Carnegie Mellon University Environmental Health & Safety FIRE | LAB | WORK	**Environmental Health and Safety (EHS)** **Mobile Elevating Work Platform Program**
Date of Issuance: 08/2023	**Revision Date:** 10/22/2024
Revision Number: 1	**Prepared by:** EHS and FMCS

1. Purpose

The purpose of this Mobile Elevating Work Platform (MEWP) Program is to protect Carnegie Mellon University faculty, staff (herein referred to as "employee") and students from hazards and hazardous situations associated with the use of MEWPs.

2. Scope

This program establishes the minimum requirements for the use and inspection of MEWPs in accordance with Occupational Safety and Health Administration (OSHA) 29 CFR 1926.453 and 1910.67, as well as American National Standards Institute (ANSI) A92 - 2018. The procedures within this document shall be used to protect employees and students from the hazards associated with the use of MEWPs. This procedure also addresses training, required equipment and its associated inspections and identification of MEWP Operators.

Any incident involving MEWPs, with or without injury, must be reported to EHS by emailing safety@andrew.cmu.edu so that a thorough investigation can be performed with the involved parties, root cause(s) can be identified, and corrective actions can be put into place.

3. Definitions

a. **Exposed Power Lines:** Electrical power lines which are accessible to employees, and which are not shielded from contact. Such lines do not include extension cords or power tool cords.
b. **Fall Arrest Rescue Plan:** A detailed procedure that provides instructions on how to retrieve a person who has fallen from an elevated work surface and is suspended in a full body harness.

c. **Fall Protection Training:** Training provided by a fall protection qualified person.
d. **Guardrail System:** A vertical barrier, consisting of, but not limited to, top rails, mid rails, and posts, erected to prevent employees from falling off a platform or walkway to lower levels.
e. **Incident:** An unplanned, undesired event that adversely affects completion of a task. This may include injuries to persons or damage to property.
f. **Insulated Aerial Device:** An aerial device designed for work on energized lines and apparatus.
g. **Job Hazard Analysis (JHA):** A process used to analyze each step of a task, identify the hazards of each step, identify hazard controls, and describe hazard control implementations.
h. **Mobile Elevated Work Platform (MEWP):** Machine/device intended for moving persons, tools and material to working positions, consisting of at least a work platform with controls, an extending structure and a chassis.
i. **MEWP Operator:** Any person operating a MEWP who is a CMU employee or student, is operating a MEWP for commerce related to CMU, or is operating a MEWP on CMU property.
j. **MEWP Training:** Training provided by a certified MEWP trainer.
k. **Personal Fall Arrest System:** A system used to arrest an employee's fall. It consists of an anchorage point (able to withstand a minimum of 5,000 lbs. of force per employee attached), connectors, and a body harness. A lanyard, deceleration device, lifeline, or any combination of these may also be included.
l. **Platform:** Any personnel carrying device (basket or bucket) which is a component of an aerial device.
m. **Qualified Employee (Electrical):** Electricians who are trained in and familiar with skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment, skills and techniques necessary to determine the nominal voltage of exposed live parts, and clearance distances specified in OSHA 1910.333(c) and the corresponding voltages to which the qualified person will be exposed.
n. **Qualified Person:** A person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project.

o. **Severe Weather:** Wind speed exceeding manufacturer's recommendations for operation, lightning, or any other weather affecting the safety of a MEWP operator during MEWP operations.

4. Roles and Responsibilities

a. Environmental Health and Safety (EHS):
   i. Maintain training and certification records.
   ii. Maintain a list of certified MEWP operators and notify operators when re-training is required.
   iii. Assist with Job Hazard Analysis (JHA).
   iv. Collaborate with student groups to ensure program compliance.
   v. Validate MEWP program for contractors using MEWPs on CMU property.
   vi. Investigate any incident and determine corrective actions.
   vii. Review and update the MEWP Program annually.

b. Facilities Maintenance and Campus Services (FMCS):
   i. Identify employees and trades who may operate MEWPs.
   ii. Arrange training for MEWP operating employees.
   iii. Attend MEWP Supervisor training.
   iv. Assist with JHA.
   v. Ensure equipment and Personal Protective Equipment (PPE) needed for MEWP operations are obtained.
   vi. Ensure FMCS employees adhere to this program.
   vii. Identify contractors who may operate MEWPs and notify EHS of those contractors.
   viii. Report all incidents to EHS and assist with incident investigations.
   ix. Assist with MEWP Program updates.

