Photocopy and Use Authorization

In presenting this thesis in partial fulfillment of the requirements for an advanced degree at Idaho State University, I agree that the Library shall make it freely available for inspection. I further state that permission for extensive copying of my thesis for scholarly purposes may be granted by the Dean of the Graduate School, Dean of my academic division, or by the University Librarian. It is understood that any copying or publication of this thesis for financial gain shall not be allowed without my written permission.

Signature _____

Date _____

The Color of Rain:

Technical Direction of *The Burial at Thebes: A Version of Sophocles' Antigone*

By

Elizabeth M. Christensen

A thesis

submitted in partial fulfillment

of the requirements for the degree of

Master of Arts

in the Department of Theatre and Dance

Idaho State University

August 2022

Committee Approval

To the Graduate Faculty:

The members of the committee appointed to examine the thesis of Elizabeth M. Christensen find it satisfactory and recommend that it be accepted.

_____
Chad Gross
Major Advisor

_____
Paul Yeates
Committee Member

_____
Tom Kloss
Graduate Faculty Representative

Table of Contents

Technical Plates

The Color of Rain:

Technical Direction of *The Burial at Thebes: A Version of Sophocles' Antigone*

Thesis Abstract--Idaho State University (2022)

The Color of Rain will serve as a detailed account of the technical direction experience for the ISU production of *The Burial at Thebes: A Version of Sophocles' Antigone.*

Chapter One: Pre-Construction describes the preparation, research and testing prior to the construction and build phase.

Chapter Two: Construction contains detailed descriptions of the construction including building and rigging all the way from building and installation to strike.

Chapter Three: Evaluation of the process and my Technical Direction during the show. This includes self-assessments of what I would do differently if the opportunity arose again.

The bulk of this thesis is not contained within the written text, but in the appendices. This is where details of the drawings, budgets, project lists, inventory and shop calendar tasks can be found. Also included are process and production photographs.

Chapter One: Pre-Construction

During my 2020-2021 academic year at Idaho State University, I discussed separately with both Professor Dr. Norm Schroder and Professor Chad Gross what my goals were and my thoughts regarding the selection of a show slot I would base my thesis work on. This did not include the selection of the written work, but the time slot of the faculty selected production. I felt the first show of the season would allow me time to think on potential possibilities of how to achieve what the designer and director both wanted over the summer without sacrificing time during the build of a show and allowing me time to ponder after the close of the show regarding what could have worked better and what I would change if I were to do a similar again.

The Burial at Thebes: A Version of Sophocles' Antigone by Seamus Heaney was selected as the first show of the academic 2021-22 season. On October 1, 2021, Idaho State University opened the first show of the season. The production was directed by Assistant Professor Joel Shura with scenic design by Assistant Professor Paul Yeates. I was asked by my advisor and Theatre Technical Director at ISU Professor, Chad Gross to keep budget costs to a minimum because of multiple factors including the production potentially being set in the round with a pared-down set, limited scene shop personnel with minimal experience and a short build time. I felt it would be the best course of action to do my initial research and product testing outside of shop hours so the in-shop hours could be spent on the build and installation of the show.

My initial summer research focused on the request for it to rain on stage and for the color to show on the costumes. I researched and tested some ways that color could be introduced to the costumes and activated by the water. This included adding powdered dye into seams of costume pieces and adding color in powder form to surfaces that could be picked and transferred by the

actors and then water activated. Neither one of these methods ended up being used for the production.

It was unknown to me at the time how much area on the stage the director visualized being hit with water or if a perimeter of rain around the edge was the visual the director was looking for. I also did not know the length of time it was expected to rain, if lighting effects and light colors were to be used in adding or enhancing the rain to the intended color. It was also brought up that we may need to add some opacity to the rain to enhance the effect. These things can play a factor in how much water is used, how much of a reservoir is needed to contain the water that is then shed off the stage, what direction the rake of the stage would need to go, along with the best method of clearing it up after each show.

