

# NEBRASKA THESPIANS

## TECH CHALLENGE

### HANDBOOK



*Adapted from the EdTA website*

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# Introduction

Each troupe can bring one team of six [6] thespians with each gender represented. All needed equipment will be provided. There are 3 sizes of gloves provided at the lighting station, small, medium and large. The participant may bring their own gloves as long as the gloves are complete, finger tipless gloves are not allowed. Adjustable wrenches are provided, the participant may bring their own standard adjustable wrench, quick wrenches and speed wrenches are not allowed.

Items brought by the participant must be placed on the bench so that all participants are on an equal field.

The Tech Challenge is a series of events that are designed to test your knowledge of basic skills that every technician should have. The combination of team and individual events underline the principle that theatre technicians work alone and in ensemble groups depending on the required task in order to make the production successful. In technical theatre both time and accuracy are critical to a successful outcome. As artists we demand excellence in the tasks we are given, but as technicians we also have to perform the tasks quickly and efficiently so as not to disrupt the production process.

The Tech Challenge consists of preselected individual and team events. These events represent the basic skills that every technician should possess to be well rounded theatre professionals. Your team should consist of six members.

## We are anticipating that the events will be:

1. **Lighting: *Hanging And Focusing a Source 4*** (*individual event*)
2. **Costumes: *Sew a button*** (*individual event*)
3. **Lighting: *Cable Relay*** (*team event*)
4. **Stagecraft: *Drop fold*** (*team event*)
5. **Stagecraft: *Prop shift*** (*team event*)

We acknowledge the fact that there are many ways to accomplish these tasks and that various professionals, vendors and educators may have different methods. The following packet was designed by professionals, educators, and the Educational Theatre Association to communicate the standards upon which the event will be judged. The study materials will provide criteria for your team preparation for each event.

Throughout the manual you will find specific words that are bolded and capitalized. For your reference, the definitions of these words can be found in the vocabulary section of this manual.

A penalty has been added to each event for blatant disregard for the rules. This penalty ensures that no team will do an event as quickly as possible, take all penalties, and still win. This is cheating, and teams will be penalized. For safety reasons, participants should wear close-toed shoes. Sandals, flip-flops, etc., are not allowed. Participants will not be allowed to compete in their event until they are in compliance with the shoe policy. Fingerless gloves are not allowed for the Light Hang & Focus event. Students will be timed at each event, given time additions for any penalties.

## Good Sportsmanship

All teams are required to show good sportsmanship which means being respectful and supportive of other teams. Teams or their supporters showing poor sportsmanship may receive penalties. If poor behavior continues a team may be removed from the event.

## Lighting: Hanging and Focusing an Instrument (*Individual Event*)

Maximum time = 5 minutes

Each team is allowed two attempts (may be the same or different student)

Lighting provides a tool for setting moods and tones of scenes on stage. Having knowledge of how to use the equipment allows one to act as the master electrician for a production. The responsibility of hanging and focusing the lights for a show falls on the **MASTER ELECTRICIAN (M.E.)**.

There are many different types of lighting instruments that the M.E will use in the theatre. Each type of instrument plays an important role in the overall lighting scheme. It is important that the M.E. has a broad understanding of all of these instruments, how they work, and how they are installed on the **ELECTRICS**. One of the instruments that you will use the most is the **ELLIPSOIDAL REFLECTOR SPOTLIGHT**. There are many types of ellipsoidals from different manufacturers; one of the most common is the **ETC, SOURCE 4**.

In this challenge individuals will be asked to successfully hang and focus an ETC, Source 4. All equipment and tools will be provided. You must bring and use your own gloves and wrench. Successful completion of this challenge is when the unit is secured to the pipe, powered on, and correctly focused to the shape marked out on the wall.



### How to hang a lighting fixture (ellipsoidal)

1. Place **C-CLAMP** over the pipe at the designated hanging location.  
**NOTE:** the opening of the C-clamp should be facing upstage of the electric pipe that the unit is hung on.
2. Attach the **SAFETY CABLE** through the **YOLK** and around the electric pipe.
3. Adjust the **PIPE BOLT** so that it is secure on the electric pipe.  
**NOTE:** pipe bolt should be no tighter than  $\frac{1}{4}$  turn past finger tight.
4. Plug the **TAIL** of the lighting instrument into the designated **CIRCUIT**.

