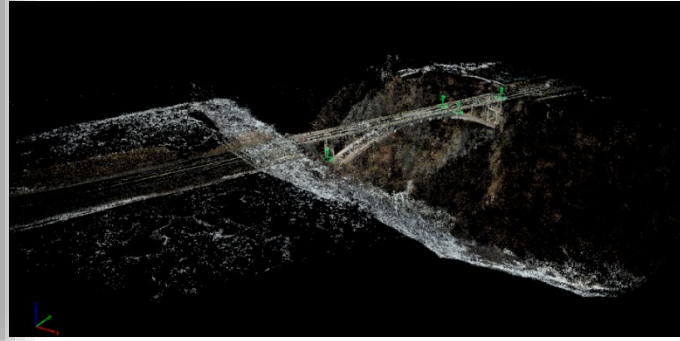
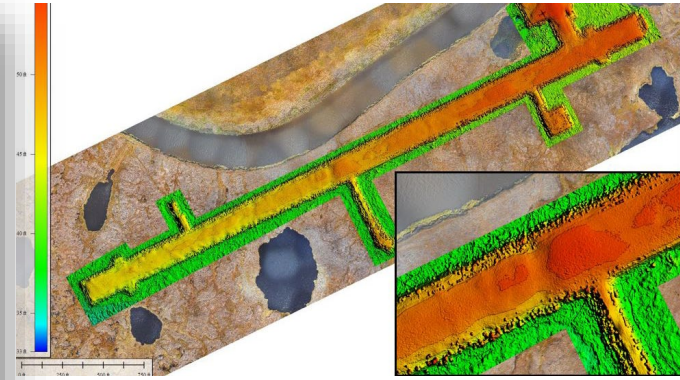


DOT&PF UAS PROGRAM



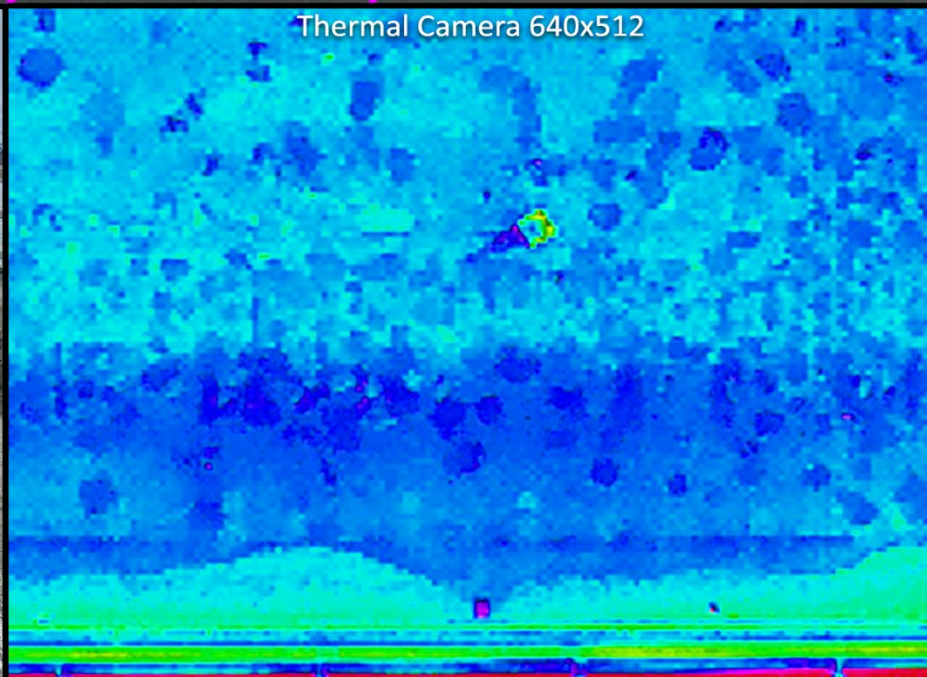
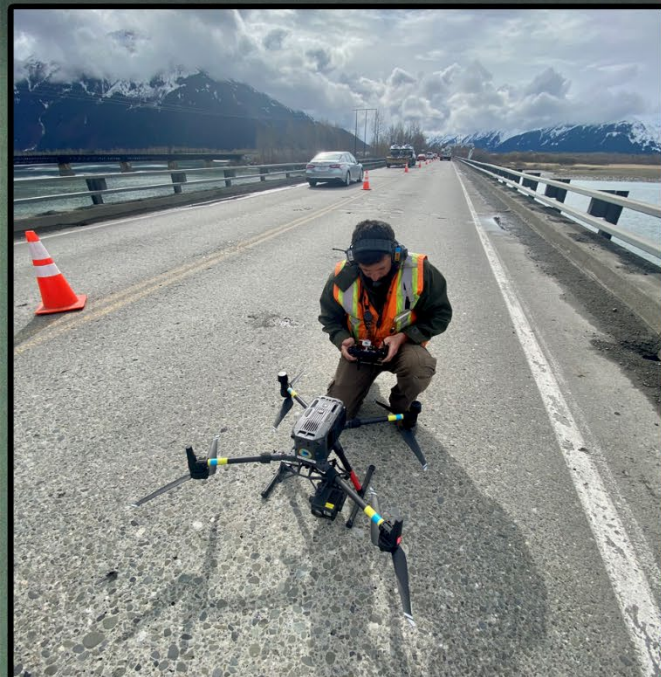
Small and Heavy UAS Platforms



