WPI Lens and Lights

Training Policies and Procedures

Contents

Contents 1

Introduction 3

Authorship 4

Enforcement of Procedures 5

CAMLOK Power Connections / Power Taps 6

1) General Info 6
2) Safety 7
3) Operation – Plugging In / Turning On 7
4) Operation – Disconnecting / Turning Off 8

Truss / Rigging 9

1) Safety 9
2) Operation – Rigging/Derigging Hoist Devices 10
3) Operation – Assembling and Flying Out Truss 10
4) Operation – Picking Truss Cables 11
5) Operation – Flying In and Disassembling Truss 11

Alden Batten System 13

1) Safety 13
2) Operation - Flying 13
3) Operation - Weighting 14

Applied Electronics L-16 16

1) Specifications 16
2) Safety 16
3) Operation 17

Applied Electronics L-25 Mini Tower 19

1) Specifications 20
2) Safety 20
3) Operation - Setup 21

4) Operation - Raising 22
5) Operation - Strike 22

SkyJack 3219 & 3226 DC Electric Scissor Lifts 23
1) Specifications 24
2) Safety 24
3) Fall Arrest 25
4) Operation 26

Genie AWP-30S Aerial Work Platform 27
1) Specifications 28
2) Safety 28
3) Fall Arrest 28
4) Operation 29

Genie Boom Lift (Z-40/23N RJ) 30
1) Specification 31
2) Safety 31
3) Fall Arrest 32
4) Operation 32
5) Range of Motion 34

Yale MPB040-E Electric Pallet Jack 35
1) Specifications 35
2) Safety 36
3) Operation 36
4) Training 36

Introduction

This manual is designed to give the Lens and Lights Technical Director a guide to follow while training members about the safety and proper procedures to follow while using any of the Lens and Lights Club's rigging and personnel lift equipment. This manual is also designed to act as a reference for the safe operation of LNL equipment.

If all members are trained to the specifications listed in this manual, then it is possible for the Executive Board to hold all members to the procedures outlined. The Executive Board must also maintain records of all trainings, incidents, and disciplinary actions. The level of training received by each member should be publicly accessible (as of the time of writing, the LNL DB performs this role).

LNL's training procedures are designed to follow regulatory compliance requirements and current industry best practices and standards. The training for Mobile Elevated Work Platforms (Scissor Lifts, Mast Lifts, and Boom Lifts) follows the standards given in ANSI A92 while the Electric Pallet Jack training meets the OSHA standards outlined in 29 CFR 1910.178. Training procedures and safety rules may be updated from time to time and when required as regulations, practices, and standards evolve.

Should any member act inappropriately or damage a piece of equipment due to negligence or other reason, the Executive Board may refer to this document when deciding if any rules or regulations were violated. This document is also meant to be a 'living' document, meaning that as new equipment is purchased by the Club, this document should be appropriately updated.

Reading this document is NOT a substitution for training provided by the Lens and Lights Technical Director. Only the Lens and Lights Technical Director or their designee may provide trainings to members of the Club.

Authorship

This LNL Training Manual has had a long history and has proven to be a valuable resource in both providing information and training club members on equipment and systems the club uses.

Document created by Ilan Levin, March 2006

Modified by Ilan Levin, March 2006

Modified by Matthew Houstle, December 2006

Modified by Dan Cianfrocco, February 2009

Modified by Dan Cianfrocco and Kyle Hobin, February 2009

Modified by Mikhail Tan, 2012

Restructured and Content Creation by Matthew Forman, September 2013

Updates and Modifications by Nicholas Dal Porto, April 2021

Additions, Restructuring, and Formatting by Matthew Haahr, December 2022

Content Additions and Editing by Kevin Boenisch, January 2023

Enforcement of Procedures

The guidelines for enforcing these Procedures is as follows:

1) If the Lens and Lights Technical Director witnesses or is informed about a trained member violating any training procedures or policies, they will meet individually with the member in question to review the correct training procedures and allow for the member to explain the thought process regarding the action that violated the procedures or policies, or send a formal warning email to the member, depending on the Technical Director's discretion.

2) That conversation will act as a verbal warning for the member, and it will be recorded in the Technical Director's records.

3) If a second incident occurs, the Technical Director reserves the right to act to revoke the specified training from the member.

4) Members who have had training revoked may be retrained at the sole discretion of the Technical Director.

5) Some situations, incidents, or egregious violations of these training procedures may result in an immediate revocation of training at the Technical Director's discretion and/or the requirement for refresher training.

CAMLOK Power Connections / Power Taps

1) General Info

a) LNL uses 120 VAC 3 phase power to power our equipment, connected using CAMLOK (also called CAM) allowing us to draw more power without having to use even more massive cables (or connectors).
   i) 3 phase 120VAC, 60Hz waves, 120º out of phase.
   ii) Connectors are rated to carry up to 400 amps, 2/0 cable up to 300, and 4/0 cable up to 400 amps per phase.
   iii) The amount of power able to be delivered is determined by the main breaker and should be labeled at the disconnect (typically 100-200A on campus and lower than cable ratings).

b) The disconnects must always stay locked in the off position and unlocked when on.

c) CAMLOCK connectors are color matched.
   i) To Connect
      (1) Align the molded indicators (sometimes a triangle, sometimes just a line) on the housing and connector
      (2) Push the connector together
      (3) Twist connector clockwise until tight (often around 180º)
   ii) To Disconnect
      (1) Twist connector counterclockwise
      (2) Pull connector free of distro
   iii) Colors of CAM:
      (1) Green is GROUND
      (2) White is Neutral

(3) Black, Red, and Blue are all the different live phases

2) Safety

a) NEVER lock a power disconnect in the ON position.

b) NEVER connect or disconnect CAM itself, a distro, or disconnect while any component is energized.

c) NEVER leave a power tap ON when an event is not supervised by an LNL Crew Member.

d) ALWAYS get independent verification of the CAM connections before energizing.

e) If you are turning power on after it has been turned off but is still setup, (multi-day events, during strike, etc.) inspect the whole run and physically check every connector to make sure everything is plugged in and safe.

f) ENSURE that a minimum of 3 ft. clearance be maintained around a disconnect to allow easy access.