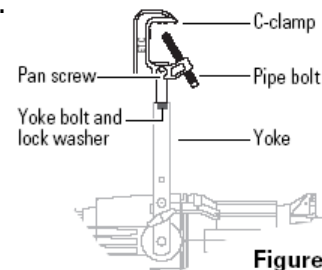


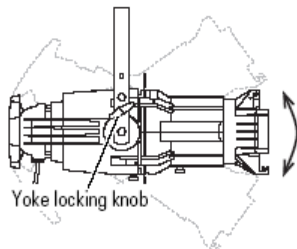
Figure 9

### How to focus an ellipsoidal

1. Adjust the **PAN** of the unit so that it is set in the desired location.
2. Adjust the **TILT** of the unit so that it is set in the desired location.
3. **FOCUS** the **BEAM** to the desired beam edge.
4. Using the **SHUTTERS**, shape the beam of light to the desired shape.
5. Make sure all nuts, handles and knobs are locked down so the instrument does not **DROP FOCUS**.
6. Drop **COLOR** in to the color slot of the instrument.

### Setting the angle within the yoke

1. Loosen the yoke locking knobs. (Do not remove them.)
2. Tilt the fixture to the desired position.
3. Tighten the yoke locking knobs to secure the fixture in position.



### Focusing the beam

1. Loosen the beam focus knob located under the barrel.
2. Slide the lens tube forward or backward to achieve the desired beam edge.
3. Once the fixture is focused, tighten the beam focus knob.

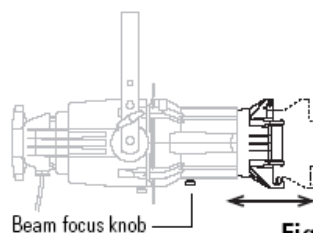


Figure 4

## Hang & Focus

### Recommended Sequence

1. Leave the Start line
2. Locate Fixture
3. Hang Fixture
4. Hand tighten C-clamp
5. Install safety cable
6. Wrench tighten C-clamp
7. Wrench tighten yoke bolt
8. Open shutters
9. Plug in fixture
10. Position fixture – Rotation and basic focus
11. Lock it: tighten pan screw and rotation knob
12. Sharp Focus
13. Shutter cuts to shape

### Penalties

- Instrument upside down
- Out of Sequence (tightened before safety)
- Forgot safety cable
- Not tight:
  - C-clamp
  - Vertical hold – yoke handles, wing nuts
  - Horizontal hold – pan screw
  - Focus knob and barrel knob
- Shutters not open before plugging in
- Shutter cuts (personal judgment)
- Sharp focus (personal judgment)
- Forgot gel frame and/or gobo holder
- Placing any items in mouth
- Dropping items
- Gloves not worn at all times

### Rules

1. Participants must not step past the tape which indicates the edge of the **catwalk**.
2. Gloves are to be put on prior to the judge providing the start,
3. Participants must wear gloves on both hands at all times and use adjustable crescent wrenches. No speed wrenches or fingerless gloves. Participants may wear an apron, but it must not have an attachment around the neck.
4. Participants must tether their wrench when it is out and put it in a pocket when not in use. All wrenches brought must be attached to an 18" minimum tie line tether when in use. Items should never be tethered around a participant's neck or over the shoulder.
5. Participants must not carry gel frames in a pocket.
6. Gloves must be worn when placing gel in frame
7. Participant must provide the sharpest possible focus of the fixture.
8. Follow the sequence and additional instructions below.

When the unit is secured properly to the pipe, powered on, and correctly focused to the shape marked out on the wall, the participant must be returned to the starting line for the time to stop, then the event has been successfully completed. The ETC Source 4 Ellipsoidal has a drop-in iris slot on the top of the fixture. The gel clip holder should also be on this side of the fixture. The gel clip holder needs to be on top of the fixture when it is focused. Not all ellipsoidal fixtures have gel clip holders, if the gel clip holder is not present the open side must be facing the ceiling.

The maximum time allotted is five minutes. For a video demonstration, visit <http://www.youtube.com/watch?v=0Psv-jvXzc8>.

## Lighting: Cable Relay (*Team Event*)

### Each team is allowed one attempt

In theatre, it is essential when a show is struck that all of the lighting cables are neatly stored on hooks or in piles. This event uses all of the team members in a relay style to disconnect and roll various lengths of power cable and store them properly.