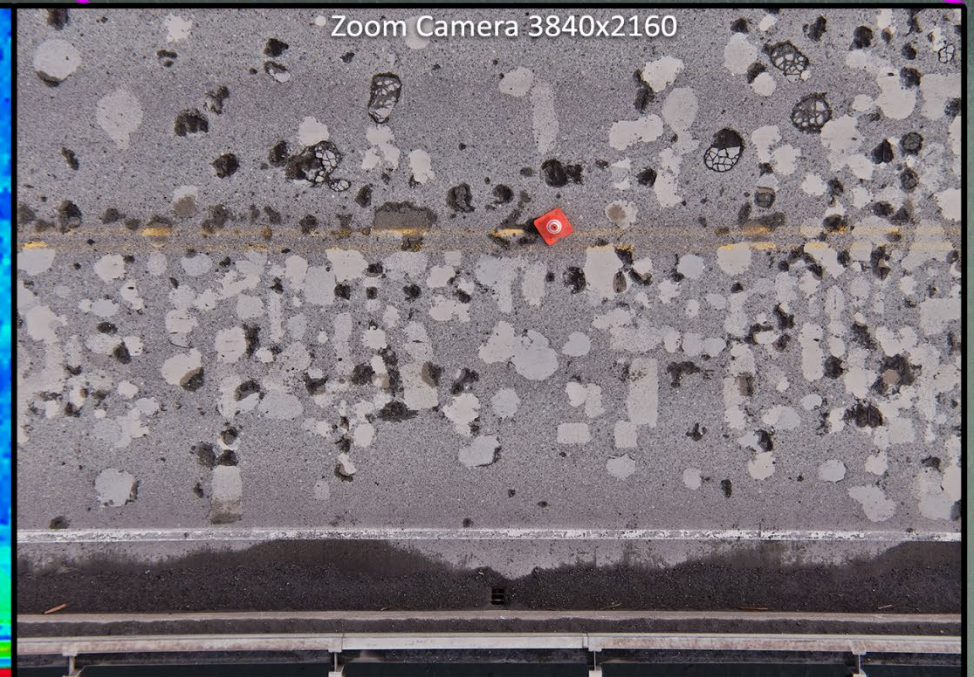




Wide Camera 4056x3040

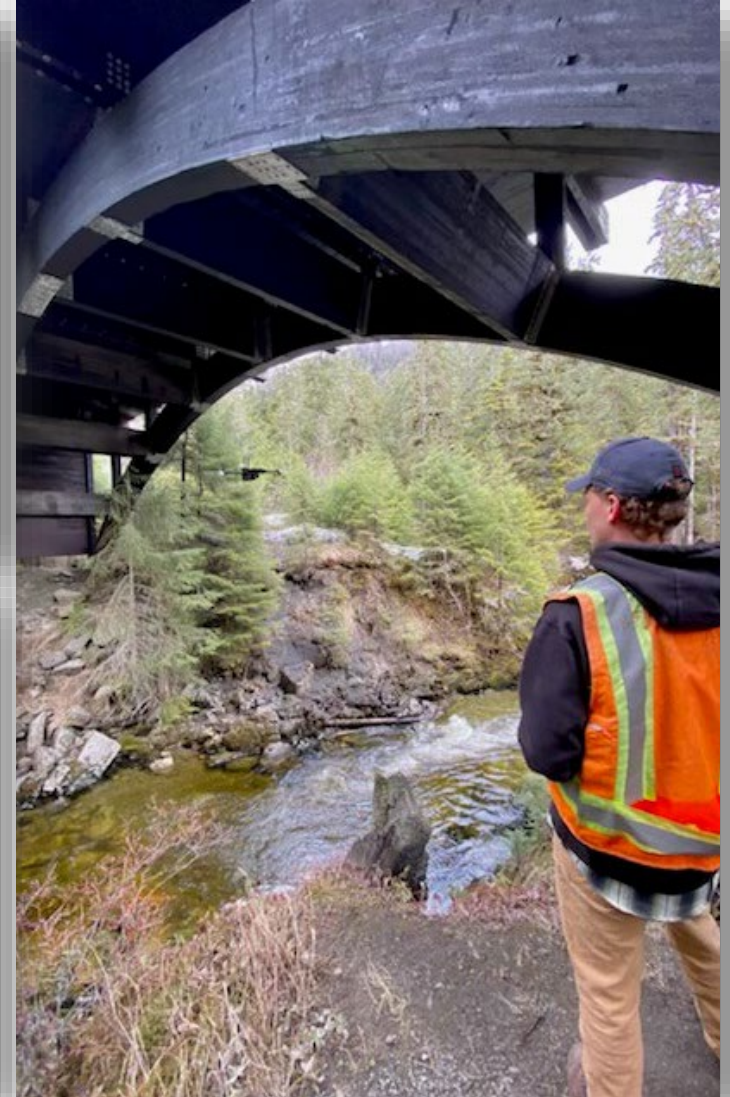
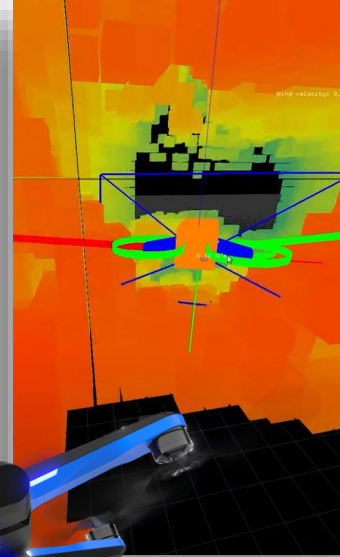


Thermal Camera 640x512



Zoom Camera 3840x2160

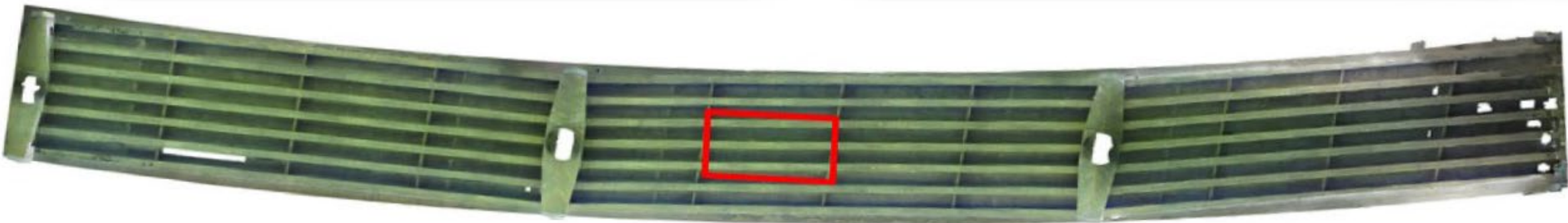
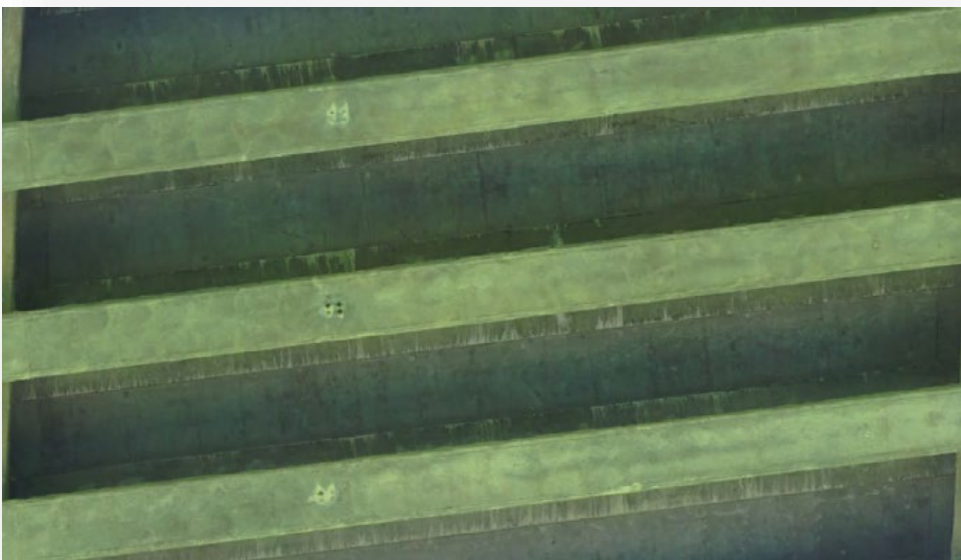
Autonomous 3D Scan – Fish Creek, Juneau AK



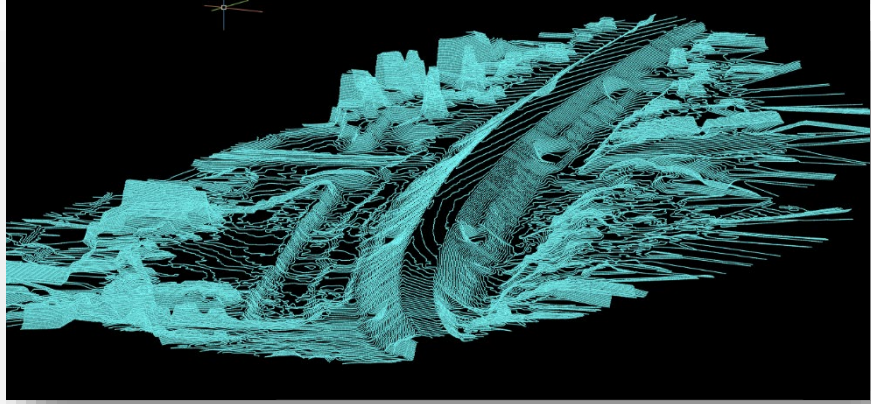
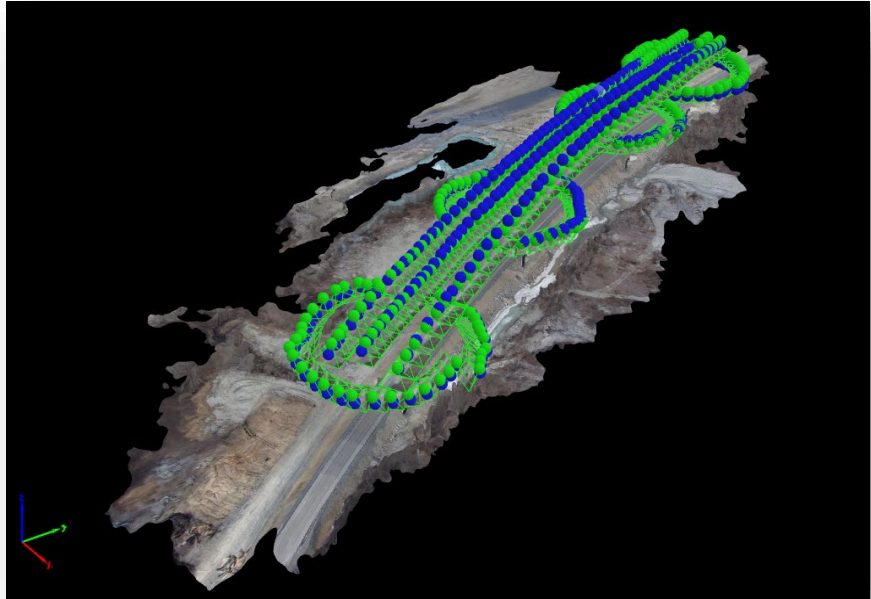
1.5mm/pixel (15 ft offset)
850 photos
Autonomous 3D Scan