I tested different available soaker garden hose brands and PVC pipe diameters with holes drilled in at regular intervals to determine durability and potential strength, and "rain" results of each. In testing the PVC pipe and scaling down to a ½" inside diameter, therefore increasing the speed the water would travel to the desired length, it did not achieve the desired results I was looking for. The water either just dribbled or sprayed straight from the holes. The weight of the pipe without adding water was also problematic. Adding water and the time it would take to secure all the joints and cumbersome customizability only dropped it further down on my list as a potential solution. I then researched and tested a few available brands of soaker and raindrop hoses to determine if there was a difference in the quality, flexibility, and durability. I did not want to have to change out of the hose before the run of the show was complete, if this could be avoided.

Some hoses were made with rubber tubing and did not allow for a tight curve to be achieved without potentially being kinked, impeding the flow of the water. Another hose did not

come in black, only green. If it had been the best solution, I would have adjusted or hide the color, but the hose was made of a single thin layer of plastic material, and I did not think that it would last the run of the show without either the holes ripping out to become bigger or the hose failing all together. The hose that I chose was a flat soaker hose that came in black with green connectors on each end and came in 50-foot lengths. This meant that I would need to conceal the green ends of the hose for the run of the show. I did not see this as an issue as I was planning to use black gaffer's tape on all the connection points to secure and cover them for the run of the show.

In the fall of 2021, the Department of Theatre at Idaho State University was set to open their theatre season with *The Burial at Thebes: A Version of Sophocles' Antigone.* Within the first week of the semester, I received a design sketch by the scenic designer Paul Yeates. The sketch showed an uncluttered design in the round with one large raised rectangle platform acting area in the center surrounded by a single step down on each side. I inquired about some dimensions of the scenic design and knew that I could get some groundwork done with the scenic shop crew. I was relieved that the set was more simplistic, although the simpler the design, the more visual any irregularities would be. The scenic carpenter shop crew had also decreased to six students (Domanick Rose, Harmoni Thompson, Joe Beutler, Katie Ware, Preston Edwards, Stacy Allen) and myself, only one of which was scheduled to be in every afternoon with me. With the initial design and confirmation that rain was still a main request from the director Joel Shura, I began my initial testing of how to limit or eliminate water damage to the scenic materials that would be used in the space.

I had previously purchased some black Gorilla Tape for a project. It claimed to be weather-resistant, and I wanted to see how it would hold up with paint, polyurethane, and water

on lauan and masonite surfaces. Gaffer's tape was also used in this testing as it is commonly used in theatre spaces and rarely leaves a residue or remove paint from properly prepared surfaces. Gaffer's tape is not designed to withstand a lot of moisture or to be used in wet conditions, but with a protective coating or two, I thought it was worth including in the tests as a familiar and reliable product in many theatre scenarios. Harmoni, Stacy and I tested each of the tapes with multiple coats of paint along with single and multiple coats of interior/exterior polyurethane. After repeated testing, we determined Gorilla Tape held up better to wet conditions than gaffer's tape even with the sealant. The one downside was that the paint on the surface could be scratched off if given enough persistent rubbing or buffing. The Gorilla Tape was repeatedly tested with paint and a polyurethane sealant. Regardless of the amount of paint we used, the multiple coats of sealant seemed to make the most difference and held up better to standing water and rubbing. I also tested both types of tape with paint and spar urethane as an alternative because of its use in high humid conditions both indoors and outdoors. The testing revealed positive results using the spar urethane while the Gorilla tape still won out on durability and water resistance. Since the painted platforms were meant to look like stone, the designer wanted to keep the shine down as much as possible. Chalk was also going to be used on the stage and this could help keep down any potential shine. The spar urethane was only available at our local stores in semi-gloss and gloss. However, with two good sealant options, I felt confident that a water repellent product could be applied, and the desired finish achieved.

