



**Atmospheric Radiation Measurement Climate Research Facility/
North Slope of Alaska/Adjacent Arctic Ocean (ACRF/NSA/AAO)**

Operating Procedures for The Use of Scaffolds at ACRF/NSA/AAO Meteorological Towers

Introduction:

An aluminum scaffold structure is used at ARM Climate Research Facility/North Slope of Alaska/Adjacent Arctic Ocean (ACRF/NSA/AAO) Sites to access instruments mounted on the meteorological tower as shown in Figure 1 below. The scaffold is typically used for maintenance of instruments mounted on moveable booms or for maintenance of guest or temporary instruments. The scaffold is a commercially-available product that was purchased from Upright, Inc. and was fitted with aluminum grating platforms by Cubic Designs, Inc. of Wisconsin. The scaffold and platforms meet all OSHA requirements for scaffold safety.

This Operating Procedure describes requirements for use of the scaffold. It lists parts required and steps for assembly. Training requirements for personnel who use this scaffold are included in this document.

Tower Storage, Transportation, Assembly, and Use:

Storage:

The scaffold will be stored out of the weather at the ACRF/NSA/AAO Barrow site. It is not meant to be exposed to the salt air for extended periods of time. It should be periodically inspected and cleaned with water to remove salt and soil buildups.

Transportation:

The scaffold, being aluminum, is light and is composed of sections that can be carried by hand to the tower. It could also be loaded on a snow mobile sled and moved towed to the tower.

Parts List:

Lower Section (#B1345)	Outriggers (4, #B430)
Upper Section (#B1745)	Swivel Base Plates (4)
Guardrail Set (#B1365)	Platform Gratings (3)
Horizontal Braces (3, #B217)	Double Width Toeboard (#E297-23)
Banister Braces (2, #E582-08)	Single Width Toeboards (2, #E297-22)
Swivel Couplers (4, cut in half for guardrail)	

Scaffold Assembly Procedure: (see Figures 2, 3, and 4 for locations of components)

1. Expand the folded up Lower Section.
2. Attach the Swivel Base Plates to the bottom of the Lower Section legs.
3. Place plywood pieces under the Swivel Base Plates.
4. Secure the Outriggers to each leg of the Lower Section and expand them to full length. Place plywood under their feet if needed.
5. Place a Platform Grating over the pins in the horizontal members at the top of the Lower Section (not over the stairway).
6. Secure a Single Width Toe board over the Platform Grating; hooks at the end of each toeboard swing down and fit under the horizontal tubes on which the toe boards sit.
7. Secure a Banister Brace to the outside of the Lower Section, on the ladder side, and oriented diagonally to the ladder.
8. Lift the Upper Section on top of the Lower Section and unfold it (see the third page of the attached V-X Stairway Scaffold Instruction Manual for more details). Place the bottoms of the Upper Section vertical tubes into the openings in the top of the Lower Section vertical tubes. The Upper Section ladder should be located above the ladder in the Lower Section. Move the clips at the upper part of the Lower Section vertical tubes so that the clip pin fits into the upper hole, where the Upper and Lower Section verticals meet. Clip the end of the ladder onto the horizontal tube below.
9. Place a Platform Grating over the pins in the horizontal members at the top of the Upper Section (not over the stairway).

10. Secure a Single Width Toe board over the Platform Grating; hooks at the end of each toe board swing down and fit under the horizontal tubes on which the toe boards sit.
11. Secure a Banister Brace to the outside of the Upper Section, on the ladder side, and oriented diagonally to the ladder.
12. Place the Guardrail Section end pieces into the tops of the Upper Section vertical tubes. Move the clips at the upper part of the Upper Section vertical tubes so that the clip pin fits into the upper hole, where the Guardrail and Upper Section verticals meet.
13. Guardrail Braces (straight aluminum tubes with no fastener ends) fit through the receivers on the two sides of each Guardrail end piece. Secure these with the lag bolts supplied.
14. A diagonal brace (aluminum tube with a fastener on only one end) fits through the receiver (inboard from the Guardrail Brace) on one Guardrail end piece. Secure this with the lag bolt supplied. Clip the other end of this diagonal brace to the lower horizontal on the opposite Guardrail end piece.
15. Attach a Horizontal Brace (with fastener ends) between the upper horizontals of the Guardrail end pieces and attach a Horizontal Brace (with fastener ends) between the lower horizontals of the Guardrail end pieces. The Horizontal Braces should be located in the middle of the Guardrail section to prevent someone from falling backward into the stairway. Secure the two Horizontal Braces with a Swivel Coupler on each side of the end of the brace.
16. If a full platform is desired on top of the Upper Section, place a second Platform Grating above the stairway and secure the Double Width Toe board over both Platform Gratings.
17. Level the scaffold with the adjustable Swivel Base Plates (rotate the silver serrated ring). Adjust the outriggers (they have multiple positions; multiple holes in the slide tube) so that the scaffold does not lean or move.