c. MEWP Operators:
   i. Review, understand, and follow all guidelines provided in this program.
   ii. Successfully complete required training and evaluations before operating a MEWP.
   iii. Assist with JHA.
   iv. Complete jobsite, equipment, and PPE inspections.
   v. Maintain PPE and other equipment.
   vi. Document MEWP location at the end of each shift.
   vii. Stop work and request guidance and direction from a supervisor or EHS at any time when: a hazardous situation is encountered, those involved do not feel safe, there

is a lack of adequate training or required equipment, or any similar situation is present.

viii. Stop work and report any incident to a supervisor immediately.

ix. Assist with incident investigations.

d. Campus Design and Facility Development (CDFD):
   i. Verify contractors have an effective MEWP program.
   ii. Report all incidents to EHS.
   iii. Assist with incident investigations.
   iv. Recommend disciplinary actions if needed.

e. Contractors:
   i. Adhere to their companies' MEWP program.
   ii. Ensure all MEWP operators have completed the required training.
   iii. Alert CMU project manager and CMU EHS if contractor's company does not have a MEWP program but is required to operate MEWPs.
   iv. Supply CMU project manager and EHS with documentation when requested.
   v. Contact CMU project manager and EHS any time an incident occurs. Supply incident investigation documentation and corrective action suggestions.

5. MEWP Procurement

a. Any time that a MEWP is purchased or rented, it shall meet the requirements of ANSI A92.20.

b. Ensure that operation and maintenance manuals are received with the purchase of new and rented MEWPs. If they are not, contact the manufacturer to procure those manuals.

6. MEWP Groups and Types:

a. MEWP Groups are determined by the platform location in reference to the equipment's tipping line, which is either at the wheels or the outriggers.
   i. Group A – A machine that has a design that does not allow the main platform to extend beyond the tipping line. The platform does not move outside of the drive chassis. Scissor lifts and mobile man lifts are included in this group.
   ii. Group B – A machine that has a design that allows the platform to extend beyond the tipping line. Extensible boom lifts and vehicle mounted lifts are included in this group.

b. MEWP Types are determined by the equipment's ability to travel.

i. Type 1 – Traveling is allowed only when the MEWP is in its stowed position.
ii. Type 2 – Traveling with the work platform in the elevated position is controlled from a point on the chassis.
iii. Type 3 – Traveling with the work platform in the elevated travel position is controlled from a point on the work platform (Type 2 and Type 3 may be combined).

7. Training and Certification:

a. Only trained and authorized persons shall operate a MEWP. Training shall include the inspection, application, and operation of MEWPs, including recognition and avoidance of hazards associated with their operation. Such items covered shall include, but not be limited to, the following:
   i. The purpose and use of manufacturer's manuals and the requirements contained therein;
   ii. Knowing that operating manuals are an integral part of the aerial platform and must be store properly in the weather resistant compartment when not in use;
   iii. Explanations of electrical, fall and falling object hazards;
   iv. Fall protection, anchor points, and PPE;
   v. Recognizing and avoiding unsafe conditions in the work setting;
   vi. When and how to perform equipment and work zone inspections;
   vii. Instructions for correct operation of the lift (i.e., load capacities, traveling, raising the platform, etc.);
   viii. Demonstrations of the skills and knowledge needed to operate a MEWP;
   ix. Safety rules and regulations; and
   x. Operator warnings and instructions.
b. Fall protection training is required for anyone who operates a Group B MEWP.
c. MEWP Supervisor training shall be completed by anyone who directly supervises MEWP Operators. This training shall consist of at least the following:
   i. MEWP rules, regulations, and standards to include safe use, operation, and training
   ii. Potential MEWP hazards and appropriate corrective actions
   iii. Proper MEWP selection
   iv. Proper use and storage of manufacturers operation manuals
d. Training must be completed under the direct supervision of a competent person who has the knowledge, training, and experience to train operators and evaluate their competence. Training must not endanger the trainer or trainees.