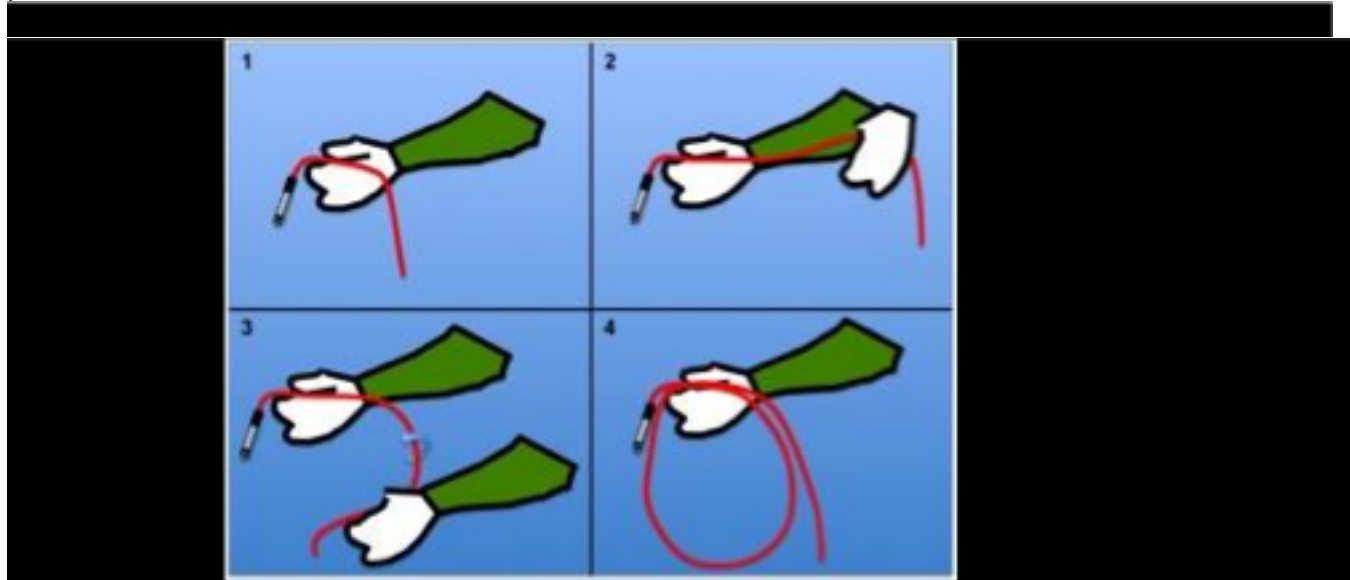
### Tech Challenge Event: Cable roll-up relay

*Team Event* The team gets two tries.

*Note:* At the beginning of the event, all cables will be connected and have a tie line connected to the female end. Once judging is complete, the team will restore the event under the supervision of the judge before being released from the starting box.

If a team only has five or six members, some participants may need to go twice. All members must participate before a member goes to coil a second cable. Participants must be in the starting box which will have a next participant area marked in it.

For this challenge, all cables will be in one connected loop beginning with a 5 cable connected to a 10 cable connected to a 25 cable connected to a 5 cable connected to a 10 cable connected to a 25 cable connected to a 5 cable. For ease of restoring the connection sequence, the cable connection points will be labeled with a piece of tape showing the length of the next connected cable, i.e. at the first cable the label will be 5 and at the next connection a piece of tape saying 10 and so on. The cables being used for this event are power cables, although sound or DMX cables may be used as a variation on the event, preferably with stage pin connectors. Seven cables will be used.



## Rules and required sequence

**The relay:** When the judge says start, the person in the next participant spot will proceed to the first cable connection point. They will untie the tie line, roll up the cable properly, secure it, and place it in the designated storage spot. Then the participant will tag the next participant to begin and proceed back to the starting box. This procedure continues until the last cable is rolled and stored and the last participant is in the starting box. Judging is based on neatness, size of coil, and proper location.

1. Make sure your cable is not twisted and has no kinks in it. Next, lay the cable in your hand with the connector hanging freely between your thumb and index finger. If there is a twist in the cable, you will see a figure eight form as you coil. See the previous diagram. To avoid this, you need to perform half-turns on the cable as you go. Rolling cable over the arm does not allow the cable to follow its natural roll pattern.
2. Using your free hand, pull a length of the free cable towards your body. The longer the length, the bigger the coils you will make. Pull to just past your elbow for a good-size, tidy coil.
3. Using the hand you pulled towards your body move the cable back towards your other hand. While doing this, use your thumb and index finger (keep your wrist straight) on the moving hand to turn cable through half a turn (180 degrees). This will cause the cable to make a loop. The coil should be the same size as equal length cables. All same size cables should be coiled not more than 2 larger or smaller than the other cables of the same size used for this event.
4. Place the newly formed loop into the first hand and repeat until all the cable is coiled.
5. Properly secures the cables with tie line tied a bow, do not tie with a knot. Properly securing cables allows for neat storage and ease of transport. Also, storing cables in the to grab a 25' cord and a 20' is in its location, that can add time to

### Penalties: Cable relay

Add the following time for:

Rolling cable over arm

Messy and inconsistent roll size

Cables not properly secured with a bow for storage

Cable placed in incorrect storage location

Failure to follow the sequence Blatant disregard for the rules

For a video demonstration visit: <https://www.youtube.com/watch?v=0yPcJD7RVuY>

## **Costumes: Sew a Button (*Individual Event*)**

**Each team is allowed two attempts (may be the same or different student)**

Any wardrobe technician must be able to fix costume problems, such as reattaching buttons, quickly.