Proper Scaffold Use:

1. Do not assemble or place the scaffold such that it will contact any electrical power source.
2. The scaffold must be properly assembled and supported by plywood pieces under the Swivel Base Plates before use.
3. The scaffold must be inspected for damage, deficiencies, and missing parts before each use.

4. Ladders may not be used on the scaffold platforms.
5. Do not hang off of or lean over the side of the scaffold. It is not designed for this type of use.
6. Hands must be free when ascending or descending the scaffold ladders.
7. The manufacturer of the scaffold (Upright, Inc.) has stated that the maximum wind loading for which the scaffold can be safely used is for a wind speed of 42 mph. However, the more stringent SGP guidelines for the Okmulgee stairway scaffold will be followed for the Barrow scaffold also; the scaffold must not be used if sustained wind speeds or wind gusts exceed 25 mph, if it is coated in ice, or covered with snow.
8. Remove accumulations of ice and snow before using the scaffold and before disassembling and storing it.

Injuries/Falls:

All injuries and falls must be treated properly and reported to the ACRF/NSA Site Manager, Mark Ivey and/or ACRF/NSA Site Operations Manager, Jeff Zirzow.

If the injury/fall resulted from a scaffold deficiency or damage, the scaffold must not be used until the condition is corrected.

Scaffold Damage / Deficiencies:

All scaffold damage and deficiencies must be reported to the ACRF/NSA Site Manager, Mark Ivey, and the ACRF/NSA Site Operations Manager, Jeff Zirzow or to the tower mentor (David Cook); see contact information on page 5. The scaffold must not be used until the damage is repaired, the scaffold part is replaced, or the deficiency is corrected.

Training:

All ACRF/NSA personnel, and visitors who use the scaffold, must have completed a basic Fall Protection training course from an instructor certified in this subject area. The Sandia National Laboratories course FPP105, Fall Prevention And Protection Awareness Training, or an approved equivalent, is required.

Contacts:

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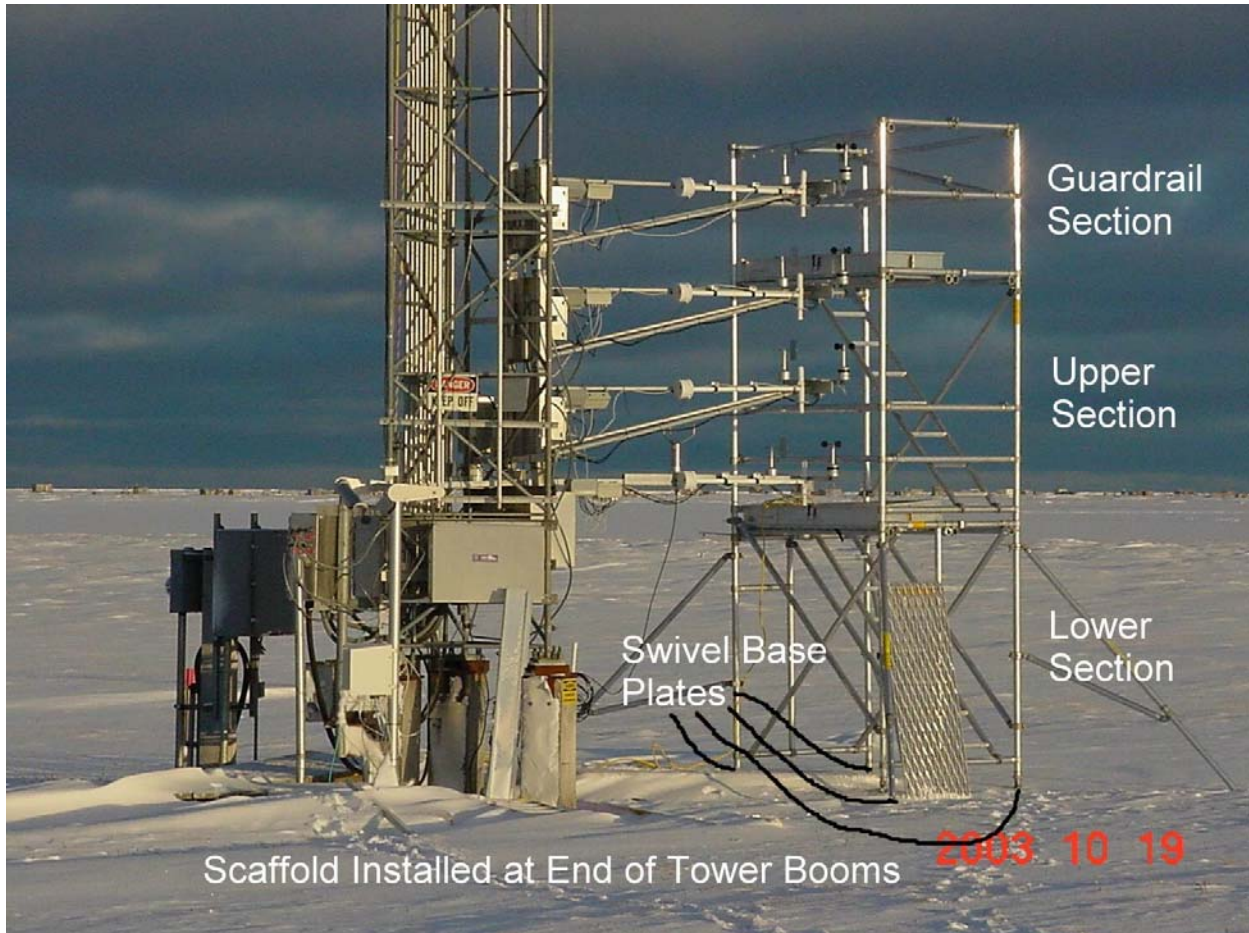