e. The trainees shall operate the MEWP for a sufficient period to demonstrate proficiency in the safe operation of the equipment.
f. Refresher training for MEWP Operators may be necessary if any of the following occur:
    i. An incident occurs during MEWP use;
    ii. New workplace hazards involving a MEWP are discovered;
    iii. A different type of lift is being used by the operator;
    iv. It is determined to be necessary by a supervisor; or
    v. Sufficient time has passed causing a loss of knowledge.
g. FMCS and EHS will collaborate to determine if refresher training is required.
h. Employees shall be retrained if they are observed operating a MEWP improperly and/or unsafely.
i. Operators shall not be permitted to operate MEWPs before successful completion of MEWP training and evaluation.
j. MEWP operators shall supply training certificates to FMCS and EHS.
k. EHS shall document and maintain training certificates in an accessible platform such as BioRAFT/SciShield for the duration of employment of the certified MEWP Operators.
l. Training and certification documents shall be supplied upon request.

8. Equipment Access and Tracking

a. All MEWPs shall be secured in a way which prevents unauthorized use. This may include the use of locked cages, key boxes, access control, chains and locks, etc. Varying configurations may be used across the zones and off campus locations to secure MEWPs. Configurations will depend on operator's needs, space availability, and feasibility. Space owners, MEWP Operators, and EHS will collaborate to determine these configurations.
b. Each MEWP owner shall maintain a MEWP Access Document that states how MEWPs are to be secured, how access is granted to authorized operators, and how the use and location of the MEWPs are to be tracked. MEWP owners shall collaborate with EHS to create this document.
c. All MEWP Operators shall be given access to the equipment for which they have been trained to use. Access shall be granted upon completion of training.
d. MEWP operators shall follow the guidance stated in the MEWP Access Document that correlates to the area or equipment being used.

9. Pre-use Inspections

a. Pre-use inspections shall be created by EHS and be made to be equipment specific unless the manufacturer's pre-use inspection form is satisfactory. If the manufacturer's pre-use inspection form is found by EHS to be satisfactory, then this form may be used. Please see Appendix A for the Pre-use Inspection Form.

b. Pre-use inspection forms shall be laminated, accompanied by a grease pencil and be maintained with the MEWP it corresponds to. MEWP users shall fill out the pre-use inspection form and include the date the inspection was completed using the grease pencil. The pre-use inspection form shall not be erased until it is read and understood during the pre-use inspection before its next use.

c. Before using a MEWP for the first time in a shift, a pre-use inspection must be completed to verify that the equipment and all components operate properly. Pre-use inspections must include information specific to the make/model of the equipment. These inspections may include, but are not limited to:

   i. Vehicle Components:
      1. Proper fluid levels (oil, hydraulic, fuel and coolant);
      2. Signs of fluids leak (oil on the ground or components, etc.);
      3. Wheels and tires in good repair;
      4. Battery and charger (no damage or signs of malfunction);
      5. Lower-level controls are properly working;
      6. Horn, gauges, lights and backup alarms are functional; and
      7. Steering and brakes engage properly.

   ii. Lift Components
      1. Operating and emergency controls are working properly;
      2. PPE is available;
      3. Hydraulic, air, pneumatic, fuel and electrical systems;
      4. Fiberglass and other insulating components (i.e. electrical insulation);
      5. Missing or unreadable placards, warnings, or operational, instructional and control markings;
      6. Mechanical fasteners and locking pins are in place and not missing;
      7. Outriggers, stabilizers and other support structures;
      8. Loose or missing parts;
      9. Guardrail Systems are properly installed and in place; and
      10. Any other items specified by the manufacturer.

d. Pre-use inspections must be submitted by taking a photo of the completed inspection form and emailing it to safety@andrew.cmu.edu and the MEWP owner. This shall be done prior to operating the MEWP.
e. Any deficiencies found during a pre-use inspection shall be noted.
f. Deficiencies that affect the safe operation of the MEWP, or the safety of the operator, must be addressed by placing the MEWP out of service, tagging the MEWP with an out of service sign or tag, securing the MEWP to prevent unauthorized use, and immediately notifying a supervisor.