3) Operation – Plugging In / Turning On

a) Ensure that the power disconnect is OFF and locked before connecting or disconnecting CAM.

b) When laying out CAM feeder, ensure that the CAM is continuous and shows no sign of obvious wear and/or damage.

c) When connecting devices to power, start at the device that will be furthest from the CAM Tap and work up the chain towards the disconnect

i) Always keep in mind “if power were to turn on, what would be energized?”. You do not want any loose/unplugged CAM ends sitting around that could be energized if the circuit were on.

d) When attaching CAM ALWAYS follow this HOOK UP order:

i) Ground → Neutral → Phase → Phase → Phase
(use the order on the CAM-Tap or distro, whatever is most convenient)
For example: Green → White → Black → Red → Blue

ii) Keep in mind “If the circuit were to be energized, there needs to always be a path to ground”

e) To insert a CAMLOCK connector into a panel or distro align the cam heads (usually notated by a triangle on the molded connector) and then turn clockwise until the connection is tight. Repeat for each connector in the order described above.

f) After all equipment down the chain has been connected, verify again that the main breaker on the power distribution panel is in the OFF position before connecting CAM.

g) Once fully connected, ask another crew member who is also power trained and did not set up the cam to verify the following at every connection between disconnect and equipment:
   i) All connector colors match correctly.
   ii) All connections are physically tightened all the way.

h) ONLY after another member has independently checked the CAM hookup may the lock be removed from the disconnect.

i) Announce to the room or area where the distro is located that “Power Going On!”

j) WAIT for an acknowledgment and enough time that someone can call a “HOLD”, minimum 5 seconds.

k) The CAM may now be energized.

l) NEVER lock the power disconnect in the ON position.

4) Operation – Disconnecting / Turning Off

a) Verify that the main breaker on the power distribution panel is in the ON position.

b) Announce to the room or area where the distro is located that “Power Going Off!”

c) WAIT for an acknowledgment and enough time that someone can call a “HOLD”, minimum 5 seconds.

d) The CAM may now be de-energized.

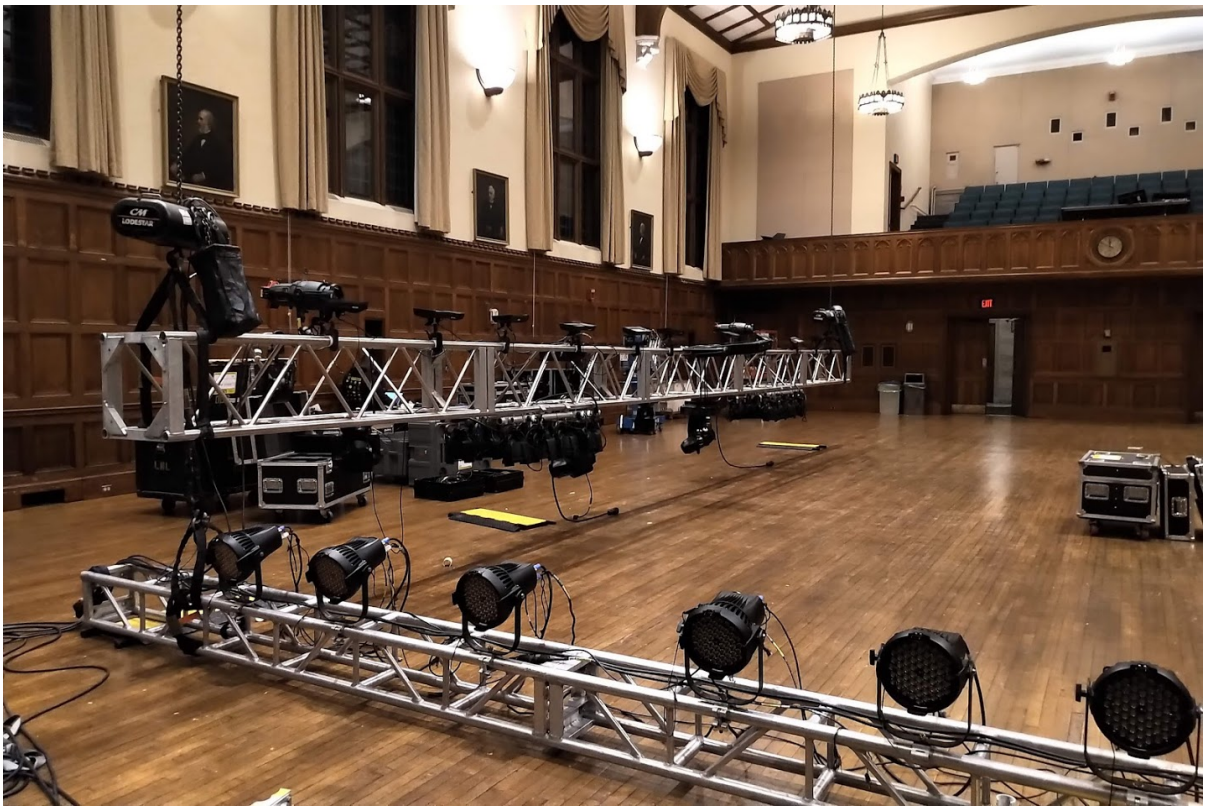
e) IMMEDIATELY lock the power disconnect in the OFF position before walking away from the disconnect.

f) When detaching CAM always follow this DETACHMENT order:
   i) Phase → Phase → Phase → Neutral → Ground
   (use the order on the CAM-Tap or distro, whatever is most convenient)
   For example: Blue → Red → Black → White → Green
   ii) Keep in mind “If the circuit were to be energized, there needs to always be a path to ground”

g) When disconnecting power, start at the CAM-Tap and work towards the last device in the power chain.
   i) Always keep in mind “if power were to turn on, what would be energized?”
   ii) You do not want any loose/unplugged CAM ends sitting around that could be energized if the circuit were on.

h) To remove a CAMLOCK connector from a panel or distro, turn the connector counter clockwise until the connector can be removed from the device it was plugged into.

Truss / Rigging



1) Safety

a) Training is provided by the Technical Director or their designee in two parts: setup and strike.

b) Any event using rigging must follow the “Rigging Design Policy” established by the Technical Director.

c) Access to attic spaces is not permitted without direct permission from the Technical Director or Facilities Liaison, who will coordinate with WPI Facilities.

d) Shackles and truss bolts should always be loosely threaded together when not in use to prevent damage to the threads.

e) All slings should be checked before use.

f) “Creativity” in raising hoist chains to hangpoints is not permitted. While many other methods for rigging may be seen in industry, only those described here are allowed to be used in LNL.

g) If force is required to complete a task, something is wrong.

h) All cables coming off the truss must be strain relieved.

i) All loads must be suspended vertically with no more than a 5-degree offset from vertical.

j) Truss must be checked by a truss/rigging trained member who has not been involved with the assembly of truss or other rigging tasks before being flown.