Bridge Inspection and Scanning



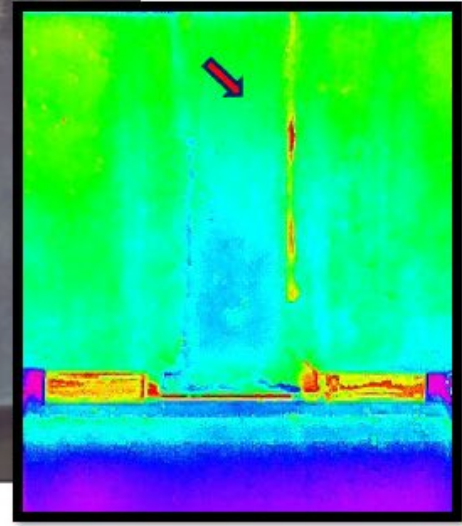
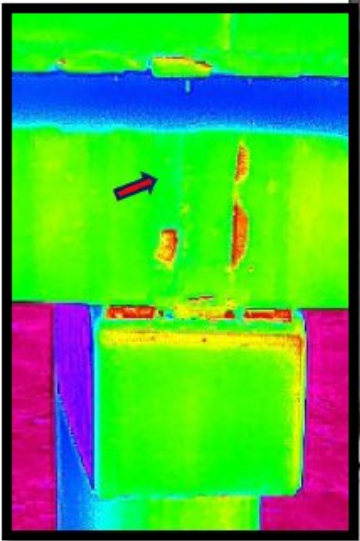
Bridge Culvert Inspection