10. Worksite Inspections

a. Prior to operating any MEWP, the worksite in which the lift will be used must be inspected for hazards that will affect safe operation. Items to look for during this inspection may include, but are not limited to:
    i. Drop-offs, holes, or unstable surfaces such as loose dirt;
    ii. Ceiling heights and overhead obstructions;
    iii. Slopes, hills, ledges, ditches, or bumps;
    iv. Overhead exposed power lines and communication cables;
    v. Damaged or inadequate floor support to withstand the load of the MEWP, operators, and materials.
    vi. Wind and other severe weather conditions, such as ice or lightning;
    vii. Presence of unauthorized persons; and
    viii. Other possible unsafe conditions.
b. Worksite inspections must be completed before operating any MEWP.
c. When hazardous worksite conditions exist which impact the safety of the operators, stop the operation and contact EHS and a supervisor to discuss next steps. At this point, a JHA will be completed, or the work will be rescheduled.

11. Maintenance and Equipment Inspections

a. Types of equipment inspection include:
    i. Frequent: performed prior to placing a MEWP into service or if the MEWP has been out of service longer than three months. Must be completed by a Qualified Person.
    ii. Annual: performed at least once every 12 months. It must include all items checked on the frequent inspection and any additional items specified by the manufacturer. Must be completed by a Qualified Person.

iii. Pre-use: performed every day or at the beginning of each shift. Can be completed by a certified MEWP operator. Please see Appendix A for the Pre-use Inspection Form.

b. Persons who are not certified to perform maintenance or equipment inspections on MEWPs must never do so. Preventative maintenance, frequent inspections, and annual inspections must be completed by a Qualified Person.
c. Preventative maintenance and equipment inspections must be completed before or on the schedule recommended by the manufacturer of the MEWP and not after.
d. If preventative maintenance or equipment inspections on a MEWP have not occurred within the time recommended by the manufacturer, then the MEWP must be placed out of service by tagging the MEWP with an out of service sign or tag and securing it to prevent unauthorized use. A supervisor must be notified immediately upon this occurrence.
e. Proof of completed preventative maintenance and equipment inspections must be provided by the Qualified Person who is contracted to conduct the maintenance and inspections. This proof must be visible on the MEWP and provided upon completion of maintenance and inspection.
f. When damage to a MEWP is discovered, the MEWP must be placed out of service by tagging the MEWP with an out of service sign or tag and securing it to prevent unauthorized use. A supervisor must be notified immediately with details about the damage.
g. Any time that a MEWP fails an equipment inspection it must be placed out of service by tagging the MEWP with an out of service sign or tag and securing it to prevent unauthorized use. A supervisor must be notified immediately.
h. Repair maintenance of MEWPs must be completed by a Qualified Person who is certified to repair MEWPs.
i. Insulated Aerial Devices must be maintained and inspected according to the manufacturer's recommendations.

12. MEWP Operation, Traveling & Loading:

a. MEWP Operators must read the manufacturer's operator manual before operating equipment.
b. MEWPs must never be operated alone. A ground person capable of operating the ground controls of a MEWP must be present in case of an emergency.

c. Each MEWP has a specific load capacity rating. Operators must know this rating and ensure that the load capacity is not exceeded at any point during use. The combined weight of the worker(s), tools and materials must be considered when calculating the load.
d. MEWPs shall not be used to replace a crane or other material handling equipment.
e. The area around the MEWP must be secured in a way that prevents access to those not involved with the work.
f. Unless traveling at short distances as part of one project, operators shall travel with the platform in the lowered and retracted (when applicable on Group B MEWPs) position.
g. Lower-level controls shall not be operated unless permission is obtained from the operator(s) in the lift except in an emergency and the lower-level controls are needed.
h. MEWP operators shall never elevate themselves from the working platform and extend above the top rail by standing on a ladder, materials, mid rail, etc.
i. Operators shall not exceed the vertical or horizontal reach limits of the lift.
j. The outdoor use of MEWPs is prohibited during severe weather. Operators shall consult the operator's manual to obtain the max wind speed in which the MEWP can be used. Local wind speed must be identified by using accuweather.com and entering the zip code of the area where the MEWP will be used.
k. The outdoor use of MEWPs is prohibited when lightning is in the weather forecast for the area, or any time a lightning strike is witnessed.
l. Snow and ice must be removed from a MEWP platform before use. Other slip/trip hazards such as a wet or slippery platform surface must also be eliminated before use.
m. Hydraulic, mechanical, or electrical safety devices shall not be tampered with or disabled.
n. Minimum approach distances for Unqualified and Qualified Employees must be always maintained when working near exposed power lines. Any time that the voltage of a line is not known, the MEWP operator must not operate the MEWP within 35 feet of a line. Confirmation of the voltage of a line must be obtained before operating within 35 feet. Approach distances are as follows:

