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ESTA

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Attendees of the 2023 Midwest Rigging Intensive.

Midwest Rigging Intensive recap:

Look at all the expertise in the room

BY **VERDA BETH MARTELL**

WE STARTED the Midwest Rigging Intensive (MRI) in 2022 and 2023 with one message: Look at all the expertise in the room. Getting to know each other is as valuable as the classes offered over the weekend. The Midwest Rigging Intensive (MRI) is humbling in that way. This event is developed and taught by nine ETCP-recognized trainers: Tracy Nunnally, professor and our host at Northern Illinois University; Tyler DeLong, managing principal of Delong Rigging Solutions; Ben Brian, principal at Reed Rigging; Patrick Stewart, Rebecca Knipfer, and Brent "Mickey" Henry from ETC; Shane Kelly, head of the theatre technology and projection design departments at The Theatre School at DePaul University; Ed Leahy, Head Trainer for Chicago Flyhouse; and me (Verda Beth Martell), educator, technical director, and author turned Senior Theatre Planner for DLR Group. In addition to the trainers, 40+ participants joined the discussion, each with their own expertise.

If you were at MRI either year, you should have received an invitation to join a Slack channel to reach out to others who have been to the event. Contact the ESTA office if you participated but have not received an invitation. We encourage participants to post questions or news to share. We are better riggers when we take advantage of our varied expertise.

Here's a recap of the classes, debates, and experiences shared over three days on the Northern Illinois University campus in DeKalb, IL. The 2023 Midwest Rigging Intensive covered two main topics: arena rigging and fallen worker rescue. Arena rigging was by far the most requested topic from MRI 2022 attendees. Trainers felt that rescue training was needed to responsibly cover arena rigging. It's a natural and necessary pairing.

After initial introductions, we fitted all the riggers in harnesses. The variety of harnesses opened conversations about the pros and cons of various types and manufacturers. When questions arose, we called the manufacturers to ensure the harnesses were being used and adjusted as designed. That led to conversations about design features that made for better harnesses. Harness fittings were led by ETCP trainer, firefighter, IATSE rigger, and ETC's Outreach and Training Specialist Patrick Stewart with support from Rebecca Knipfer, a former flying director for ZFX who is now the Marketing Project Manager for Rigging at ETC; Mickey Henry, Senior Technical Support Specialist for Rigging at ETC; and Ben Brian, Principal with the chain hoist specialists at Reed Rigging.

ESTA Executive Director, Erin Grabe (left), with ETCP Trainer Patrick Stewart (right) accepting the ESTA Frank Stewart Volunteer of the Year Award.

Following harness fittings, I led a discussion about rigging loads on the structures supporting them, reviewing structural terms such as tension, compression, sheer, and torsion, while looking at how these forces cause structural failure. We offered options for determining the bridle component lengths, tensions within the cable, and horizontal and vertical components of those forces. Tracy Nunnally showed the riggers one method using a calculator. Tyler DeLong and I got to a similar place with geometry and estimating tools. This session was the only time when the riggers had to choose a path.

Thursday night, we held a new event: the Arena Hunt. At the NIU

Convocation Center trainers were stationed in the catwalks to draw attention to interesting components of the structure, means of egress, and areas that pose a particular challenge to riggers. At the same time, another team of trainers was demonstrating how to pull points and answering questions about technique. Riggers collected poker chips hidden in the catwalk system and particularly insightful questions were rewarded with more poker chips. After exploring the rafters, the riggers met on the loading dock to discuss where they acquired their poker chips, and share their notes from the day. At the end of the night, Gavin Oldigs and Joel Brandwine both held six poker chips, and each were awarded three entries into the Swag Raffle.

The Swag Raffle benefits Behind the Scenes. This year, the trainers and their companies came through with the Chicago Flyhouse Hoists and Ladders game, Vertigo water bottles, DLR Group sketchbooks, DeLong Rigging hats for every occasion, *Physics of Theatre: Mechanics* books care of the Martell Family, ETC gear bags, Reed Rigging lowball glasses, and piles of pens, cups, and koozies. Over the weekend, the raffle grew. Vertigo added a new rigging rope cut to length. Shane Kelly offered copies of the soon-to-be-released updated edition of *The Stage Rigging Handbook*. Patrick Stewart added a Navy Chiefs Mess coin from VAQ-209 Star Warriors. In total, the riggers generously donated $1,380 to Behind the Scenes.

