

ENGINEERING TRANSMITTAL

Date	June 1, 2026
Project Title/Work Description	Establish Visual Weather Observation System (VWOS) at Livengood, AK (4AK)
Location	Livengood, AK
Facility	Alyeska Pipeline - Livengood
Program Manager	Cohl Pope (FAA)
Project Engineer	Abrar Hassan (NISC)
Installation Technician	TBD (TSSC)



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A. SCOPE

This transmittal provides engineering instructions for establishing a Visual Weather Observation System (VWOS) at Livengood, AK.

The VWOS will be installed at the Alyeska Pipeline Facility, to provide weather data for the local area. The azimuths included are approximations and have not been verified by a surveyor.

Table 1. VWOS Location Data

Facility	Alyeska Pipeline Facility - Livengood	
Location ID	4AK (FAA ID)	
Coordinates	N65.477758°, W148.656553° Accuracy (+/- 10 feet)	
Elevation MSL	475 feet (at ground level)	
Magnetic Declination	-14°	
Sensor considerations		
	Obstruction Distance (ft)	Obstruction Height (ft)
Wind	Trees to north/west <100'	20-30ft
Visibility	Trees to north/west <100'	20-30ft
General (All Inst.)	Trees to north/west <100'	20-30ft
Camera	Trees to north/west <100'	20-30ft
Points of interest for Pilots		
Runway Approach		