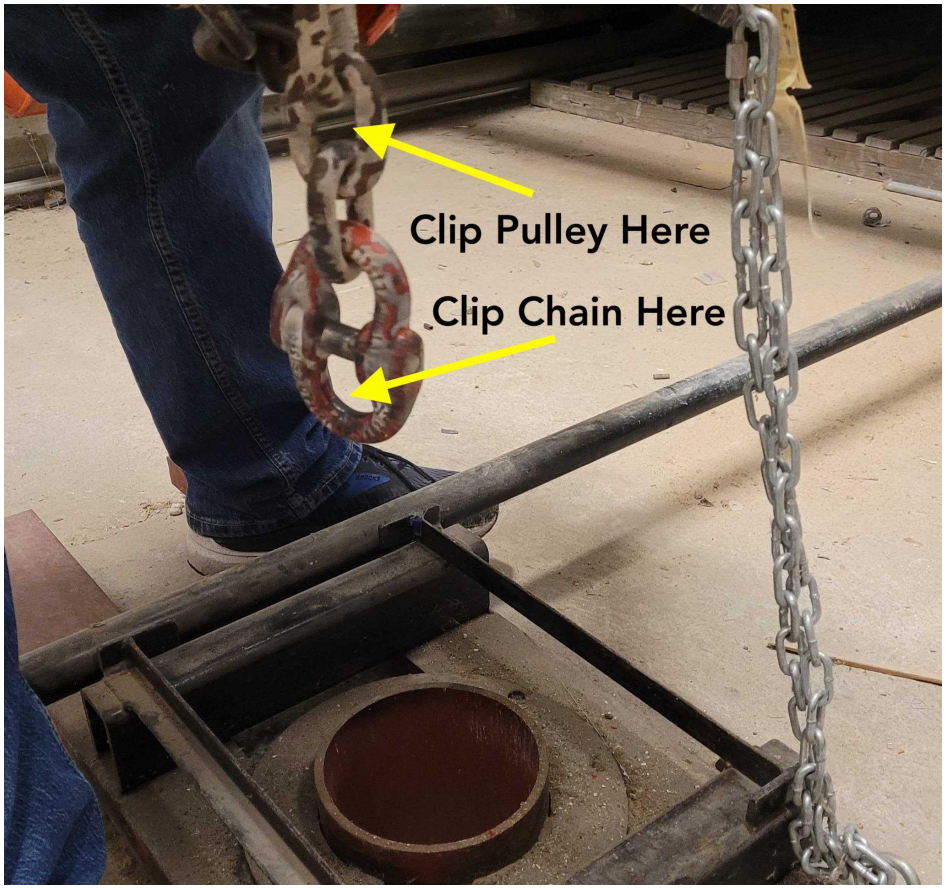
2) Operation – Rigging/Derigging Hoist Devices

a) Position each hoist under a hangpoint. Open case, attach chain bag, put excess chain in bag.

b) Use lift to reach desired hangpoints.

c) Uprigger brings rope and pulley with them in lift and attaches carabiner and pulley above the hangpoint attachment point.

i) Clip the motor and pulley as described in the figure below.



d) Once uprigging begins and the uprigger and ground rigger need to communicate, music should be turned off so they can converse safely.

e) Uprigger calls out “Rope coming down”. Uprigger drops rope clear of lift and basket.

f) Ground rigger ties a modified Rolling Hitch 1’ below the hoist chain end.

i) See the guide on the next page on how to tie the knot.

ii) You can also find videos/instructions online for how to tie a rolling hitch, however note that they may tie it in the opposite direction. Be sure to follow the direction in the photos below.

Step 1.

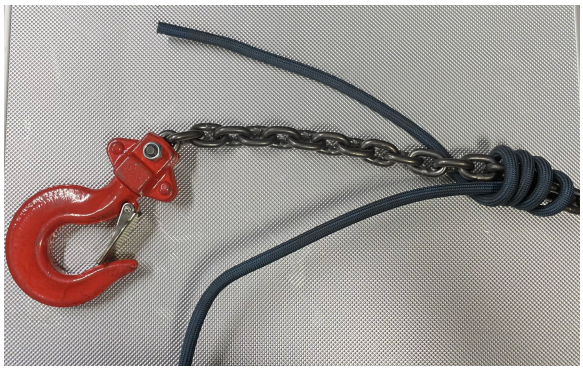
- Get between 2’ and 3’ feet of rope
- Find a point about 1’ foot down the chain from the hook

Step 2.

- Wrap the rope around the chain 1’ from the hook
- Start by having the rope go under the chain

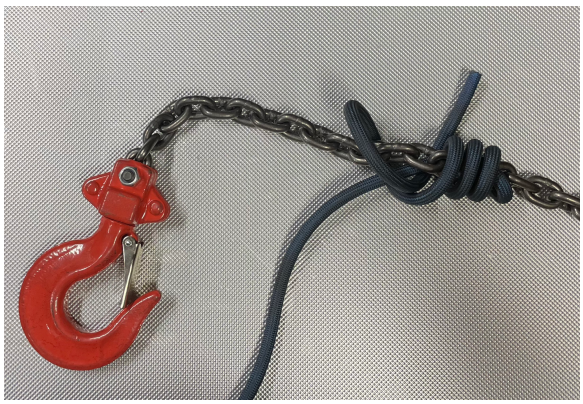
Step 3.

- Wrap the tail of the rope around both the rope and the chain, going up the chain towards the hook.
- Create at minimum 4 wraps but ensure there is still at least 1ft of tail. If there isn’t enough tail, start again with more rope.



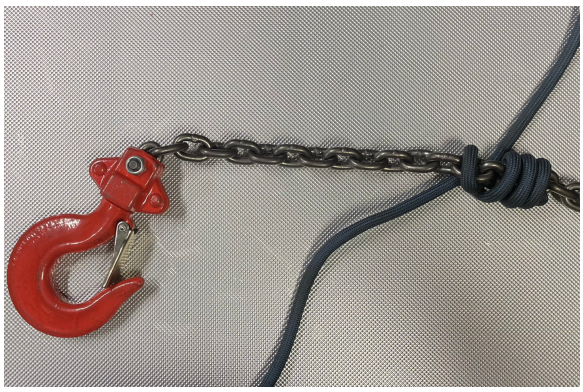
Step 4.

- Wrap the rope around the chain one more time, this time passing the rope through the loop closest to the hook
    - ***Only pass the rope through the loop closest to the hook, not all of them.***



Step 5.

- To tighten, pull the two sides of the rope in opposite directions
    - Pull the tail of the rope down the chain
    - Pull the main length of the rope up towards the hook



g) By radio or voice, the ground rigger confirms the uprigger is ready to receive the hoist chain.

h) Using two hands, the ground rigger hauls hoist chain to hangpoint. Grabbing the rope with thumb facing down allows for more force.

i) When the hoist chain has reached adequate height, the uprigger will call “HOLD” by radio or voice. The ground rigger holds tension on the rope until told otherwise.

j) The uprigger clips the hoist chain to the point, and then calls “All clear” by radio or voice to the ground rigger.

k) Uprigger unties rope, removes rope and pulley, returns to the ground, and the process is repeated.

l) To derig hoists, process is followed in reverse, with uprigger tying the Rolling Hitch 1’ below hoist chain end, ground rigger pulling slack, uprigger unclipping hoist chain, and ground rigger gently lowering hoist chain with two hands on rope.