Minimum Approach Distances for Unqualified Employees

Nominal Voltage kV Phase to Phase*	Distance	
	ft.-in	m
0.0 to 1.0	10-00	3.05
1.1 to 15.0	10-00	3.05
15.1 to 36.0	10-00	3.05
36.1 to 50.0	10-00	3.05
50.1 to 72.5	10-09	3.28
72.6 to 121.0	12-04	3.76
138.0 to 145.0	13-02	4.00
161.0 to 169.0	14-00	4.24
230.0 to 242.0	16-05	4.97
345.0 to 362.0	20-05	6.17
500.0 to 550.0	26-08	8.05
785.0 to 800.0	35-00	10.55
*Exceeds phase to ground		

Minimum Approach Distances for Qualified Employees

Nominal Voltage kV Phase to Phase*	Includes 1910.269 elevation factor, sea level to 5,000 ft*		Includes 1910.269 elevation factor, 5,001 to 10,000 ft*		Includes 1910.269 elevation factor, 10,001 to 14,000 ft*	
	ft-in	m	ft-in	m	ft.-in	m
0.5 to 1.0	Avoid Contact		Avoid Contact		Avoid Contact	
1.1 to 15.0	2-04	0.71	2-08	0.81	2-10	0.86
15.1 to 36.0	2-09	0.84	3-02	0.97	3-05	1.04
36.1 to 46.0	3-00	0.92	3-05	1.04	3-09	1.14
46.1 to 72.5	3-09	1.14	4-03	1.30	4-07	1.40
72.6 to 121.0	4-06	1.37	5-02	1.58	5-07	1.70
138.0 to 145.0	5-02	1.58	5-11	1.80	6-05	1.96
161.0 to 169.0	6-00	1.83	6-10	2.08	7-05	2.26
230.0 to 242.0	7-11	2.41	9-00	2.75	9-09	2.97
345.0 to 362.0	13-02	4.02	15-00	4.58	16-03	4.96
500.0 to 550.0	19-00	5.80	21-09	6.63	23-06	7.17
765.0 to 800.0	27-04	8.34	31-03	9.53	33-10	10.32

*Exceeds phase to ground: elevation factor per 29 CFR 1910.269.

13. Fall Protection

a. MEWP Operators must complete fall protection training by a Qualified Person before operating a Group B MEWP and using a Personal Fall Arrest System. If MEWP Operators do not have this training, they are prohibited from using a Group B MEWP.
b. Any time that a Group B MEWP is used, a Personal Fall Arrest System must be used.
c. The lanyard used in a Personal Fall Arrest System must not allow a MEWP operator to free fall more than 6 feet or contact any lower level.
d. Any time that a Personal Fall Arrest System is used, the lanyard must be of the appropriate type for the height at which it is being used.
e. Any time that a Personal Fall Arrest System is used, the lanyard must be of the appropriate type for the position of the anchor point being used.
f. Only approved anchor points are to be used.
g. When a Group B MEWP is used, a JHA and a Fall Arrest Rescue Plan must be created and understood by all those involved.
h. Fall Arrest Rescue Plans must provide procedures for safely retrieving a suspended person so that suspension occurs for no longer than 60 minutes.
i. If public rescue teams such as local EMS/Fire Departments are to be used as the primary option for rescue of a suspended person, then they must be contacted prior to the job and details of the area given to the rescue team.
j. Operators must be tied off to the surface in which they are working from. If operators exit a lift to work from a new surface, they must tie off to both the MEWP and the surface that they are transitioning to during their transition. Once on the new surface, operators should remove their connection to the MEWP. 100 percent tie-off must be always maintained.
k. Harnesses and lanyards must be maintained and inspected according to the manufacturer's recommendations.