Figure 1. Overhead View of VWOS Location

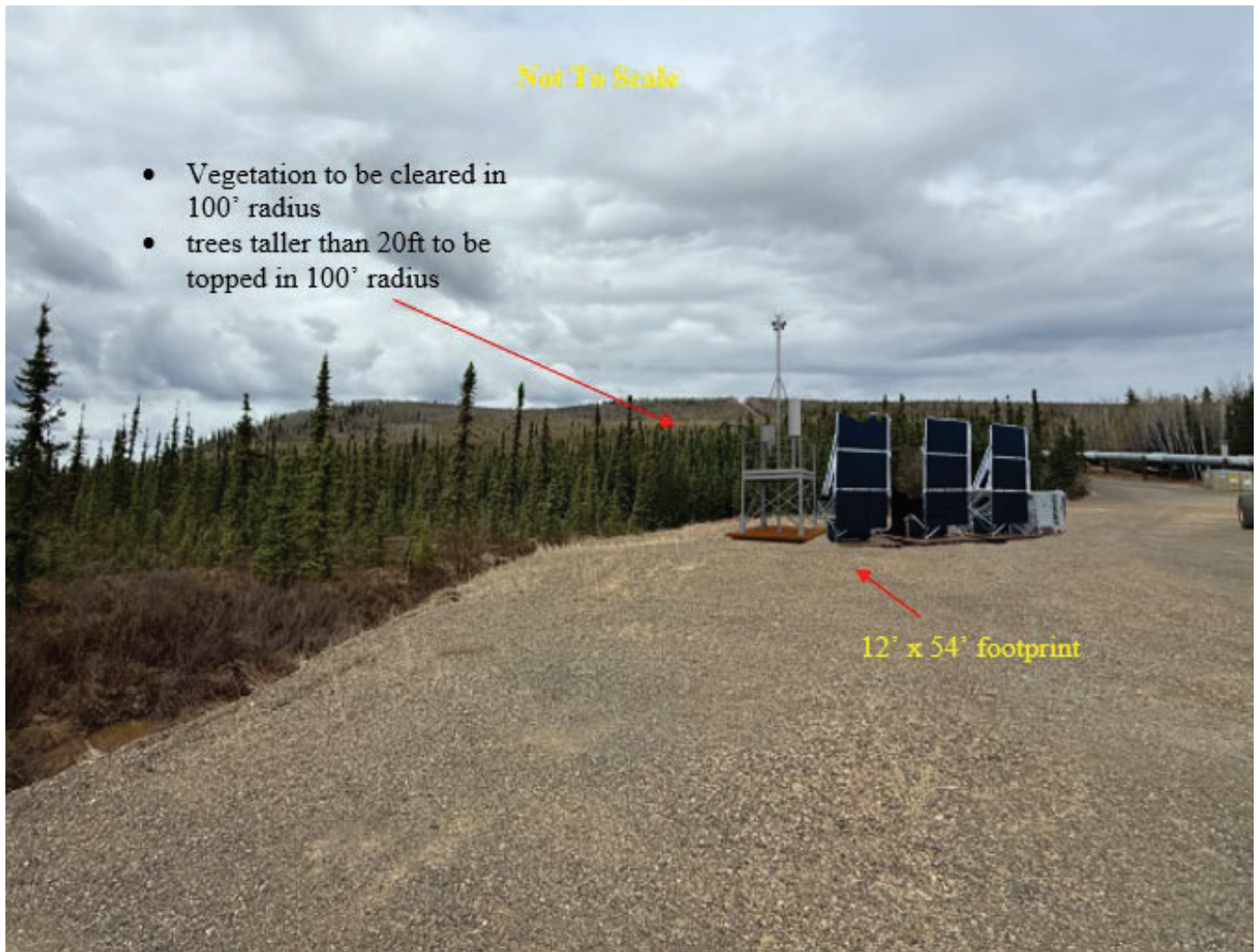


Figure 2. Overall Installation Plan

RELATION TO OTHER FAA Facilities and Equipment (F&E) WORK

No other work is planned at this time and no relation to other FAA facilities exists.

B. IMPLEMENTATION CONCEPT

Coordination

- 1) The Weather Camera Program Office (WCPO) will coordinate with Alyeska Pipeline and State of Alaska or designated personnel for review and comment on the engineering package.
- 2) The WCPO or its selected contractor will acquire all authorizations, documentation and materials required to access the site, as appropriate.
- 3) The WCPO will coordinate the installation and schedules with Craig City Council or designated personnel.
- 4) The WCPO Implementation Lead will obtain all permits, licenses and authorizations required for the installation.
- 5) A power outage is not planned as a part of this installation and power will only be removed in the case of an emergency or if an unknown extenuating circumstance requires an outage. In this case, the WCPO Installation Lead will coordinate any necessary power outages with the Alyeska Pipeline representative prior to the removal of power to the facility or any existing equipment within the facility.

Assumptions

- 1) A three-man installation team will be used to complete all installation work at the Alyeska Pipeline Facility in Livengood.
- 2) A Preliminary Deployment Meeting with WCPO personnel and the Alyeska Pipeline/State of Alaska will be conducted to communicate the installation team's plans prior to commencing work at the site.
- 3) The WCPO will complete all work according to the engineering package, and all applicable FAA orders and local, State, and National codes.

Work Outline (reference Figure 2)

- 1) Install VWOS at location N65.477758°, W148.656553°.
- 2) Power for the VWOS and communication equipment would be fed from an available slot on Alyeska pipeline power distribution panel and trenched 350ft to the proposed location. If power is not available, then a solar array consisting of 9 panels, 16 AGM batteries and a propane generator will be utilized to create power. All this equipment will be mounted on four additional 8' x 8' platforms and included in the VWOS footprint
- 3) Telecommunications will be made available by a Starlink system.

Project Coordination

- 1) Coordinate installation with the WCPO, contracted installation personnel, FAA Contracting Office, and the contracted location owner.
- 2) Transport all materials, tools, and crew to and from the site.
- 3) Install crew is responsible for all food, lodging and transportation.
- 4) Coordinate with Microcom for the IP connection requirements.
- 5) Coordinate with Alyeska for access to the facility and beginning installation work.

Risk Assessment

- 1) There will be considerable work performed on the platform and personnel will observe accepted safety practices when working in extreme cold climates on the platform to avoid frostbite and falls.
- 2) Accepted climbing practices and safety gear will be utilized.
- 3) A rescue plan will be developed and understood by all personnel on site.

C. DRAWING LISTING

As-built drawings will be developed as indicated in the following table. Responsibility for developing or distributing the drawings will be by the WCPO or its designated contractor.

Table 2. Drawing Package

DRAWING NO.	TITLE
ALD-4AK-VWOS-454.001	WCAM System Architecture Diagram
ALP-4AK-VWOS-455.001	Telecommunications Equipment Configuration
ALP-4AK-VWOS-456.001	Electrical Power Equipment Configuration
ALP-4AK-VWOS-502.001	Overall VWOS Site Installation
ALP-4AK-VWOS-502.004	Cable Run Installation
ALD-4AK-VWOS-509.002	As-Built Sectional Chart

D. PROJECT SCHEDULE

This schedule addresses equipment related events. Project schedule may be impacted by scope and equipment changes as they occur.