Bridge Inspection and Scanning

Palmer Side

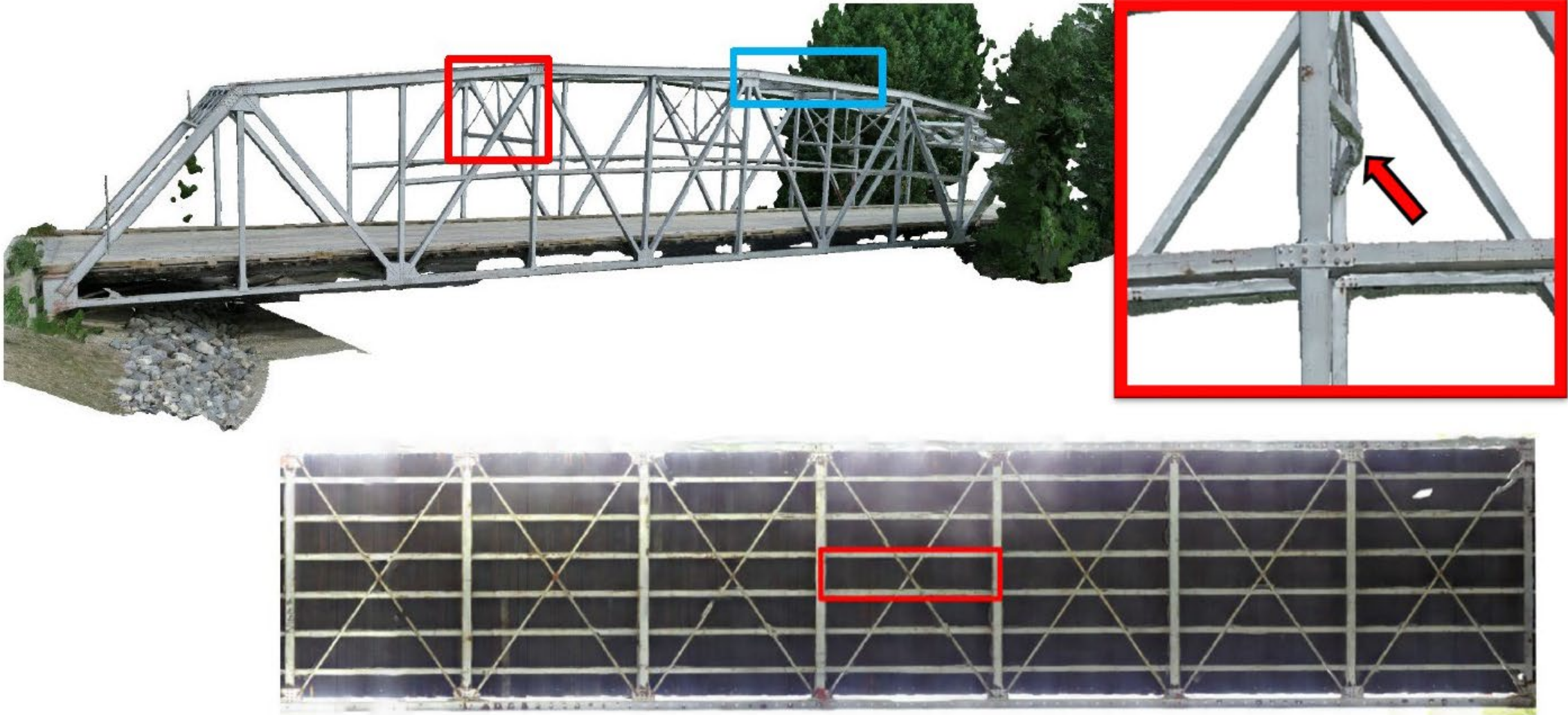
Anchorage Side



Bridge Inspection and Scanning



Bridge Inspection and Scanning

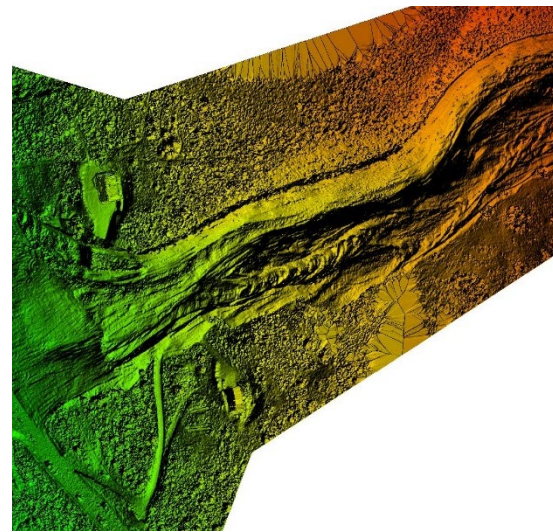
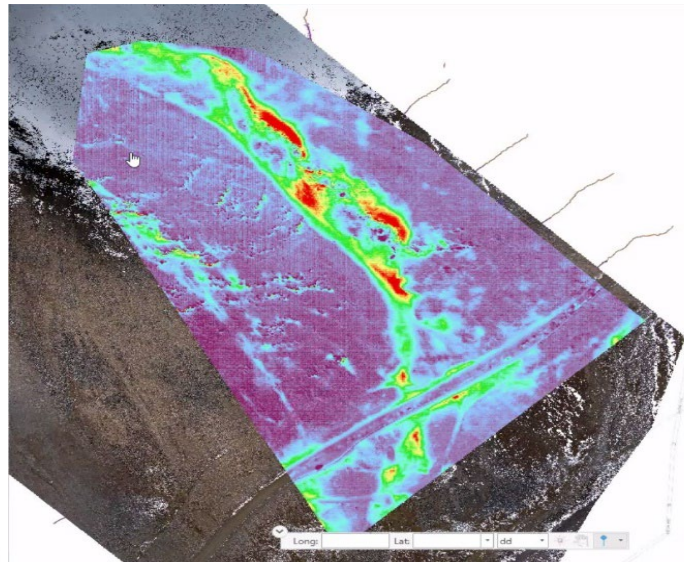
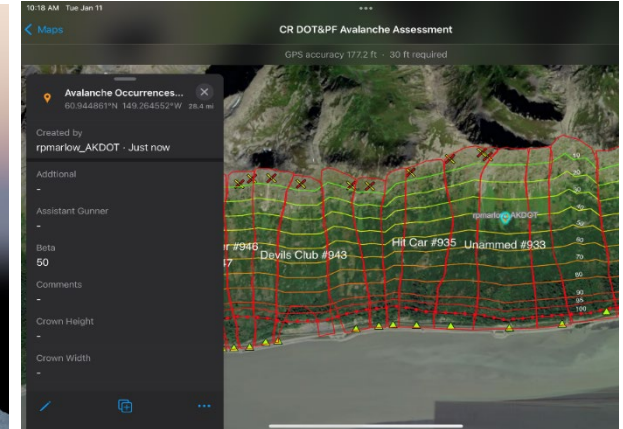
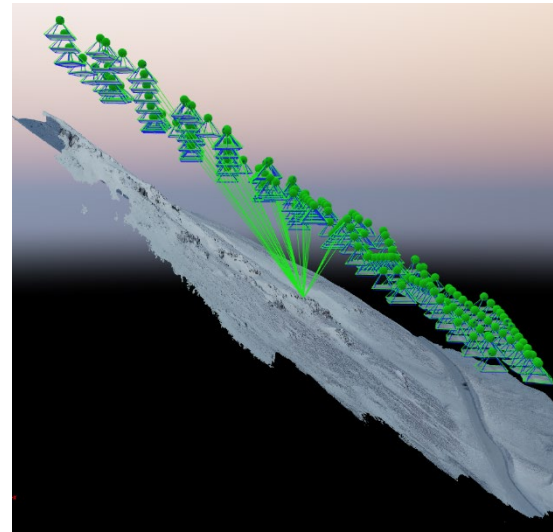
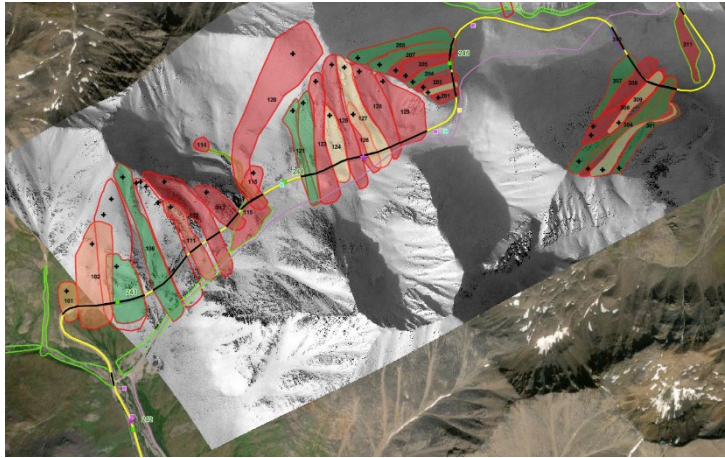




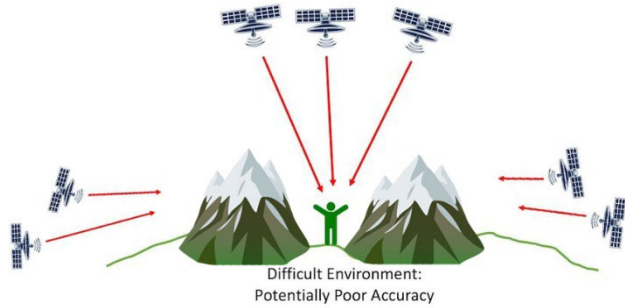
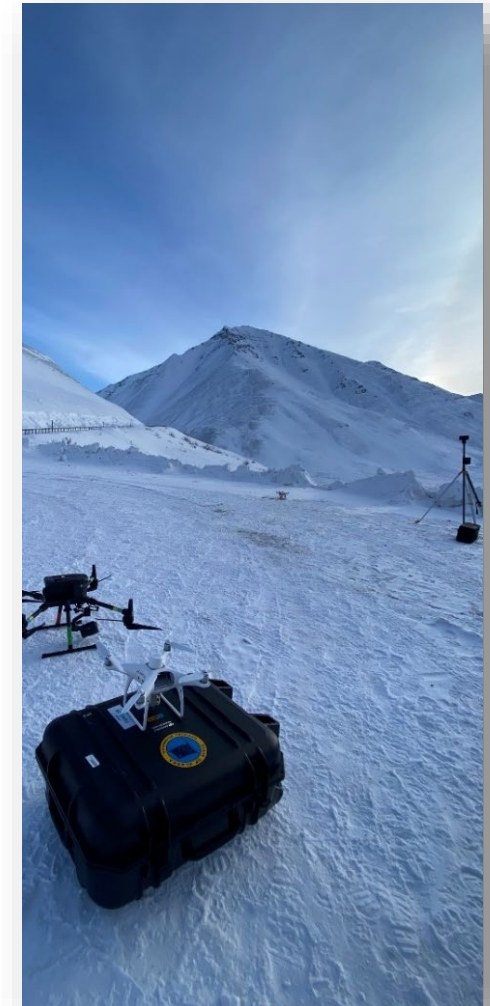
**Alaska Department of Transportation & Public Facilities
Avalanche Monitoring and Mitigation**