DeLong Rigging Solutions, ETC, Reed Rigging, and Vertigo were major sponsors of the event. SMS, Tyler Truss Systems, and Sapsis Rigging also stepped up to sponsor. Sponsors keep the cost of the event down for the participating riggers, making this event possible. Thank you to everyone for their support.

Friday and Saturday split time between Arena and Rescue classes, dealing with hardware/gear, theory, and practice.

The Arena series, led by Tracy Nunnally and Tyler DeLong, and supported by Rebecca Knipfer and Mickey Henry, started with the customary collection of arena hardware: wire rope, shackles, STAC chain, etc.; along with three tables of gear: many varieties of rope, rope grabs and ascenders, bags, and other useful tools. With each piece of hardware, Tyler and Tracy talked through their preferences in what they use for what situation. Tracy made a custom "It Depends" sign to punctuate his remarks as they walked through hardware and gear alternatives for various situations. There was back and forth about a few topics including why burlap is used. (I subscribe to the "softening the beam edge so that it can't cut through one strand of cable at a time" reasoning. The highlight of the session was Tracy showing off his laser levels and distance meters. One had a video screen where the user could zoom in on the target to ensure they were measuring to exactly the right spot.

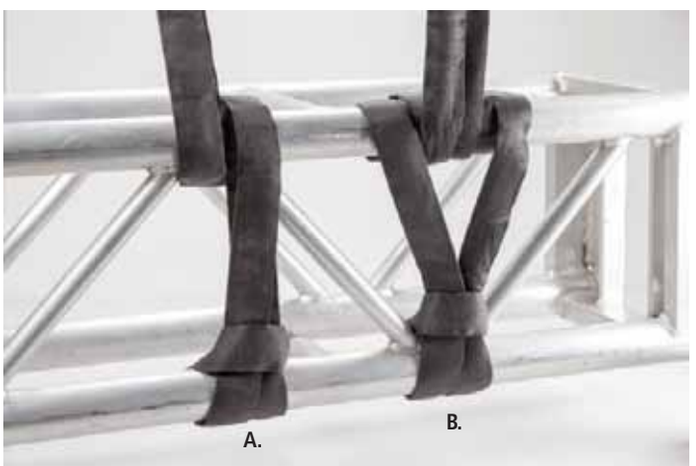
The theory session for the Arena thread walked through each of the stations that would be used in the Saturday hands-on session: wrapping truss, walking beams, and pulling points, so many bowlines, and rig planning. The stations were set up by Flying Directors from Vertigo including Jamie Nicklas, Lewie Long, and Jake Jackson. Interesting things were happening at every station, so we will walk through them individually.

How a truss is wrapped with span sets is a hot debate in the rigging world. There was so much discussion about it on Friday that ETCP Trainer Ben Brian went back to his shop at Reed Rigging to pick up load cells so we could run experiments. The debate revolves around how the top member of a box truss is wrapped. If the span set chokes the bottom chord and then also chokes the top chord (the bend passes between the two legs of the span set—Figure B) it distributes the load differently than if the span set chokes the bottom chord and then wraps the top chord (it sits side by side—Figure A). The results were inconclusive. The debate and the experiment taught us that a more scientific test would be worthwhile. If your company or school would be interested in performing a handful of truss load tests and reporting back, please contact me. My contact information will be at the end of the article.

Walking beams and pulling points are central arena rigging skills. Northern Illinois University set up a pair of teaching beams approximately 10ft off the floor with appropriate fall arrest in their scene shop, for teaching how to safely hook into the lifeline, transfer from a catwalk to a beam, walk the beam, pull a straight point or a bridle, and strike those same points. They are set up with different weights of chains to challenge the students and an I-beam on dollies to allow tentative students to practice at floor level before going out on suspended beams. MRI riggers were able to pull points and bridles while still being able to hear ETCP trainer Rebecca Knipfer and Vertigo Flying Director Jamie Nicklas coach them along.

The bowline has been the knot of choice for arena rigging. The third station had riggers tying up to sixteen types of bowlines while discussing the pros and cons. Trainers Mickey Henry and Tracy Nunnally walked the riggers through the anatomy of the knots, including how bowlines can be pulled into slip knots and preventing that from happening.