Table 3. Milestone Listing

MileSTONE	DATE
Preliminary Site Selection (pre-survey)	15 May 2026
Site Survey	20 May 2026
Site Selection	20 June 2026
Lease Acquisition	TBD
Pre-Implementation Meeting	date should be approx. 1 week prior to install
Installation Begins	TBD
Installation Complete	TBD
CAI	TBD
JAI	TBD

E. POWER REQUIREMENTS AND DISTRIBUTION

A 24VDC circuit will be installed via solar panels and battery stack. A fuel generator will also be installed to provide supplemental power for instances in which incremental weather prevents adequate solar charging needs. Actual power consumption will not exceed 600 watts continuous load (300 watts nominal).

F. FACILITY GROUNDING AND BONDING REQUIREMENTS

Grounding will consist of four 10' vertical grounding rods installed in accordance with FAA standard FAA-STD-019G. A 2' deep trench will be excavated for the counterpoise (EES) conductor. Ground rods will be driven from the bottom of the trench to full depth, leaving the top of each rod accessible within the trench for exothermic welding (Cadweld) of the 4/0 stranded bare copper conductor. Ground rods shall be spaced a minimum of 10' apart.

G. FACILITY LIGHTNING PROTECTION

Additional lightning protection will be added for the platform assembly to support the VWOS.

H. TEST EQUIPMENT REQUIREMENTS

There is no routine test equipment provided with the VWOS. Maintenance can be performed using standard laptop computers and provided instrument software.

I. TRAINING REQUIREMENTS

One set of the as-built drawing package and manuals will be delivered to the WCPO Operations and Implementation (O&I) Lead for familiarization and training as deemed necessary by the O&I Lead.

J. FLIGHT INSPECTION REQUIREMENTS

Flight inspection is not required for VWOS.

K. APPLICABLE FAA ORDERS / DIRECTIVES / STANDARDS / HANDBOOKS

FAA Orders:

FAA-Std-019D	Lightning and Surge Protection, Grounding, Bonding and Shielding Requirements for Facilities and Electronic Equipment
FAA-Std-020B	Transient Protection, Grounding, Bonding and Shielding Requirements for Electronic Equipment
FAA-Std-1217F	Electrical Work, Interior
FAA 6950.19A	Practices and procedures for lightning protection, grounding, bonding, and shielding implementation
FAA 3900.19B	Occupational Safety and Health Program

National Standards:

NFPA 780	Standards for the Installation of Lightning Protection Systems, National Fire Protection Association
NEC Handbook	National Electrical Code Handbook

Manufacturer's instruction manuals:

Manuals are provided with the equipment and will be left with the VWOS Maintenance Management Office as instructed at time of installation.

L. FREQUENCY REQUEST AND AUTHORIZATION

The Cellular modem is a licensed system supported under agreement with GCI. No separate frequency authorization is required. There are no other transmitters used on this project. All other communications are via existing hardwire and commercial data channels.

M. TELCO, DATA

An architecture diagram is included in Appendix B.

N. FACILITY REFERENCE DATA FILE (FRDF)

For FAA collocated facilities, an FRDF will be prepared. For non-collocated facilities, a project folder will be maintained in the WCPO.

O. CONTRACTOR ACCEPTANCE INSPECTION (CAI)

A CAI with the WCPO will take place after the installation is completed. The WCPO will provide the CAI documentation.

P. JOINT ACCEPTANCE INSPECTION (JAI)

A JAI with the WCPO will take place after the CAI is completed. The WCPO will provide the JAI documentation.

Q. CAPITALIZATION

Capitalization will be completed by the WCPO.

R. EQUIPMENT INVENTORY

An inventory of new equipment will be provided at CAI.

S. MATERIAL LISTING

Supplied Material – Regionally Purchased Material

<u>Item</u>	<u>Qty.</u>	<u>Cost</u>	<u>Total</u>	<u>Status</u>
VWOS Instruments	1 set	\$	\$	purchase
VWOS Structure	1 ea.	\$	\$	purchase
Solar Structure	3 ea	\$	\$	purchase
CCU Components	1 ea.	\$	\$	purchase
Camera, M1	4 ea.	\$	\$	purchase
Power Distribution	1 ea.	\$	\$	purchase
VSAT (if used)	1 ea.	\$	\$	purchase
Cabling	Misc.	\$	\$	purchase
Miscellaneous Hardware (EMT, etc.)		\$	\$	purchase
Subtotal			\$	
10% Contingency Allowance	\$			
Total		\$		

T. LOCALLY PURCHASED MATERIAL

This may include such items as fastener hardware and conduit clamps. The 10% Contingency Allowance may be accessed as necessary to complete the installation. Livengood is a small mining camp on the road system. Locally purchased material in this situation may include purchases made in Anchorage or Fairbanks and forwarded to the site in Livengood.