### **Tech Challenge Event: Sew a button**

*Individual Event: One [1] person per team can participate in this event, and each gets two tries.*

In this challenge, participants must sew a **shank** button on the material provided. The needle will be threaded, but not knotted. Participants will be given a shank button, the threaded needle, and scissors.

Maximum time allotted for this event is three minutes. For a video demonstration, visit

<http://www.youtube.com/watch?v=yfTpYoTqHoM>.

### **Rules and required sequence**

1. Pick up the needle and knot the thread.
2. Place the needle into the fabric, starting at the back side of the garment, bringing it through the front.
3. Bring the needle up to the top of the garment and bring the thread through the button shank and back through the fabric.
4. Pull the stitch semi-tight. The shank should still stand up over the fabric. Do not pull the threads tight enough to sink the shank into the fabric.
5. Sew through the cloth and wrap the thread under the shank four times. Then sew back through the cloth.
6. Create a loop of thread on one side of the threads and bring the needle around through the loop. Pull the thread. Make at least three blanket stitches around the threads that are holding on the shank button.
7. Bring the needle to the back of the fabric then knot off the thread.
8. Cut the thread.

### **Penalties: Sew a button**

Add the following time for:

Each loop under the four required on button hole

Each wrap under the four required around the thread

Knot missing at beginning/end

Button pulls away from fabric, loose

Button pulls off

Loose thread on wrap (around thread)

Wrap done on button shank instead of around thread

Puckered fabric

Failure to follow the sequence

## Scenery: Folding a Theatrical Backdrop (*Team Event*)

Maximum time = 4 minutes

Each team has one attempt

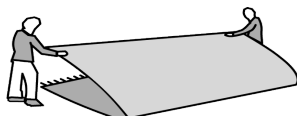
**BACKDROPS** and other **SOFT GOODS** are essential to every production. When the goods are not hung on a **BATTEN** for show use, there are particular ways that the goods should be folded for safe storage and easy identification.

In this challenge your team of six will be asked to successfully fold a theatrical backdrop for storage using the method outlined below. For a video demonstration visit: [https://www.youtube.com/watch?v=0FY7Eed7\\_A8](https://www.youtube.com/watch?v=0FY7Eed7_A8)

\* Please note this is not the only way to properly fold a drop, suppliers of drops require their drops to be returned as originally folded, and if they are not a fold fee is assessed.

Step 1. Place backdrop on a clean stage floor face (painted or **KNAP** side) up. Make sure the drop is smooth and free of any wrinkles.

Step 2. The next step requires six people. Together fold the **PIPE POCKET** (lower corners) to the **WEBBING** (upper corner).



Step 3. Fold again from lower edge to the webbing (top) and smooth out any wrinkles.



Step 4. Fold again in the same manner until the backdrop is approximately 3 feet wide. Again smooth out any wrinkles or creases.



Step 5. Fold hemmed edges towards the center, leaving enough space for the final book fold (approx. 1' to 1'6").



Step 6. Fold edges towards the center again, in the same manner until the backdrop can be folded into a square of 2 to 3 feet.



Step 7. Fold the two halves of the drop back on themselves, creating a book-like shape with one open end.

### Recommended Sequence

Prior to the event, the drop will be crumpled in a disorganized pile on the stage floor. The team members should plan ahead who will be at each corner as the drop is folded and who should check for the crispness of each fold or pleat.

1. Leave the start line
2. Pull the drop out flat on the floor
3. Determine the **Center Line**
4. Make first fold to one end
5. Continue folding till appropriate width
6. Drop should be folded to the top (where the tie lines are).
7. Carry the folded drop and place it on the sizing template/in the storage box
8. Team returns to the finish line and one member says "DONE!"