Planning a rig includes doing the math and making sure the building can handle the loads. It also means working out which points need to be in the air first, how points will be marked, where



Span set wrapping a truss for suspension: A. Span set wrapping the top chord. B. Span set choking the top chord.

Trainer Rebecca Knipfer (standing) leads Robert Franklin of Local 476 through pulling points on the NIU practice beams.

rigging beach will go, how the equipment will get in and out of the building, how to pack the equipment, and what equipment to pack. Tracy and Tyler talked about their preferences for the planning and execution of the rig. Tyler talked about how his dad used Frisbees with numbers to indicate the installation order of the points. They both talked about creating a consistent language with each team, *before* the high riggers go up. Riggers worked in teams to determine which lengths of steel to use to land points where they were shown in the floor marking. They could then check their planning by pulling up the bridles to see if they were right.

Much of the learning was rigger to rigger. One of the best decisions of the weekend was to create teams with different skill levels in each team. The more experienced riggers had the opportunity to clarify what they knew by teaching it to someone else. The less experienced riggers had more resources during the event and will know more riggers to reach out to after the event.

The Fallen Worker Rescue series was led by Ed Leahy and Patrick Stewart with Shane Kelly. Rescue training started with gear, worked through theory, and then gave riggers the opportunity to practice what they had learned. Discussions included the difference between a D-ring and a dorsal ring on harnesses and the challenge of trying to hook into a D-ring during a rescue; types of anchors and how the placement of the anchor will affect fall distance; how lanyards work and the fall distance before lanyards begin to arrest the fall; how self-retracting lifelines work and how that significantly diminishes the fall distance and arresting force. Ed and Patrick ran through different rescue kits available on the market and how to choose a particular kit, or what you want to see in a kit supplied by the venue or your employer. Patrick made a strong argument to store the kit on the ground and bring it out with the other equipment to rigging beach. The kit can be pulled up where it is needed quickly using the riggers and ropes that are already in the high steel. A kit stored on the catwalks will never be where it is needed.

The second session shifted the focus to the people involved in the rescue: what roles need to be filled, what are the duties of each, how do you determine which person on your team is best suited for each role, how will the members of the team know who is leading the rescue. It also asked the questions: What do you do if there are not enough people for the roles? Where do you send the workers not involved in the rescue while the rescue is performed?

The rigging team's goal is to either lower worker to a safe location or have the rescue well in hand by the time the fire department arrives, but regardless of where the team is in the process, the arrival of the firefighters changes things. How do you communicate their arrival and hand-off command of the site? While the fire

Verda Beth Martell showing how to get reasonable approximations of cable lengths and tensions using a ruler and a couple sheets of paper.

department is in charge, what does the rigging team do? After the fallen worker is down, what's next? For Patrick, this is not a theory. He walked us all through his experience as a firefighter and how he was trained for these situations. Patrick's description was a great primer for the discussions needed with a venue's local fire department.

The intent of fall arrest is to save a life. There is a high likelihood that the fallen worker will sustain some kind of injury. No one should anticipate the worker returning to work after a rescue and care needs to be taken for the other workers at the venue. This can be a traumatic event for everyone. Fall arrest does not make rigging "safe" and it should not be used as an excuse to take on more risk. The best option is to do whatever we can to avoid the fall.

Tyler DeLong leads the discussion of rigging hardware while Tracy Nunnally prepares his commentary and his "It Depends" sign in the background.

On Saturday, teams came up with a plan and used it to rescue Randy, the fallen worker dummy. The first time around the riggers hadn't practiced, so even though they had a plan, it didn't work very well. The equipment didn't work the way they wanted, they couldn't reach from the angles in the venue, or they got nervous about the time needed to figure things out. It was a very effective demonstration of why practice is such a necessary component of the rescue planning process.

In the second attempt, the teams were encouraged to experiment with the equipment before the rescue. This time, Randy was intentionally positioned so the building structure and limitations of the equipment would not allow a clean rescue. For the third attempt, the rescue was set up to mimic a rescue from a high steel beam rather than a catwalk, forcing the riggers to work below their feet. Each attempt ended with the arrival of the "fire department" and the handoff of Randy to the emergency medical team.

On Saturday, Erin Grabe announced a surprise for the trainers. ESTA was awarding the Frank Stewart Volunteer of the Year Award for both 2022 and 2023 to the nine ETCP trainers leading MRI. Frank Stewart was the ESTA treasurer and bookkeeper for almost four decades and was the first recipient of the award. He is also ETCP Trainer Patrick Stewart's father. Patrick accepted the first plaque in an emotional passing of the torch, "I've been Frank's son for so long. It's odd to hear him referred to as my father."