U. EQUIPMENT SUPPORT AND SPARES

Spares are locally managed by the WCPO as supported by the Logistics Specialist.

V. NATIONAL CHANGE PROPOSAL/CONFIGURATION CONTROL DECISION

NCP is not applicable at this time.

W. MATERIAL SHIPPING ADDRESS

Federal Aviation Administration
222 W. 7th Ave, Suite 14
Anchorage, Alaska 99513
ATTN: Cohl Pope
Tel.: (907) 271-5349

X. POINTS OF CONTACT

Name	Title	Office	Phone
Cohl Pope (FAA)	WCPO Program Manager	WCPO	907-271-5349
Dan Phillips (FAA)	O&I Lead	WCPO	907-775-0232
Abrar Hassan (NISC)	Project Engineer/Lead	WCPO	570-677-8905
TBD	Installation Technician	TBD	
* Heather Lescanec	Land Manager	Alyeska Pipeline	
Alexander Wait	Land Manager	State of Alaska	aj.wait@alaska.gov
Chio Saepanh	Account Manager	GCI	
WCAM Help Desk	Helpdesk	WCPO	

* = POC for site access

Z. DETAILED IMPLEMENTATION CONCEPT

Prior to leaving for site:

- 1) Inventory parts; contact Project Engineer for any missing long lead items.
- 2) Attend pre-installation planning meeting to ensure all parties are in agreement on project requirements and goals.
- 3) Ensure copies of all installation instructions are available and understood.