Figure 1: Scaffold Use at a Met Tower at the ACRF/NSA/AAO Site in Barrow, Alaska



Figure 2: Scaffold Details

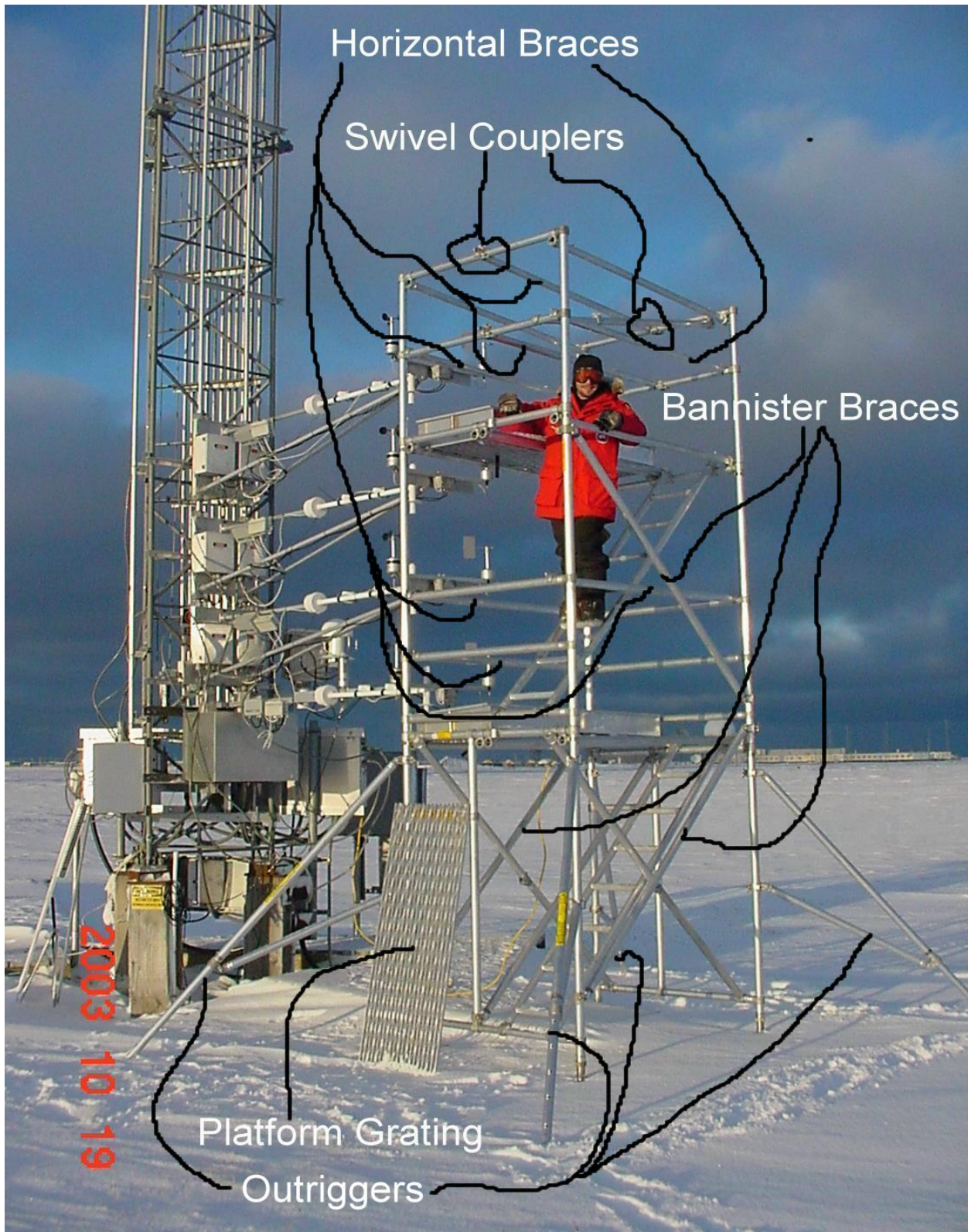


Figure 3: Scaffold Details



Figure 4 Scaffold Details