Rigging has long been a career for the fiercely independent. Many riggers felt that they had to protect their knowledge to protect their job. Those guarded days are ending. To gain ETCP certification, we had to rely on each other to fill in the gaps in our experience and knowledge, which meant admitting things we didn't know. That transition from a rugged individualist culture to a team-based culture is vital to the field. It makes us all safer when we look out for each other and share our experiences. The ETCP Trainers who lead MRI are some of the most giving, selfless riggers out there. Many of them stepped up long before MRI to share their knowledge and help guide the next generation. I am proud of our team and particularly honored to be recognized as a team. ESTA has a long history of supporting working groups and recognizing that many successes cannot happen individually. Thank you.

Next summer, the ESTA staff will be busy supporting the quadrennial North American Theatre Engineering and Architecture Conference (NATEAC). We cannot do MRI without them, so MRI will take 2024 off and return in 2025. In the meantime, please join the Slack channel, answer the post-event survey, and send me your topic requests at bmartell@dlrgroup.com. Rig safe out there. ■

Verda Beth Martell is a technical director, rigger, and scenic automation systems designer turned theatre planner for DLR Group, an integrated firm with architects, engineers, interior designers, planners, and specialists in house. You can reach Beth at bmartell@dlrgroup if you have questions about MRI or are interested in the truss wrap study.

Midwest Rigging Intensive trainers receive ESTA's Frank Stewart Volunteer of the Year Award

ESTA IS PLEASED TO ANNOUNCE a team of nine ETCP Recognized Trainers as the recipients of the Frank Stewart Volunteer of the Year Award for service in both 2022 and 2023: **Bennett Brian** (Reed Rigging, Inc.), **Tyler DeLong** (DeLong Rigging Solutions), **Brent "Mickey" Henry** (ETC), **Shane Kelly** (DePaul University), **Rebecca Knipfer** (ETC), **Ed Leahy** (The Chicago Flyhouse, Inc.), **Verda Beth Martell** (DLR Group), **Tracy Nunnally** (Vertigo), and **Patrick Stewart** (ETC), whose father is the award's namesake. These trainers tirelessly volunteered around their busy schedules to plan, design, and deliver a curriculum for the Midwest Rigging Intensive (MRI) two years in a row.

"Being recognized by ESTA for doing MRI is one of the highlights of my career thus far," said DeLong, whose company, DeLong Rigging Solutions, is a sponsor. "I support MRI because it is a unique event driven by a group of world-class trainers who are allowed the freedom to create an all-encompassing curriculum of their choosing. We are passionate about our material, and it shows. I lovingly refer to MRI as the geekiest weekend in rigging, and we wouldn't have it any other way."

The Volunteer of the Year Award was originally created by ESTA to honor Frank Stewart's incomparable service over the eighteen years he served as its Treasurer and the additional twenty years he served as bookkeeper. This award recognizes extraordinary effort by a volunteer or group of volunteers and may be awarded for work on a specific project. The Volunteer of the Year Award is not presented every year, but only when there are exemplary candidates whose service to ESTA and the greater industry is to be commended. Patrick Stewart shared his memory of the inaugural award:

"At a tradeshow in 2005, I was told that I needed to attend an ESTA function. Actually, I wasn't given a choice; I wisely did what I was told. At that event, my father was recognized with the Volunteer of the Year Award, which was named after him. I distinctly remember that moment. And given that I barely remember things from yesterday, it really was a significant moment for me. I even remember the room. I remember how proud I was of him and how proud I was to be his son. I was given the opportunity to be one of the first to congratulate him. After, as I stood in the back of the room and watched the line of others congratulating him, I realized he had set a new marker for me to achieve. I never had a plan on how to achieve this goal. That is probably the point. We don't do things for recognition. We do them because we love it. I hope that between the two of us, we have inspired others to be giving of their time. And I hope we will leave this industry better than we found it." ■

The winners of ESTA's Frank Stewart Volunteer of the Year Award 2022-2023: Beth Martell, Ed Leahy, Tracy Nunnally, Patrick Stewart, Bennett Brian, Shane Kelly, Tyler DeLong, Rebecca Knipfer, and Brent "Mickey" Henry.