3) Operation – Assembling and Flying Out Truss

a) Connect the motor controller to power and connect power/control cables to motors for the truss being hung.

b) Using pickles, float motors several feet above the case and move the case out from under the hangpoint.

c) Place truss segments on the floor, end to end, triangle segments touching, along desired run of truss.

d) Bolt truss together. Keep nuts loose until all four are snug, and then tighten nuts in opposite corners. Do not force bolts through or force nuts to thread.

e) Have another LNL member with truss/rigging training who has not been involved with any rigging setup physically check every bolt's tightness using 2 wrenches.

f) Lift the assembled truss run and slide a cable ramp under each end.

g) Sling truss at desired points. For 12" truss, choke truss with single 6' SteelFlex sling. For 20.5" truss, choke truss with two 6' SteelFlex slings on the bottom chord and wrap around the top chord.

   i) Slings must all be wrapped to the right (as seen when looking from the outside of the truss) to prevent sliding (remember the mnemonic "wrap right and you'll neve be wrong").

h) Connect ends of sling(s) with a 5/8" shackle.

i) Lower motors with pickle to just above truss. Clip shackle to motor hook. The shackle's pin should be in the motor hook while the semi-circular part is where the slings go.

j) Have another LNL member with truss/rigging training who has not been involved with any rigging setup again check the truss, slings, and motors for correct assembly.

k) Once checked, clear the area around the truss.

l) Turn off all music in the space and stop any loud noises.

m) Call out "Attention (in/on) the (space), truss flying out". If anyone calls HOLD, DO NOT PROCEED.

n) Using the motor controller pendant, fly the truss to desired height.

4) Operation – Picking Truss Cables

a) Before flying assembled truss, use a sling to choke cables coming off truss and connect to additional chain hoists.

b) Fly the cable pick in unison with the truss.

c) Using SkyJack, drape cables over top of basket.

d) Raise basket to static pick point, and secure cables with sling and shackle.

e) Ensure that the fire curtain's descent is not obstructed by any cables.

f) Photos of correctly attached pick can be seen below.

5) Operation – Flying In and Disassembling Truss

a) Turn off all music in the space.

b) To lower the truss, call out "Attention (in/on) the (space), truss flying in". If anyone calls HOLD, DO NOT PROCEED.

c) Using the motor controller pendant, fly the truss to desired height.

d) Before landing the truss, place cable ramps on the ground below the truss and ensure the truss will not land on any cables.

e) Call out "Attention (in/on) the (space), truss landing". If anyone calls HOLD, DO NOT PROCEED.

f) Using the motor controller pendant, lower truss until it is resting on cable ramps and tension is relieved from the slings.

g) Unclip the motor hooks from shackles. Using pickles, raise motors out of the way.

h) Remove slings from the truss. Lift truss, remove cable ramps, and place it flat on the floor

i) Remove bolts, loosely re-assemble the bolt with 2 washers and a nut, and return to the storage location.

Alden Batten System

1) Safety

a) Training for the Alden Hall Batten System is provided by the Technical Director or their designee.

b) Arbors and battens move in opposite directions.

c) Battens should always be weighted for empty batten (2 and ½ bricks, painted YELLOW). Never remove these yellow bricks.

d) The metal spreader plates are to prevent the bricks from falling out if the arbor were to hit the grid or floor. They should be placed when and where indicated by stickers on the arbors.

e) The collars MUST be tightened down at all times the batten is not being weighted.

f) A full brick weighs 25-30 lbs and a half brick weighs 12-15 lbs.

2) Operation - Flying

a) Clear the area and ensure nobody walks near the lineset being moved..

b) Call out “Batten (number), flying (in/out)”. If ANYONE calls a hold, DO NOT PROCEED.

   i) Linesets are numbered from downstage to upstage and painted on the wall.

c) Grab rope and pull towards you, releasing brake with firm grip on rope.

d) Hold onto the rope with one hand. With the other hand, remove the brake locking ring and pull the brake towards you.

e) Pull rope down hand over hand slowly, use the front rope to fly in and the rear rope to fly out.

f) Watch the arbor AND the batten while in motion. Slow down before hitting the end.

g) When you reach the desired height of the batten, re-engage the brake, brake locking ring, and padlock. Call out “Batten (number) clear”.

3) Operation - Weighting

a) To climb the ladder, empty contents of pockets (i.e., phones, keys, etc.).

b) Before climbing the ladder, call out “Stagehand, stage right ladder”.

c) When you have reached the weight rail or grid, call “Ladder clear”.

d) Never stand under a ladder when someone is on it.

e) Lights for weight rail are behind the ladder on stage level, and on the wall adjacent to the ladder on the weight rail. Lights for the grid are located to the side of the ladder on the grid.

f) Confirm stage is clear before loading weights onto the arbor.

   i) The stage is considered closed at this point and no one should be on stage in the case of a dropped weight or runaway batten or arbor.

   ii) Ensure all others in the space are aware of this and don’t accidentally enter.

g) Loosen, raise, and retighten collars for arbor undergoing weighting.

h) Lift spreader plates and use clamp to hold above weight bricks

i) Work in a team to pass weights through railing and place on arbor, alternating tab directions.

   i) When de-weighting, the base weight of 2 and ½ bricks should not have alternative tab directions to indicate the base weight. Do not remove these.

j) Add weights to match what was hung on the batten, or slightly less.

   i) If in doubt, ALWAYS PUT LESS WEIGHT. Perform a weight check, add weight, and repeat as needed.

k) Add spreader plates where indicated by stickers on arbor.

l) After weighting remove clamp, lower remaining spreader plates, and tighten collars.

m) When placing weights on the weight rail deck, never stack higher than two bricks.

n) Ask another batten trained member on stage level for a weight check if unsure about the proper weight amount.

   i) Replace and tighten all collars before allowing anyone to re-enter the stage.

   ii) To perform a weight check, hold the rope with one hand while carefully releasing the brake. If you start to feel weight or movement on the rope, immediately reapply the brake and request weight be removed.

   iii) Everyone must clear the stage again before weights are added or removed. Repeat the weight check process as needed.

   iv) Batten is properly weighted if a balance is perfect or if slightly arbor heavy.

   v) If the arbor has significantly too many weights, it may “run away” when the brake is released, causing significant damage and/or injury. In the case of a runaway batten, do not try to grab the moving rope and clear the area immediately.

Applied Electronics L-16

1) Specifications

a) Lens and Lights owns four L-16 crank-up towers.

b) The L-16 has a maximum lift height of 16 ft.

c) The maximum load for an L-16 is 500 lbs, but this may be reduced by environmental conditions.

d) The L-16 has four outriggers.

e) The L-16 uses a hand crank winch system.

f) The L-16 has a receiver for a 12” truss fork and a 5’ “T-Bar”.