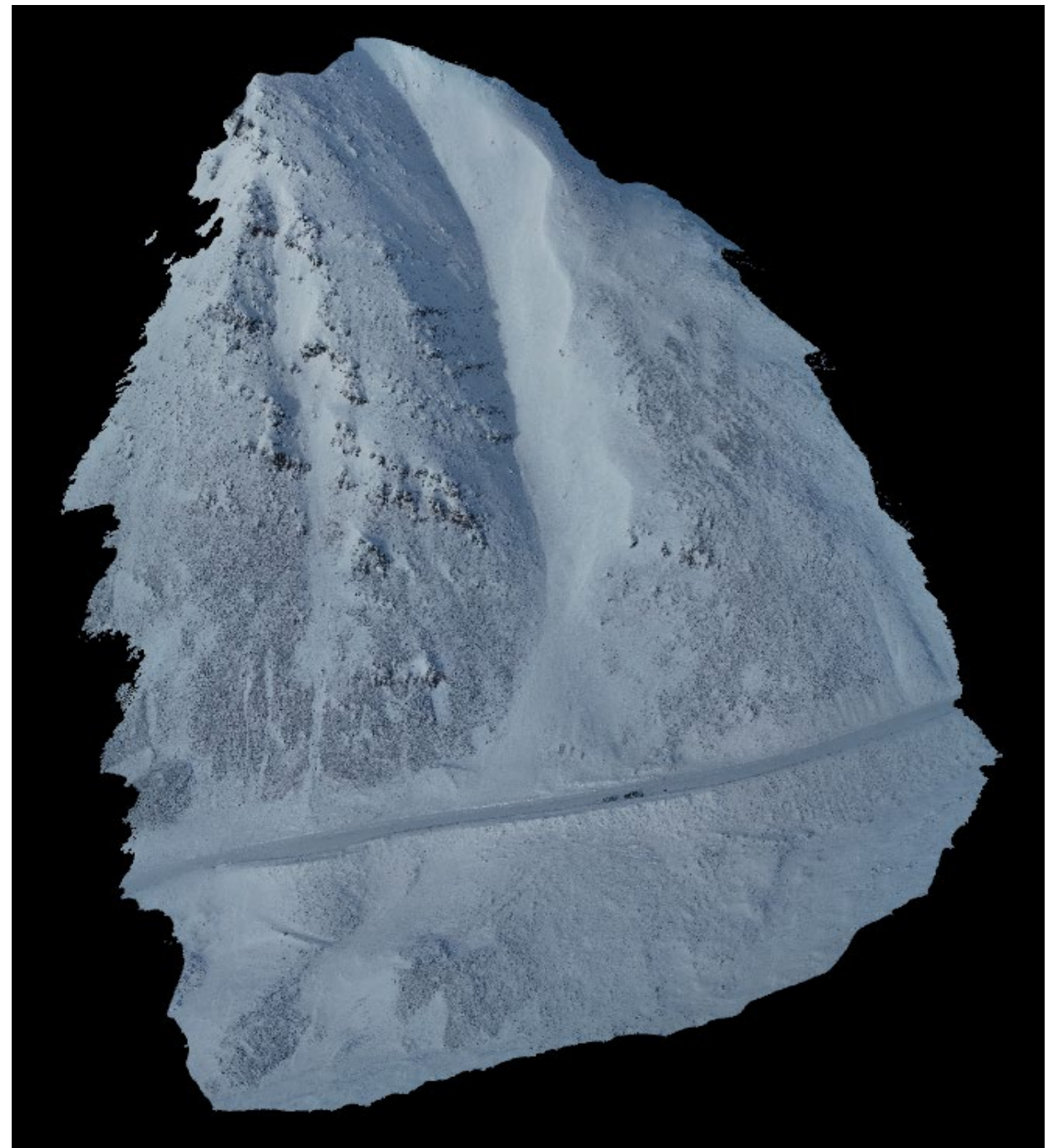
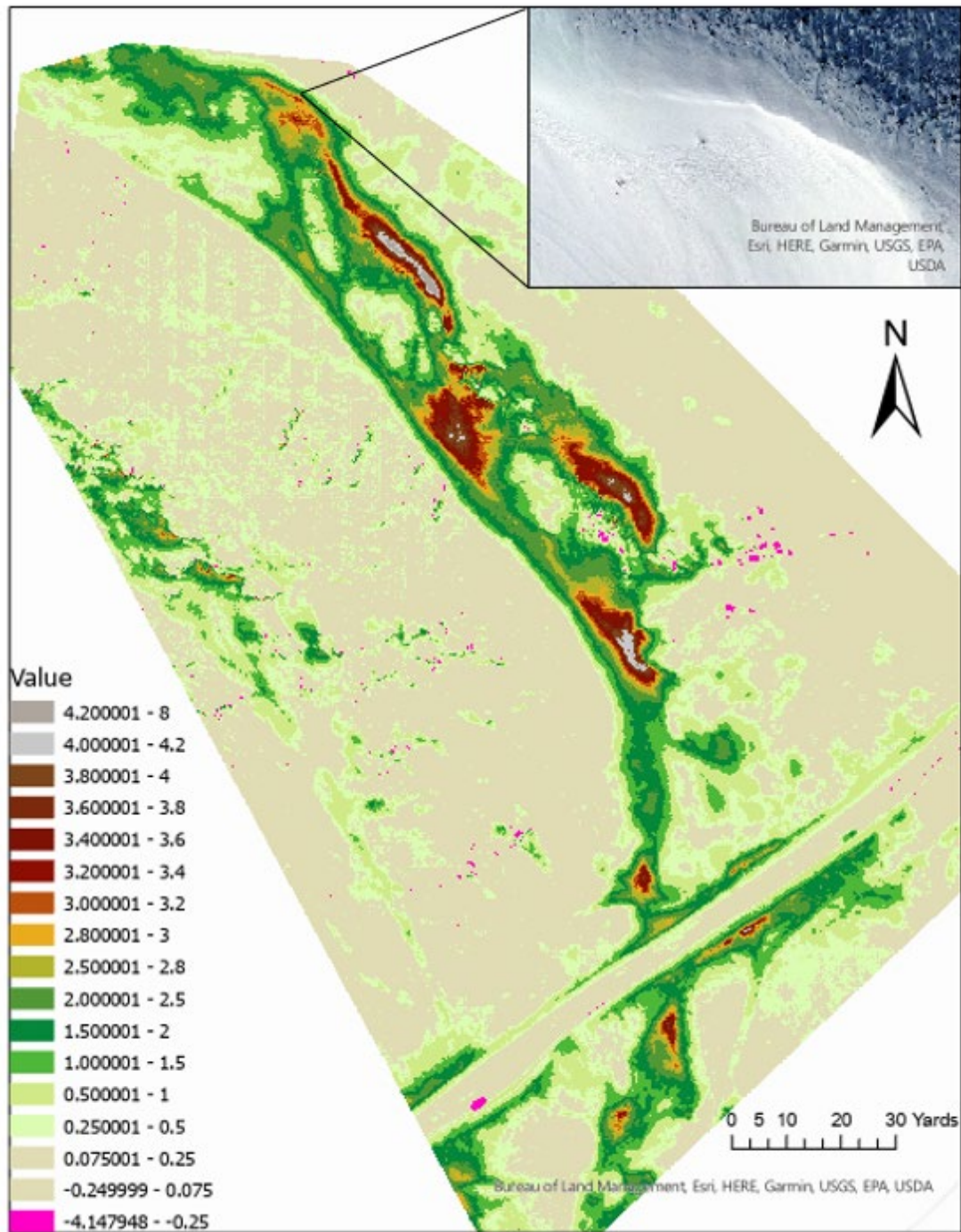