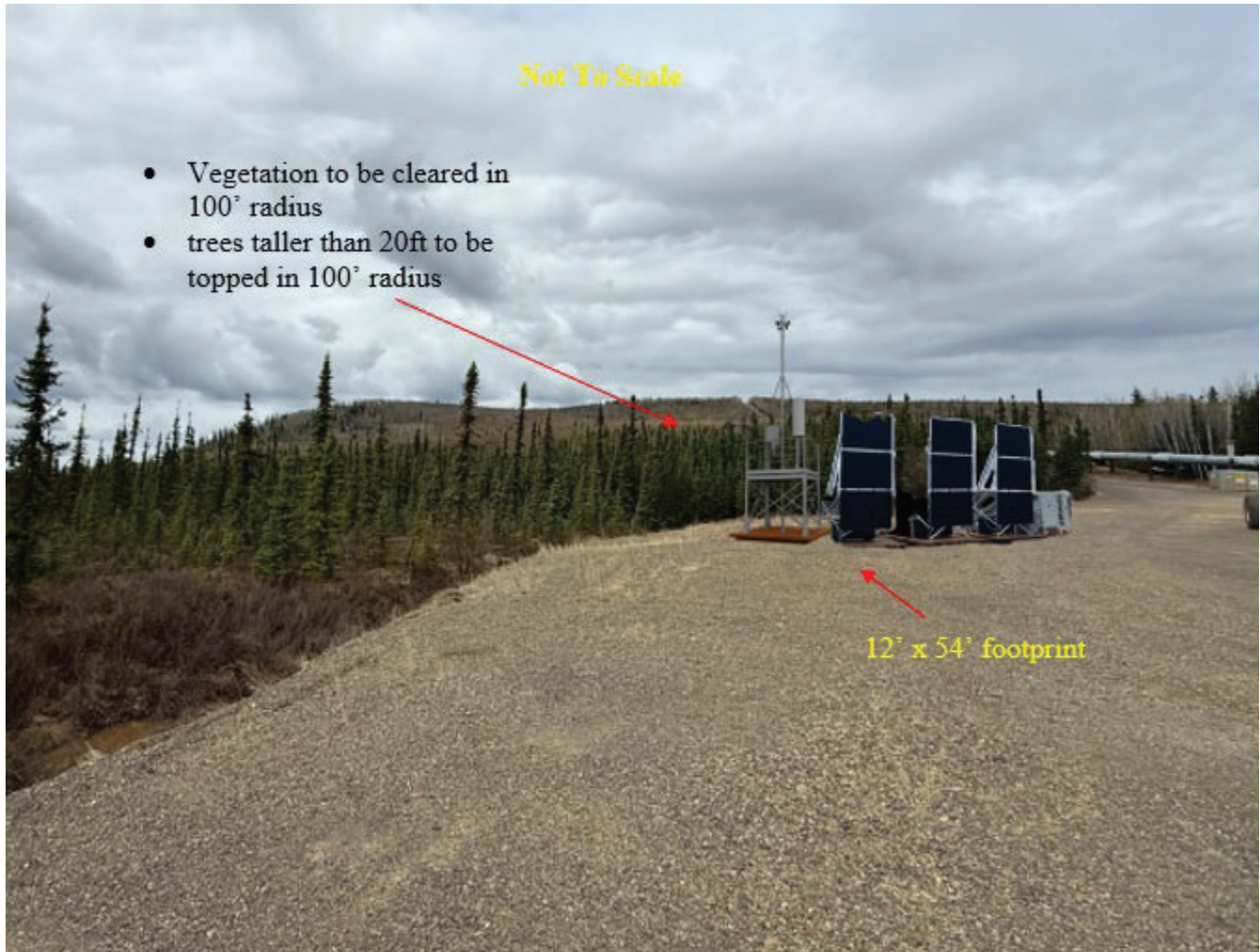


Figure 4. Overall Installation Concept

VWOS Platform Installation

- 1) Install VWOS in the northwest corner of the gravel lot within the Alyeska Pipeline Facility in Livengood.
- 2) The final location will be determined by the installation team and may be +/-5 feet from this reference as views and supportability indicate (see Figure 4).
- 3) Clear and level the ground, as much as practical, to accommodate an 8-foot by

8-foot platform.

- 4) Assembly the base (wooden) platform on the designated location
- 5) Assemble the supporting frame and platform on the base.

VWOS Instrument Installation (See Figure 5 for reference)

- 1) Install the wind tower and wind sensor to the corner furthest from nearby obstructions.
- 2) Install the Visibility and Temperature/Humidity sensors to a corner nearest the runway. The Visibility sensor should be perpendicular to the solar movement (e.g. aligned North-South).
- 3) Install the Ceilometer to the corner opposite the wind tower.
- 4) Install the support electronics enclosures to the railing between the Visibility and Ceilometer sensors.
- 5) Install the camera mount(s) below the top joiner flange on the wind mast.