2) Safety

a) L-16 training is provided by the Technical Director or their designee. There is not a dedicated L-16 training, please ask the Technical Director if you would like to be trained to use them.

b) When lifting the different stages of the L-16, insert safety pins into the appropriate holes as the lift extends.

c) When loading the T-Bar with fixtures, ensure that both sides are balanced.
    i) Use dummy lights to even out the weight if needed.
d) Large pieces of plywood should be placed under all outrigger pads of the L-16 when used outside.
e) Sandbags should be placed on top of each outrigger of the L-16 when used outside.
f) Do not insert truss adaptors or T-bars if the receiver is missing.
g) Never attempt to fix any part of the L-16.
h) A mallet or hammer should never be used on the L-16s.
i) If any part of the L-16 is broken, it is your responsibility to inform the Technical Director and discontinue use.
j) If you have any questions as to the safety of an action, consult the Technical Director.
k) When operating the L-16 outside, the CC's of the event must appoint a wind safety officer and establish a wind plan in the case that wind speeds exceed the threshold of 10 mph if truss is being used or 15 mph without truss. Regardless of wind speed, whenever the L16s are used outside each foot must have a large piece of plywood underneath and a sandbag on top.
    i) The role of the wind safety officer is to monitor the wind speed during the event and make the call that the L-16s should be lowered in the event that wind speeds are too great.
    ii) If they must leave the event, the wind safety officer must appoint a new one and inform the CC's.
    iii) The wind plan must specify who is to lower the towers in the case the wind is too high, those members must be at the event or designate another member for the whole duration of the event.

3) Operation

a) When moving the L-16s, the outriggers should be folded up and pinned in. The L-16s should only be moved with the attached wheels or in a cloth bin.
b) Once the L-16 is in the desired position, extend the outriggers.
    i) Use large pieces of plywood under each outrigger pad on grass or other outdoor surfaces, ensuring the lift column is vertical.
    ii) Never set up on unstable ground such as muddy/soft soil or if the ground is not flat and level.
c) Attach either the T-bar or truss adapter to the top of the L-16.
d) Attach any lights as needed ensuring that each side of the T-Bar is balanced.

e) A pair of L-16s must be used to fly truss. Never try to balance a stick of truss on a single tower.

f) Ensure that all fixtures have a safety attached to the bar/truss.

g) Slowly crank the handle to raise the L-16.

h) Insert safety pins as the positions for them are exposed in the L-16's travel.

i) When using two L-16's in tandem, crank at the same rate to ensure that they are level. Have a third person watching.

j) When the L-16 is at the desired operating height insert the final safety pins.

k) Lower the tower so that the safety pin is touching the surface below it, but the cables should still be holding weight and not slack.

Applied Electronics L-25 Mini Tower

1) Specifications

a) Lens and Lights owns an Applied Electronics L-25 Mini Tower.

b) The L-25 can lift a span of 12 inch box truss to a maximum height of 25 ft.

c) The maximum evenly distributed weight on the truss lifted by the L-25 is 2400 lbs (1200 lbs per tower).

   i) There is a minimum weight of 300 lbs per tower for the winch system to operate correctly.

d) The L-25 has two towers with four outriggers each.

e) The L-25 uses a hand crank winch system.

f) The L-25 has sections of different lengths to achieve the desired tower heights.

2) Safety

a) L-25 training is provided by the Technical Director or their designee.

b) When loading truss on the L-25, ensure weight is evenly distributed.

c) The L-25 should be built on a flat surface.

d) When operating the L-25 outside, large pieces of plywood must be placed under all outriggers and stabilization pads and guy wires must be used to anchor the L-25 to the ground.

   i) The guy wires should be angled 20-30 degrees towards the outside, as shown in the diagram below.

e) It is the policy of Lens and Lights that no member will climb the L-25 for any reason outside of installing the safety bars. Any member who violates this policy will have their training revoked.

f) Always set the safety bars when the L-25 system has reached the desired height, if possible install the safety bars from a ladder or lift. If the towers must be climbed to install the safety bars, this action is to be performed by the Technical Director or their designee.

g) When operating the L-25 outside, the CC's of the event must appoint a wind safety officer and establish a wind plan in the case that wind speeds exceed the threshold of 10-15 mph (higher speeds can be acceptable, but proper calculations must be performed).

   i) The role of the wind safety officer is to monitor the wind speed during the event and make the call that the L-25s should be lowered in the event that wind speeds are too great.

   ii) If they must leave the event, the wind safety officer must appoint a new one and inform the CC's.

   iii) The wind plan must specify who is to lower the towers in the case the wind is too high, those members must be at the event or designate another member for the whole duration of the event.

3) Operation - Setup

a) Set the L-25 bases at their desired locations and attach the four outriggers to each base.

b) Assemble the truss to span across the L-25, in accordance with the “Truss/Rigging” training procedures.

c) Excluding the outrigger immediately under the slide block, bolt the remaining three outrigger braces to each base.

d) Bolt the desired tower sections together and to the bases, with the head blocks bolted to the last tower sections in the system.

e) Bolt the assembled truss to each slide block.

f) Remove the pins at the top of the head blocks and feed the winch cable from each base to the head block, over the pulleys, and then back across the tower sections, pinning it to the slide blocks. Reinsert the pins above the head block pulleys.

g) If operating the L-25 outside, attach and secure the guy wires to the head block.

h) Feed a rope through the section immediately under the head block and pull rope through, leaving several feet past base.

i) Before raising, a member who has received L-25 training but has not been involved with the setup of the L-25 is required to check all work that has been done thus far.

j) Once the L-25 is checked, each tower may be raised by situating members on both sides of the rope and pulling it to raise the tower to vertical.

k) With members still holding tension on the rope, bolt the hinged section to the base. Once the base is bolted, the rope can be let go of and removed to hoist the next tower section.

l) If outside, secure and stake any guy wires.

m) Raise truss to height required.

   i) See Subsection 4) Operation - Raising for more on details on the raising process

n) When the truss is raised and the slide blocks clear each base, bolt the remaining outrigger braces to each base.

o) When the truss reaches final height, secure the safety bars to each slide block using a personnel lift or a ladder. If absolutely necessary, the Technical Director or their designee may climb the tower to install the safety bar.

4) Operation - Raising

a) With one person on each winch and one person standing back to making sure the truss stays level, begin cranking up the truss.

i) Only the one leveler may be providing feedback on the state of the truss, the more voices, the more confusing and possibly dangerous it becomes.

ii) But, if anyone involved with raising the truss calls “Hold!” everything should stop.

b) If the truss gets out of level it will jam.

c) If a jam occurs, parties must stop immediately to prevent damage to the towers or truss.

d) If only one side jams make sure both winches are in tension and then move the free side so it is level with the jammed side.