STIC- Avalanche 3D Mapping and Monitoring



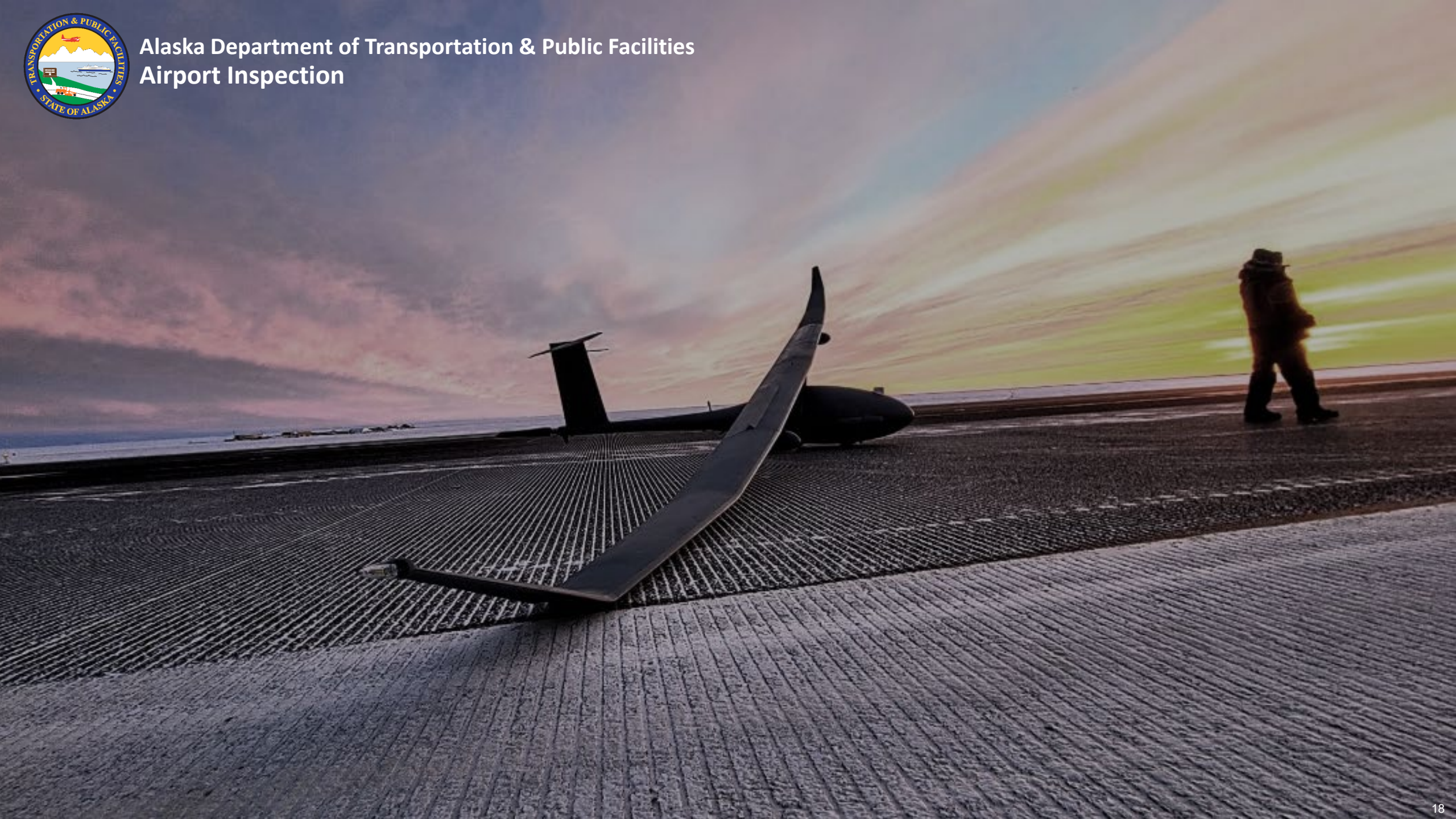
CFIT and GDOP



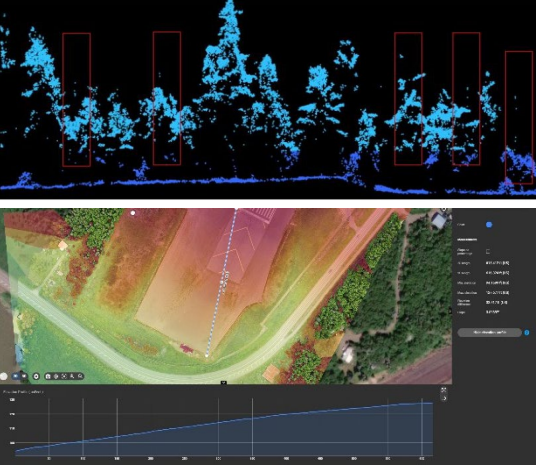
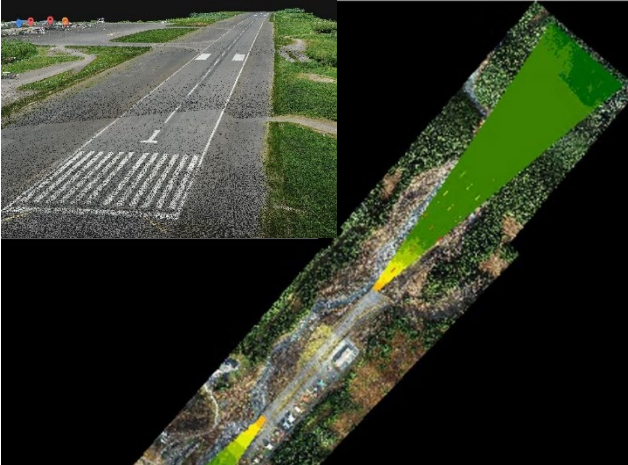
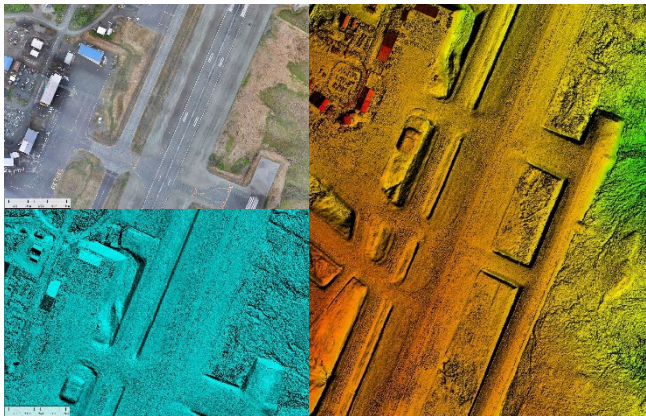
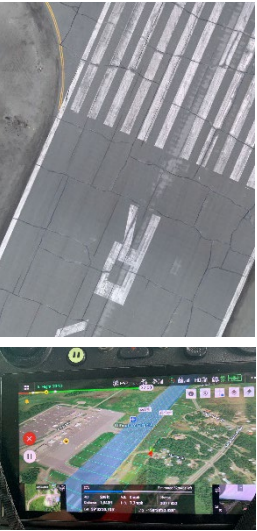
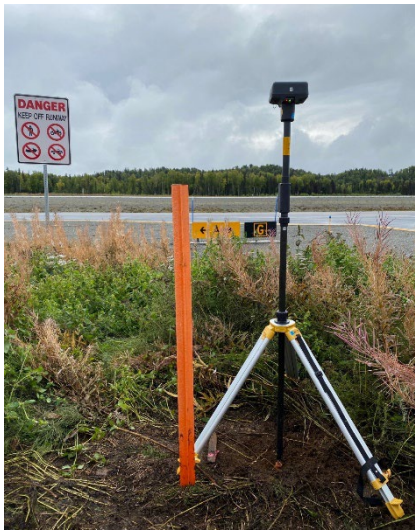




Alaska Department of Transportation & Public Facilities Airport Inspection



Airport Inspection



Authorized Drone Occurrences

UAS Operation Details (A):

Aircraft: Sensefly Ebee X under **Public COA 202-WSA-5453**

Task: Collect 3cm GSD imagery of the Bethel Airport

Date: June 2-3rd

Time: 20:00 - 5:00 Daily (WX Permitting)

Actual Flight Time: 1 Hour

Airspace: PABE Class D

Altitude: **400ft AGL**



-AUTHORIZED-



Remote Sensing Imagery GSD Comparison

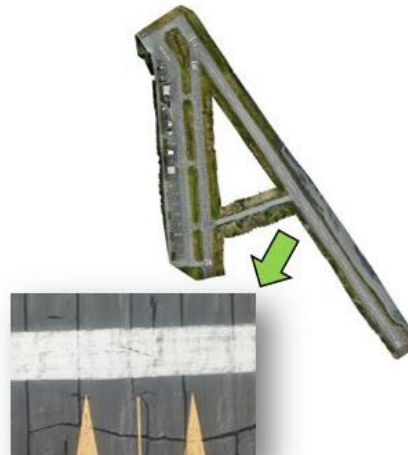
10 meter

≥ 50cm

3cm

2mm

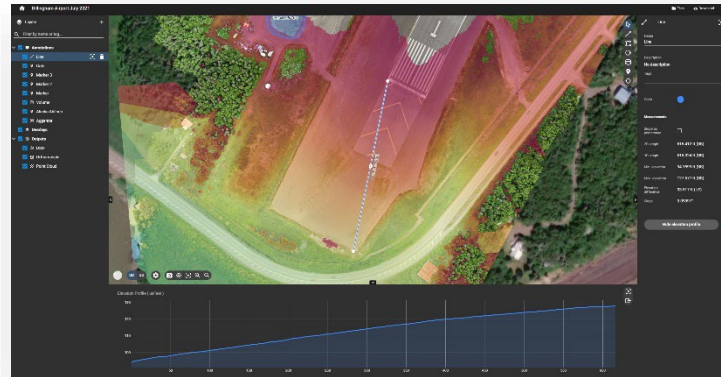
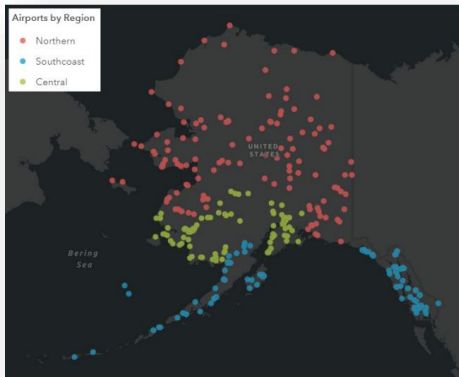
*Became Available January 21st, 2021