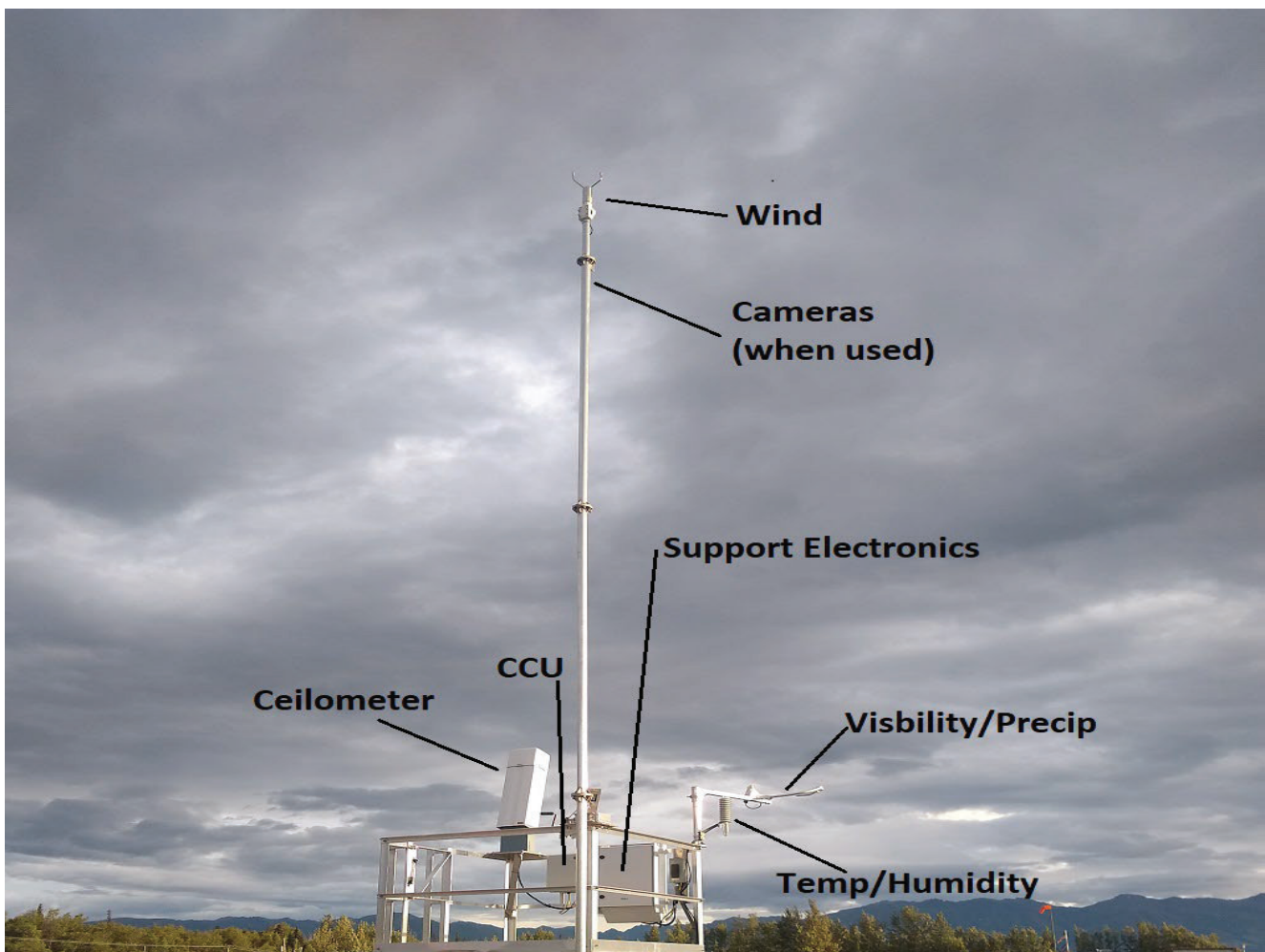


Figure 5. Instrument Mounting

AC Power Connection

- 1) The Installation contractor will install a solar array and battery stack adjacent to the system to power the VWOS. Additionally, a fuel generator will also be installed to supplement power during incremental weather conditions. 9 solar panels, 16 AGM batteries and a propane generator will be installed across four 8' x 8' platforms.