5) Operation - Strike

a) Remove the safety bar from each side of the L-25 using a personnel lift or ladder.

b) Lower the L-25 to suitable height and remove all equipment from the truss span.

c) Remove outrigger brace under truss from each base.

d) Lower truss to bottom hard stop.

e) Disconnect/remove guy wires from stakes if using outside.

f) Using personnel lift or ladder, insert rope through the section immediately under the head block and pull rope through, leaving several feet past base.

g) With members holding tension on rope, unbolt the tower section at base.

h) Slowly lower the tower section until the head block is situated on the ground.

i) Repeat for another tower section.

j) Remove guy wires from top of towers.

k) Remove winch cable from slide blocks and head blocks, and crank excess back to the winch drum. Secure with safety to the base section. Store the cable under some tension to prevent damage or unwinding.

l) Remove the truss segment from the slide blocks.

m) Remove tower sections in the order they were assembled.

n) Remove outrigger braces from the remaining three outriggers on each base.

o) Remove outriggers from each base.

SkyJack 3219 & 3226 DC Electric Scissor Lifts

1) Specifications

a) SkyJack SJIII 3219 and SJIII 3226 are owned by WPI Facilities.

b) Weights
   i) SkyJack 3219 weighs 2580 lbs.
   ii) SkyJack 3226 weighs 4135 lbs.

c) Overall Dimensions
   i) SkyJack 3219 has a width of 32”, length of 70”, and stowed height (with the rails up) of 78.5”.
   ii) SkyJack 3219 has a width of 32”, length of 92”, and stowed height (with the rails up) of 90”.
      (1) To fit SkyJack 3226 through a standard doorway, the rails must be lowered.

d) Work Platform
   i) SkyJack 3219 has a working height of 25’, a max platform height of 19’, and a 26” x 64” platform.
   ii) SkyJack 3226 has a working height of 32’, a max platform height of 26’, and a 28” x 83” platform.
   iii) Both SkyJacks have a 3’ sliding platform extension.

e) Speed
   i) SkyJack 3219 has a maximum speed of 2 mph with the lift basket in the stowed position and 0.7 mph with the lift platform raised
   ii) SkyJack 3226 has a maximum speed of 2.4 mph with the lift basket in the stowed position and 0.7 mph with the lift platform raised.

f) Both SkyJacks are battery powered and have one duplex Edison courtesy outlet in the basket that requires an Edison cord plugged into the lift to be operable.
   i) The power inlet for the courtesy outlet is on the back next to the steps.

g) Both SkyJacks have pothole guards on the sides of the lift base.
   i) These extend when the platform is raised

h) Both SkyJacks have horns and movement alarms.

i) The horn on the SkyJack should be used reasonably. The movement alarm should never be defeated or circumvented.

2) Safety

a) Training to use the SkyJacks is provided by a professional trainer in conjunction with WPI Facilities. Permission to use the SkyJacks may be revoked at any time, regardless of training status.
   i) SkyJack training is valid for 3 years.

b) At least one person familiar with the emergency lowering controls must be present in the room and not in the lift.

c) Do not use the SkyJack and notify the Technical Director if the inspection sticker is out of date.

d) Only the Technical Director, Facilities Liaison, or their designee may move the SkyJack between buildings or operate the SkyJack outside. Ask the Technical Director or Facilities Liaison before the lift needs to be moved or used outside.

e) SkyJack 3219 may be used by any lift-trained member of Lens and Lights. SkyJack 3226 may only be operated by the Technical Director, Facilities Liaison, or their designee. Ask the Technical Director or Facilities Liaison for permission before using SkyJack 3226.

    i) A non-lift trained member may ride in either SkyJack but must be informed on how to operate the lift in the case of emergency (highlight how to lower the platform)

f) Clear obstructions from around the SkyJack before moving.

g) When moving a SkyJack into an elevator, ensure the “hold” switch is engaged.

h) Do not exceed the weight limit of 500 lbs. on a closed platform and 250 lbs. on each of the main deck and extension platform when the platform is extended.

i) Make sure the static tail is down before moving the SkyJack.

j) Never operate the SkyJack without the safety chain in place.

k) Only one person is permitted on the platform extension when engaged.

l) While on the platform, both feet should remain firmly on the platform.

m) No more than 1/3 of your body should be over the side of the SkyJack.

n) Know the location of the emergency down controls.

o) Never hang on the SkyJack.

p) If you have any questions as to the safety of an action, consult the Technical Director.

q) The manual should be in the SkyJack’s manual box at all times.

r) When not in motion, put the drive/extend switch in the neutral (center) position, and engage the emergency stop.

3) Fall Arrest

a) Both SkyJacks are equipped with fall arrest lanyard connection points on the platform deck.

b) These connection points can work in conjunction with the railings to provide a fall arrest system for the operator.

c) WPI Lens and Lights owns fall arrest lanyards and harnesses, which can be provided upon operator request.

4) Operation

a) Ensure that the SkyJack charger is unplugged and that the static tail is down.

b) Make sure that there is a clear path to the door before moving the SkyJack.

c) Enter and exit the SkyJack from the rear ladder, facing the machine, and secure the safety chain.

d) Turn the key switch to the operating position and disengage the platform emergency stop.

e) Flip the transmission switch to either drive or platform controls.

f) Hold the enable switch while attempting to drive or raise the platform.

g) When lowering the SkyJack, ensure that there are no objects under the machine or people that may unknowingly walk below it while in motion. Make sure the platform is completely down before exiting or changing modes.

h) If operating on the Harrington Court Floor, lay plywood down where the lift will be stationary (if the lift is moving, plywood is optional)

i) Drive the SkyJack back into the storage room, put the transmission switch into neutral, push the safety stop, remove keys, exit SkyJack, plug into the wall to charge.

Genie AWP-30S Aerial Work Platform

1) Specifications

a) The Genie AWP-30S is owned by WPI Facilities.

b) The Genie Lift is a mast lift.

c) The Genie Lift has a max working height of 35.5’ and a max platform height of 29.5’.

d) The Genie Lift has a 350 lbs. lift capacity.

e) The Genie Lift weighs 777 lbs.

f) The Genie Lift runs on an AC power cord and has one duplex Edison convenience outlet in the basket (that must be plugged in separately).