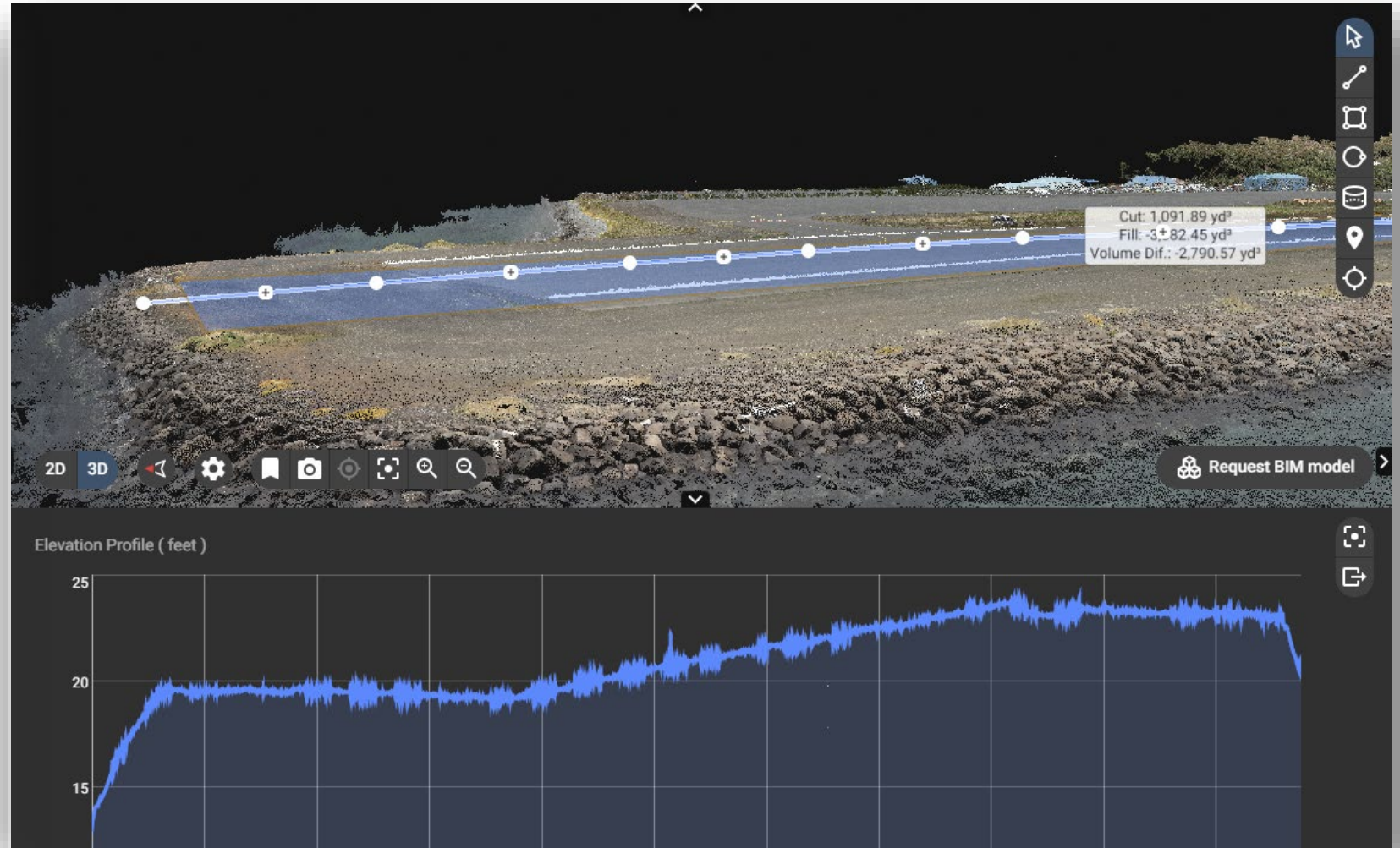
Satellite Imagery

VS

UAS Imagery



Sand Point Airport Runway Inspection

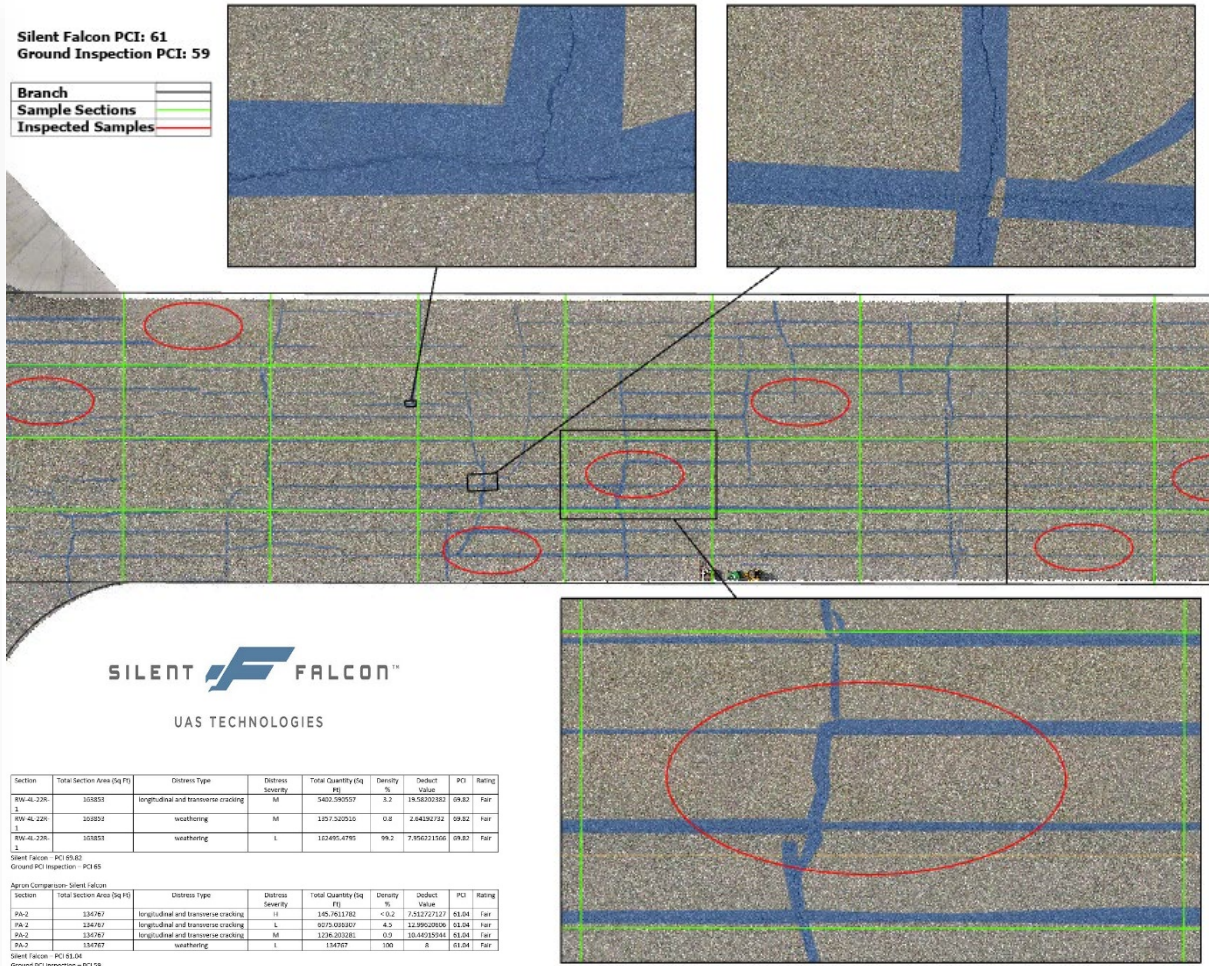


Automated PCI with Machine Learning



Silent Falcon PCI: 61
Ground Inspection PCI: 59

Branch
Sample Sections
Inspected Samples



SILENT **F** FALCON™
UAS TECHNOLOGIES

Section	Total Section Area (sq Ft)	Distress Type	Distress Severity	Total Quantity (sq Ft)	Density %	Defect Value	PCI	Rating
RW-4L-226	103853	longitudinal and transverse cracking	M	5433.590257	3.2	18.5830383	69.82	Fair
L								
RW-4L-229	103853	weathering	M	1197.320210	0.8	2.04192732	69.82	Fair
L								
RW-4L-238	103853	weathering	L	112495.4795	99.2	9.958211506	69.82	Fair
L								

Silent Falcon: PCI 61.04
Ground PCI Inspection: PCI 59

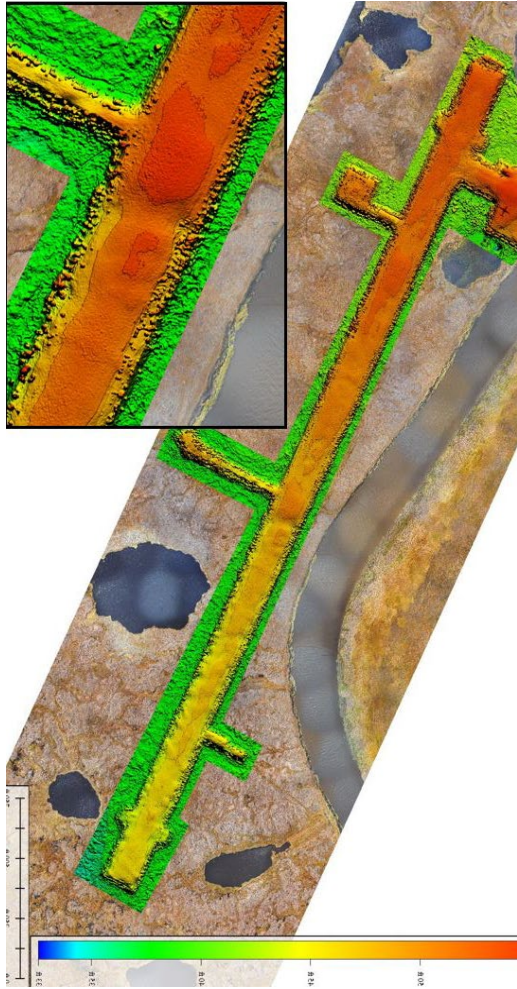
Apron Comparison-Silent Falcon

Section	Total Section Area (sq Ft)	Distress Type	Distress Severity	Total Quantity (sq Ft)	Density %	Defect Value	PCI	Rating
PA-2	134767	longitudinal and transverse cracking	II	145.7611762	<0.2	7.512727127	81.04	Fair
PA-2	134767	longitudinal and transverse cracking	L	8075.030107	4.5	12.99029006	81.04	Fair
PA-2	134767	longitudinal and transverse cracking	M	1276.201081	0.9	10.46701504	81.04	Fair
PA-2	134767	weathering	L	134767	100	0	81.04	Fair