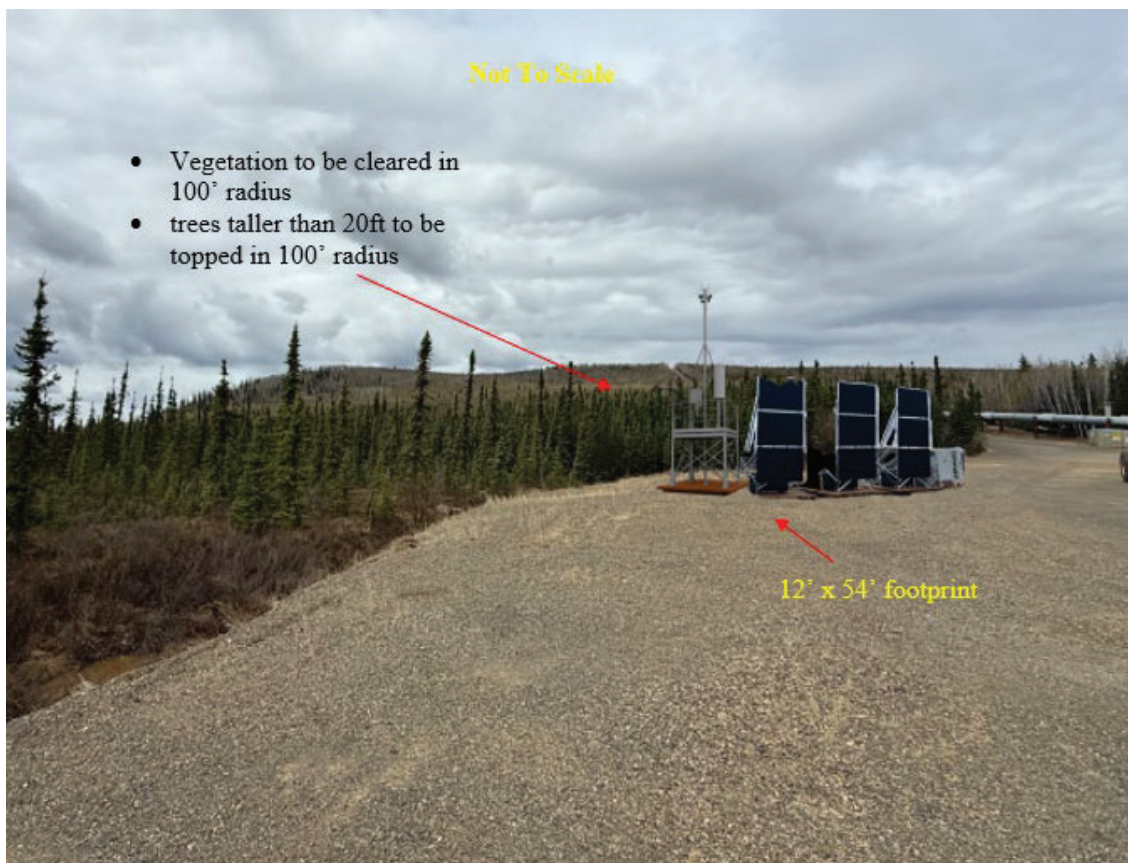
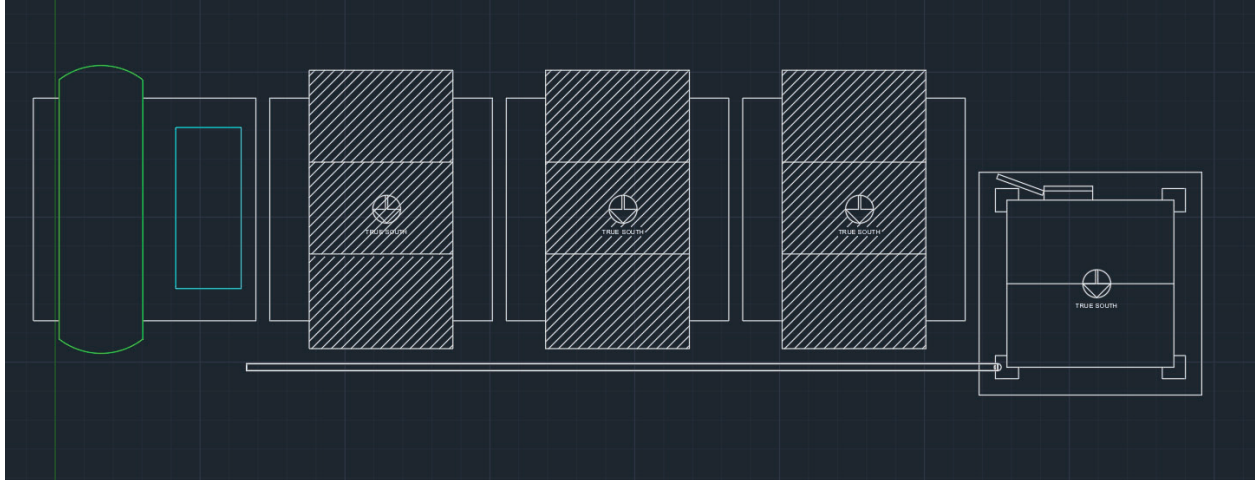


Figure 7. Power Distribution

- 2) Install solar panels vertically across the platforms. Ensure panels are facing south.
- 3) Install batteries on the platforms with the solar panels. Ensure they are within a weather proof container.
- 4) Connect the power cabling with Liquidtight between the generator, solar stack, and VWOS.
- 5) Coordinate with Engineer or Operations Lead on further technical details.

Telecommunication Connection

- 1) Connect the CAT5 cable from the CCU to the router port identified by the [Starlink](#).
- 2) Mount the cellular modem inside the CCU enclosure.
- 3) Secure the cable as necessary to keep it in place and to avoid interference with already installed equipment.

Operational Check

- 1) Apply power to the equipment and verify the VWOS and CCU router are operational.
- 2) Verify VWOS installation is compliant with the information indicated in Table 1.
- 3) Verify overall system operations by contacting the WCPO Help Desk.
- 4) Secure the VWOS enclosures with combination padlocks.

Contractor Acceptance Inspection (CAI)

- 1) Perform CAI installation upon completion; clear exceptions as required.
- 2) The WCPO will create a project file within 30 days of installation.
- 3) The WCPO or its contractor should provide copies of the project as-built drawings within 60 days of installation.
- 4) The project engineer will work with the WCPO to complete the project file for this location.