### Penalties:

- Folding with the good side facing outwards
- Way off center – not folding on center line
- Bad folds or pleats
- Tie lines not visible/accessable
- Judgment of team work - no arguments
- Folded drop size too big or too small



## Scenery: Props Shift (team event)

**Maximum Time: 5-minutes**

**Each team will have three members compete with one attempt.**

During the run of a show, the run crew is responsible for the smooth transitions of set pieces and props. It is the successful run crew that creates the magic of quick changes. A dropped prop or missing piece can ruin a scene, even an entire production. Changes must be done as quietly, quickly, and efficiently as possible. During this event, students will be moving props from "off stage" to "on stage." The onstage table should be set for Act I (tablecloth, plates, utensils, etc. as based on the prop shift form. The off-stage table should be set for Act II with tablecloth, plates, and utensils on their marks.

### Rules

1. Participants must not drop props or place them in pockets.
2. Participants must move quietly and efficiently.
3. Participants must not rough handle or be careless with props.
4. Participants must place tablecloth straight with no corners flipped and in the proper orientation, US/DS.
5. Participant must place items correctly and right side up.
6. Follow the sequence and additional instructions below.

### Required sequence

1. Leave the start line.
2. Clear the on-stage table—all items including the tablecloth.
3. Place props on the pre-set marks on the off-stage table.
4. The Act II tablecloth should be taken from the off-stage table and set on the on-stage table.
5. The Act II props should be taken from the off-stage table and moved to the correct marks on the cloth covering the on-stage table.
6. Once set, the contestants run to the finish line.

### Penalties:

- Dropped prop
  - Props put in pocket
  - Noisily handling props
  - Carelessly handling props
  - Placing any item in the mouth
  - Excessive noise on or off stage
  - Wrong prop placed on table
  - Improper position, missed mark on set table
  - Tablecloth not set in proper orientation-US/DS
  - Tablecloth not straight, corners flipped
  - Silverware upside down/turned around
  - Failure to follow the sequence
-

# Vocabulary

**Backdrop:** The fabric curtain that has scenes, images, or textures painted on it. Scenic element used in theatre to set the location of the scene. Backdrops also help to disguise a scene change that is happening upstage of the drop.

**Batten:** A pipe or bar that lighting instruments, soft goods, and scenery are attached to for rigging purposes.

**Beam:** The cone of light that is projected by the instrument.

**Catwalk:** The overhead access that allows technicians to reach lighting and rigging positions in the ceiling and high up in the theatre.

**C-Clamp:** The hardware used to attach the lighting instrument to the batten.

**Center Line:** The line that divides the stage area into two equal parts; running from downstage to upstage.

**Circuit:** Provides power to the instrument.

**Color (Also known as Gel or Filters):** The colored plastic and frame that goes in the front of the instrument to color the light.

**Drop Focus:** the act of an instrument losing its correct positioning, shape or color.

**Electrics:** A special batten that contains just lighting instruments and circuits.

**Ellipsoidal Reflector Spotlight:** A lighting instrument with a lens that throws an intense light on defined areas. This type of fixture is used for front light, side light, specials, and projections (gobos).

**ETC Source 4:** A type of ellipsoidal or fixed beam spotlight that is manufactured by Electronic Theatre Controls (ETC).

**Focus:** The positioning, shaping, and coloring of the lighting instruments as determined by the lighting designer.

**Knap:** The short fuzzy ends of fibers on the surface of cloth.

**Master Electrician:** The person who oversees the lighting crew. He /she is responsible for the hanging, focusing, and programming of the show as well as the day-to-day upkeep of the lighting for the production's run. .

**Pan:** The horizontal position of the lighting instrument.

**Pipe pocket:** The open hem in the bottom of a drop or curtain that allows a piece of pipe to be inserted to stretch the drop.

**Pipe bolt:** The long skinny bolt located on the front of the C-Clamp that secures the clamp to the pipe.

**Safety Cable:** A piece of aircraft cable that is attached to the yolk of an instrument and around the batten to prevent the instrument from falling to the ground if the C-Clamp fails.

**Shank Button:** A shank button has a raised area on the back of the button which is used to sew on the button.

**Shutters:** The part of the Ellipsoidal Reflector Spotlight that is used to shape the instrument's beam. Located behind the lens of the fixture; therefore, all uses are opposite. Ex. The top shutter shapes the bottom portion of the beam.

**Soft Goods:** A term used for any type of curtains or drops used in a theatre that are not framed or rigid.

**Tail:** The electrical cable that runs from the lamp base of the instrument to the connector.

**Tilt:** The vertical position of the lighting instrument.

**Webbing:** The top three (3) inches of the drop that is reinforced with webbing. The webbing also includes the ties and grommets for attaching the drop or curtain to a batten.

**Yolk:** The U-shaped metal piece that attaches the lighting instrument to the C-Clamp. Allows a technician to adjust the position of the instrument once secured to the batten.