2) Safety

a) Training to use the Genie is provided by a professional trainer in conjunction with WPI Facilities. Permission to use the SkyJacks may be revoked at any time, regardless of training status.

   i) Genie Mast Lift Training is valid for 3 years.

b) Only one person is allowed in the Genie at a time.

c) At least one person familiar with the emergency lowering controls must be present in the room and not in the lift.

d) Never hang onto or sit on the Genie Lift.

e) Always push the Genie Lift by the handles or pivot point on the mast side, never by the basket.

f) If an outrigger pin or any other part of the Genie is broken, do not use the Genie and contact the Technical Director.

g) Never attempt to fix any part of the Genie Lift.

h) Do not use the Genie Lift if the inspection sticker is out of date.

i) No more than 1/3 of your body should be over the side of the Genie Lift.

j) Know the location and operation of the emergency down control.

k) If you have any questions as to the safety of an action, consult the Technical Director.

l) The manual should remain in the Genie Lift’s manual box at all times.

m) The Genie should never be side-loaded, and thus should not be used to raise or lower a cable pick.

3) Fall Arrest

a) The Genie is equipped with one fall arrest lanyard connection point.

b) The connection point can work in conjunction with the railings to provide a fall arrest system for the operator.

c) WPI Lens and Lights owns fall arrest lanyards and harnesses, which can be provided upon operator request.

4) Operation

a) Ensure the Genie Lift is plugged in and the extension cord is properly stress relieved.

b) Turn the key switch to the operating position and disengage the basket and controller emergency stops.

c) When inserting outriggers, pull the locking pins out while the outrigger is slid in.

d) To properly secure an outrigger once it has been locked into the Genie, pull up on the outrigger until the green light corresponding to that outrigger turns on and stays solid.

e) Once you have a solid green light, continue to hold the outrigger up with one hand, and use the other to screw down the pad until it touches the ground, over tightening will cause the lift to tip.

f) If the light does not come on, loosen the pad and repeat the process.

g) Once the outriggers are all green, enter the Genie Lift by lifting the safety bar and stepping in. Do not climb over the basket.

   i) Before entering the lift, look at the bubble level on the base by the controller to verify that the lift is level.

h) To raise or lower the lift basket depress the enabling button and turn the switch in the desired direction of travel.

i) The Genie will hesitate for a second before raising, but will lower immediately.

j) When lowering the Genie Lift, ensure there are no objects below the platfrom. Make sure the platform is completely down before exiting.

k) The Genie Lift should NEVER be moved if any of the four outrigger lights are lit or if any of the outriggers are tightened and the pads are on the ground.

l) If you are moving the Genie Lift a large distance or around many obstacles such as chairs or tables, remove the outriggers and stow them appropriately before moving the apparatus.

m) The Genie may be movedshort distances with the outriggers installed if the pads areloosened andcompletely off the ground.

Genie Boom Lift (Z-40/23N RJ)

1) Specification

a) The Genie Z-40/23N RJ is owned by WPI Facilities.

b) The Genie Boom Lift weighs 15,300 lbs.

c) Genie Boom Lift has a maximum speed of 4.5 mph with the boom in the stowed position and 0.68 mph with the boom raised.

d) Genie Boom Lift is battery powered, and has a single courtesy duplex Edison outlet in the basket.

   i) The power inlet for the courtesy outlet is on the back of the lift.

e) Genie Boom Lift has a horn and an alarm to indicate when the lift is lowering.

f) The horn on the Genie Boom Lift should be used reasonably. The alarm should never be defeated or circumvented.

g) The Genie Boom Lift can rotate 355 degrees non-continually.

h) The Genie Boom Lift has a working height of 46.5', a max platform height of 40.5', and a horizontal reach of 22.6'.

i) The Genie Lift has a 500 lbs. basket capacity.

j) The Genie Boom Lift should not experience more than 150 lbs. of side force.

2) Safety

a) Training to use the Genie Boom Lift is provided by a professional trainer in conjunction with WPI Facilities. Permission to use the SkyJacks may be revoked at any time, regardless of training status.

   i) Genie Boom Lift Training is valid for 3 years

b) Only the Technical Director and Facilities Liaison are permitted to operate the Genie Boom Lift after receiving approval from Environment Health and Safety (EHS).

c) Both the operator and passenger of the Genie Boom Lift are required to have current WPI Facilities lift training.

d) At least one person familiar with the emergency lowering controls must be present in the room and not in the lift.

e) A safety perimeter of at least 25 feet surrounding all sides of the machine should be clearly marked by cones whenever work is happening overhead.

f) ANSI Z89.1 certified head protection must be worn at all times while operating the Genie Boom Lift indoors and by anyone within the safety perimeter.

g) Do not use the Genie Boom Lift if the inspection sticker is out of date.

h) Do not use the Genie Boom Lift if it is not on a firm and level surface. It should never be used on grass or any non-paved outdoor surface, regardless of whether it is raised or lowered.
    i) The Genie has a level sensor incorporated into its control system but sound operator judgment is always required.
i) Clear obstructions from the Genie Boom Lift's path before use.
j) Do not exceed a weight limit of 500 lbs. in the basket.
k) Do not use the Boom Lift as a crane.
l) Make sure the static tail is down before moving the Genie Boom Lift.
m) While on the platform, both feet should remain firmly on the platform.
    i) One foot must remain on the enabling pedal for the boom to operate.
n) No more than 1/3 of your body should be over the side of the Genie Boom Lift basket.
o) Never hang or ride on the Genie Boom Lift.
p) The manual should be in the service compartment of the Genie Boom Lift at all times.

3) Fall Arrest

a) The Genie Boom Lift is equipped with several fall arrest lanyard connection points.
b) The operator and passenger are both required to wear fall arrest harnesses with lanyards connected at all times while in the Genie Boom Lift basket.
c) Harnesses must be worn correctly and fully tightened. An incorrectly worn harness may be more dangerous than no harness at all. Seek assistance if you are unsure how to put on the harness.
d) WPI Lens and Lights owns fall arrest lanyards and harnesses to use with the Genie Boom Lift.

4) Operation

a) Ensure that the Genie Boom Lift is unplugged from the wall and that the static tail is down.
b) Make sure that there is a clear path to the desired operational area.
c) Make sure that the batteries on both sides of the lift are connected.
d) Reset the E-Stop by twisting clockwise.
e) Lower the basket to ground level using the ground control panel if necessary.

f) Turn the key located on the ground control panel to “basket operation”.

g) Enter the basket located at the end of the boom and re-set the E-Stop if necessary.

h) CLIP IN to one of the designated fall arrest connection points in the basket.