Silent Falcon: PCI 61.04
Ground PCI Inspection: PCI 59



Nightmute Airport Inspection Data Workflow



Analyze LAS Runway Obstacles (Aviation Tools)

Writing obstacle points... 100%

Started: Today at 10:52:17 AM
Completed:
Elapsed Time:

Parameters Environments Messages

Input GIS Features: Airspace(ObstructionSurface_MP)
Input LAS Obstacles: UAS/NME Classified 1.4 NAVD83 las
Obstacle Feature Class: DIGEST/VGT SCRATCH BUILD.gdb/Airspace Class
VBlackMASTest
Target Folder:

OBRCID*	SHAPE*	Name	Description	Status	Runway Designator	Runway End Designator	Obs Surface Type	Obs Zone Type	Obs Surface Condition	Safety Regulation	Zone U
1	MultPatch	Primary Surface	FAA FAR 77 - Primary Surface - UTILITY_RUNWAY_NON_PRECISION_INSTRUMENT_APPROACH	<Null>	03/21	<Null>	PRIM77	<Null>	<Null>	<Null>	<Null>
2	MultPatch	Approach Surface	(H) FAA FAR 77 - Approach Surface - UTILITY_RUNWAY_NON_PRECISION_INSTRUMENT_APPROACH	<Null>	03/21	21	APRC77	<Null>	<Null>	<Null>	<Null>
3	MultPatch	Approach Surface	(L) FAA FAR 77 - Approach Surface - UTILITY_RUNWAY_NON_PRECISION_INSTRUMENT_APPROACH	<Null>	03/21	08	APRC77	<Null>	<Null>	<Null>	<Null>
4	MultPatch	Horizontal Surface	FAA FAR 77 - Horizontal Surface - UTILITY_RUNWAY_NON_PRECISION_INSTRUMENT_APPROACH	<Null>	03/21	<Null>	14 CFR Part 77 Horizontal Surface	<Null>	<Null>	<Null>	<Null>
5	MultPatch	Conical Surface	FAA FAR 77 - Conical Surface - UTILITY_RUNWAY_NON_PRECISION_INSTRUMENT_APPROACH	<Null>	03/21	<Null>	CON177	<Null>	<Null>	<Null>	<Null>
6	MultPatch	Transitional Surface	FAA FAR 77 - Transitional Surface - UTILITY_RUNWAY_NON_PRECISION_INSTRUMENT_APPROACH	<Null>	03/21	<Null>	TRNS77	<Null>	<Null>	<Null>	<Null>
7	MultPatch	Transitional Surface	FAA FAR 77 - Transitional Surface - UTILITY_RUNWAY_NON_PRECISION_INSTRUMENT_APPROACH	<Null>	03/21	<Null>	TRNS77	<Null>	<Null>	<Null>	<Null>



Pre-Construction Field Data Workflow



Survey123



Drone2Map



ArcGIS Pro





ArcGIS Online



DOT&PF Data Governance

2018


Data & IS Governance Manual

Alaska Department of
Transportation and Public
Facilities

Version 1.1, July 12, 2018
Council Approved

Alaska Department of Transportation & Public Facilities




UAS Operations Manual

14 CFR Part 107

Version 1.3
7/28/2020

UAS Operations Manual
Department of Transportation & Public Facilities

Page 1 of 53



U.S. Department
of Transportation

Federal Aviation
Administration

Advisory Circular

Subject: Standards for Using Remote Sensing Technologies in Airport Surveys Date: September 30, 2011 AC No: 150/5300-17C
Initiated by: AAS-100 Change: NA

1. What is the purpose of this AC?

This Advisory Circular (AC) provides guidance regarding the use of remote sensing technologies in the collection of data describing the physical infrastructure of an airport. This AC describes the acceptable uses and standards for use of different remote sensing technologies in the data collection process.

2. Who does this Advisory Circular apply to?

- a. This AC applies to airport proponents contracting airport surveying services utilizing remote sensing technologies, such as aerial or satellite imagery or Light Detection and Ranging (LIDAR).
- b. This AC also provides data providers the standards and recommended practices for using remote sensing technologies in the collection of airport data.
- c. This AC uses a question and answer format for practical field application.
- d. This AC uses "you" to mean the Airport Owner, Operator or Consultant, and "we" to mean the FAA.

3. Does this AC cancel any prior ACs?


This AC cancels AC 150/5300-17B, General Guidance and Specifications for Aeronautical Survey Airport Imagery Acquisition and Submission to the National Geodetic Survey, dated September 29, 2008.

4. What are the Principal Changes in this Version?

This is a substantial rewrite of this advisory circular. Users should review the entire document. Major changes include reformatting, more detailed explanations, and new sections on remote sensing technologies other than aerial imagery (primarily LIDAR) for collecting airport data.

5. What is the Application of this AC?

The Federal Aviation Administration (FAA) recommends the use of the guidance and specifications in this Advisory Circular for the collection and submission of data using remote sensing technologies. In general, use of this AC is not mandatory. However, the use of this AC is mandatory for all projects funded through the Airport Improvement Program (AIP) or Passenger Facility Charges (PFC) Program. See Grant Assurance No. 34, "Policies, Standards, and Specifications," and PFC Assurance No. 9, "Standards and Specifications."



ASPRS Positional Accuracy Standards for Digital Geospatial Data

(EDITION 1, VERSION 1.0. - NOVEMBER, 2014)

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1.2 Limitations	A3
1.3 Structure and Format	A3
2. Conformance	A3
3. References	A4
4. Authority	A4
5. Terms and Definitions	A4
6. Symbols, Abbreviated Terms, and Notations	A5
7. Specific Requirements	A6
7.1 Statistical Assessment of Horizontal and Vertical Accuracies	A6
7.2 Assumptions Regarding Systematic Errors and Acceptable Mean Error	A6
7.3 Horizontal Accuracy Standards for Geospatial Data	A6
7.4 Vertical Accuracy Standards for Elevation Data	A6
7.5 Horizontal Accuracy Requirements for Elevation Data	A7
7.6 Low Confidence Areas for Elevation Data	A7
7.7 Accuracy Requirements for Aerial Triangulation and INS-based Sensor Orientation of Digital Imagery	A8
7.8 Accuracy Requirements for Ground Control Used for Aerial Triangulation	A8
7.9 Checkpoint Accuracy and Placement Requirements	A8
7.10 Checkpoint Density and Distribution	A9
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7.12 Reporting	A9

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Alaska UAS Resources



Visit
dot.alaska.gov/uas/
for all things UAS

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A screenshot of the Alaska Department of Transportation and Public Facilities website. The page is titled "UNMANNED AIRCRAFT SYSTEMS" and features a navigation menu with options like "Travel", "Business", "News and Social", "Projects", and "About Us". A large banner image shows a person standing next to a small aircraft on a runway at sunset. Below the banner, there is a section titled "UNMANNED AIRCRAFT SYSTEMS (UAS)" with a warning icon and text about the Operations Over People rule. There are also links for "Operations Over People and at Night Information" and "Operations Over People and at Night rule". A yellow button labeled "UAS Live Events" is visible. At the bottom, there are three categories: "Recreational User", "Commercial Operator", and "Public Operator", each with a corresponding image and a button.