14. Revisions

Date	Documented Changes	Initials
08/2023		
9/3/2024	Reviewed and Updated	CB
10/22/2024	Added the Appendix A	NN

Appendix A

Mobile Elevating Work Platform (MEWP) Pre-Use Inspection

Department					MEWP make/model:
MEWP type:	scissor lift	☐	personnel lift	☐	MEWP ID:
	aerial lift	☐	telescoping lift	☐	Hour meter reading:
	boom lift	☐	articulating lift	☐	
Inspection conducted by (operator/inspector):					Date

Power Off Checks	Pass	Fail	N/A	Power On Checks	Pass	Fail	N/A
1. Wheels and tires	☐	☐	☐	22. Unit starts and runs properly	☐	☐	☐
2. Lights/strobes	☐	☐	☐	23. Instruments/gauges	☐	☐	☐
3. Mirrors/visibility aids	☐	☐	☐	24. Warning lights/audible alarms	☐	☐	☐
4. Engine/engine compartment:				25. Fuel/charge level	☐	☐	☐
a. Belts/hoses	☐	☐	☐	26. Horn/audible warning device(s)	☐	☐	☐
b. Cables/wires	☐	☐	☐	27. Function controls:			
c. Debris	☐	☐	☐	a. Boom/jib/lift arms – raise/lower/extend/ retract	☐	☐	☐
5. Battery/batteries				b. Turret rotate	☐	☐	☐
a. Terminals tight	☐	☐	☐	c. Drive - forward/reverse	☐	☐	☐
b. Clean/dry/secure	☐	☐	☐	d. Steer – left/right	☐	☐	☐
6. Hydraulics:				e. Platform – tilt/rotate/extend	☐	☐	☐
a. Cylinders/rods	☐	☐	☐	f. Stability enhancing devices	☐	☐	☐

b. Hoses/lines/fittings	☐	☐	☐	g. Function – enable dead man devices	☐	☐	☐
7. Fluids:				28. Emergency/auxiliary controls	☐	☐	☐
a. Engine oil Level Leaks	☐	☐	☐	29. Safety interlocks	☐	☐	☐
b. Engine coolant Level Leaks	☐	☐	☐	30. Braking – stops & holds	☐	☐	☐
c. Hydraulic oil Level Leaks	☐	☐	☐	31. Other:	☐	☐	☐
d. Fuel/battery Level Leaks	☐	☐	☐	**General**	**Pass**	**Fail**	**N/A**
8. Data/capacity plate	☐	☐	☐	32. Mfr. operating manual stored on MEWP	☐	☐	☐
9. Counterweight/Counterweight bolt(s)	☐	☐	☐	33. Safety decals/warnings/placards	☐	☐	☐
10. Cover panels	☐	☐	☐	34. Misc. parts – loose/missing/broken	☐	☐	☐
11. Boom valley/under platform – leaks/debris	☐	☐	☐	**Work Area Inspection**	**Pass**	**Fail**	**N/A**
12. Accessory plugs and cables	☐	☐	☐	35. Drop-offs or holes	☐	☐	☐
13. Boom/lift arms – general condition/wear	☐	☐	☐	36. Bumps and floor/ground obstructions	☐	☐	☐
14. Power track – lines/hoses	☐	☐	☐	37. Debris	☐	☐	☐
15. Safety prop functional	☐	☐	☐	38. Overhead obstructions	☐	☐	☐
16. Platform– guardrails/toeboard/anchorages /gate	☐	☐	☐	39. Energized power lines	☐	☐	☐
17. Weather-resistant storage compartment/manuals	☐	☐	☐	40. Hazardous locations	☐	☐	☐
18. Control markings visible	☐	☐	☐	41. Ground surface and support conditions	☐	☐	☐

19. Other:	☐	☐	☐	42. Pedestrian/vehicle traffic	☐	☐	☐
20. Other:	☐	☐	☐	43. Wind and weather conditions	☐	☐	☐
21. Other:	☐	☐	☐	44. Other possible hazards:	☐	☐	☐

Report any problems found to supervisor. ALWAYS lock/tag-out unsafe equipment.

Item #	Comments/Action Items