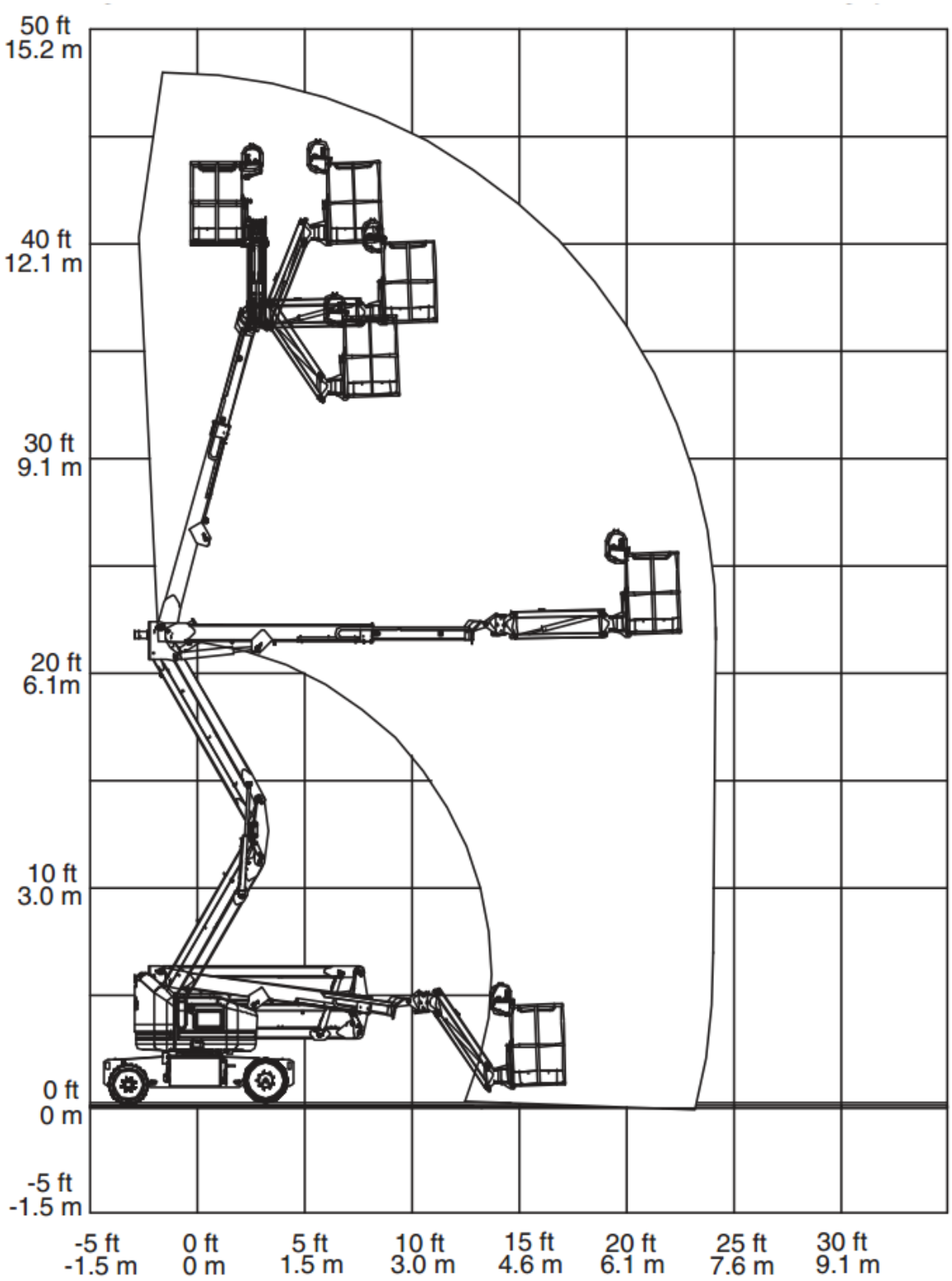
i) Wait for the computer screen to boot up and display the lift status.

j) Operate the lift as desired.

k) If operating on the Harrington Court Floor, lay plywood along where the lift is to be moved and work is to be conducted. Leave a 1-2” gap between each sheet.

l) When returning the lift to the specified storage location:
   i) E-Stop the lift at both the Basket and Ground Panel.
   ii) Turn the operation key to the off position and remove the key.
   iii) Plug the lift in for charging if necessary.
   iv) The lift should not stay plugged in for extended periods to protect the batteries. Come back the next day to unplug it once fully charged.

5) Range of Motion



Yale MPB040-E Electric Pallet Jack

1) Specifications

a) The Yale MPB040-E Electric Pallet Jack is owned by LNL.

b) The Pallet Jack has a maximum weight capacity of 4,000 lbs and weighs around 850 lbs when unloaded.

c) Overall Dimensions:

i) The Forks are 42” long.
ii) The Forks are 7” wide each.
iii) The Forks have a spread of 22” (including the width of the forks).

d) Speeds:

i) When unloaded, the Pallet Jack can move at a speed of 3.8 mph.
ii) When loaded, the Pallet Jack can move at a speed of 3.4 mph.

e) The Pallet Jack can raise the forks by 5”.

f) The Yale MPB040-E Electric Pallet Jack is a Walkie-style Pallet Jack.

2) Safety

a) Training to use the Electric Pallet Jack is provided by the Technical Director and is detailed in subsection 4) Training.
   i) Electric Pallet Jack training is valid for 3 years.
   ii) The training manual can be found here: Manual Link
b) The operators manual should remain in the Pallet Jack's manual box at all times.
c) Never ride on the Pallet Jack.
d) Do not take the Pallet Jack on inclines greater than 5% to prevent loss of control.
e) Walk clear and to the side of the Pallet Jack.
f) Ensure no one is standing close to the Pallet Jack when lowering the forks.
g) Never operate near stairs or other drop-offs.

3) Operation

a) Before using the Pallet Jack, obtain permission from the Technical Director and perform an inspection that the unit is in good working order. If something looks or operates not as expected, inform the Technical Director and do not use the Pallet Jack.
b) First, unplug the battery charger from the wall. Then unplug the battery from the charger and plug it into the main unit (on the top of the unit).
c) Load the Pallet Jack as described in the training manual, ensuring loads are secure and cannot move.
d) Do not drive the Pallet Jack under a roadcase to avoid damaging the casters. Instead, bring the Pallet Jack to a complete stop, then manually roll a roadcase onto the lowered forks.
e) The Pallet Jack may not be used inside the Campus Center (CC) or on any tile, carpet, or gym court floors.
f) When moving the Pallet Jack, use slow mode when in tight spaces and sound the horn to warn pedestrians of the device.
g) When finished using the Pallet Jack, charge the battery by first unplugging the battery from the main unit and plugging it into the charger (on the side of the battery) and then plug the charger into the wall.

4) Training

a) Pallet jack training is provided by the Technical Director or their designee.

b) The training procedure in accordance with 29 CFR 1910.178 is outlined below.

i) Before the training session, members are be required to read the training manual (Manual Link) and fully watch the following video: Video Link

ii) At the training session, the TD will first provide formal instruction about the equipment being used, safe operation principles, specific hazards, general safety guidelines, and LNL specific policies.

iii) Next, the TD will provide practical instruction and a demonstration of how to use the equipment to each member.

iv) Finally, each member must prove a thorough understanding of the topics covered in the training and a high level of competence in operating the pallet jack to pass the training.