Stock 4'x8' wood platforms were pulled from the storage area. The crew and I set out to determine and pull the best quality and constructed ones at our disposal. I asked the shop crew to pull twelve platforms to begin with and fix them up as best as possible by straightening and squaring up the wood to each other, adding or replacing screws where necessary. Taking the time

now to ensure that the platforms were properly constructed, stable, and as square as possible would save us time and frustrations down the road.

I also asked the shop crew to pull and put aside all 12” deep rectangle platforms of any length and I would determine what would be used and what would need to be modified for use. Because of the upcoming platform storage relocation, I also had the crew pull all rectangle platforms that could potentially be used as part of the step units around the taller main platform. We would then measure and sort what could be used or modified for this production and what could be put into storage. I felt it was more time and cost efficient to pull more than what we needed at the beginning than to potentially go back and forth to the storage area to determine if we had a platform that would work or build one from scratch.

It quickly came to my attention that we did not have enough 12” platforms to go all the way around the central raised platform. I then had an inventory done of the platform sizes we had at our disposal that were 11” in depth or greater. My goal was to have a reservoir that would hold the runoff water under the main stage platform, square on all internal corners and as large as possible. This would maximize the length of the trough channels at the edges of the main acting platform, allowing for the water to run off in as thin of a layer as possible and hopefully not overshoot the trough and reservoir area. It would also maximize the reservoir surface area, more evenly distribute the weight, and have less chance of water barrier punctures because of the reservoir being framed out as a rectangle using the step platforms. For these reasons, the crew and I pulled four additional 4’x8’ platforms to use on the corners and shorter sides of the main platform. We could then use two 2’x4’ in-stock platforms, each sandwiched between two 4’x8’ platforms. This would allow the reservoir to be shrunk by a minimal amount of three feet on each longer side of the main acting platform eliminating the possibility of troughs on both short sides

of the rectangle platform while still allowing for long troughs on both longer sides for water run-off and collection. Eliminating the side troughs was not an issue as the main acting platform was going to be built with a slight rake allowing for the intentional shed of water directed towards the slightly lower longer edge of the acting area that would also have a removable step for nightly cleanup of the water. The secondary trough on the slightly higher long edge of the platform was intended as a backup plan in case the unevenness of the floor dictated a secondary runoff area for collection, or the rain was requested for longer than the single trough could accommodate.

I then received a ground plot from the scenic designer. This helped to reinforce the information that I had verbally been provided regarding step and platform heights, along with length and width of the overall pieces, and the set position in the staging area. The scenic designer intentionally designed the main acting area, a size that could be built from stock platforms. This not only helped to reduce the materials that would need to be purchased for the build of the show, but it also saved time for the build of the show, both of which allowed costs to be kept down significantly. Having received all this information it was time to do a scene shop inventory of what we had on-hand, what we would need to replace if it was used, and what would need to be purchased specifically for the show along with cost estimates for the potential purchases.

Chapter Two: Construction

After gathering all the platforms that were selected to build both the main acting platform area and the step surrounding that platform, I instructed that pairs of 4’x8’ platforms be bolted together along the 8’ length, lid side down on the flat wood shop floor to achieve an evenly constructed surface. Slight platform construction variations in height could be adjusted when the

legs are attached at the desired height, but if the lids to the platforms are not flush with each other, any sheet good applied over the seams is more likely to visually stand out, redirect water in an undesirable direction, buckle or deform, detached from the platforms, require continual maintenance, along with being a potential hazard to anyone walking on the staging area. The lids of the removable step pieces were also modified from 12” wide to 11 3/4” wide, allowing for a greater area for the water to flow. As expected, drilling and bolting the 4’x8’ paired platforms together along with bolting each of the stationary step sections together for a simpler install took the better part of a week to accomplish.

We also pulled the 4”x4” legs around 15” to 15.5” from stock. Some of them would need to be cut down according to their platform placement to create the ¼” rake on the main acting platform area, directing the water to slowly flow in the desired direction towards the trough at the edge of the platform. Similar length compression legs were also pulled for most of the longer two sides of the main acting platform along with 2” compression legs for the remaining two sides and the surrounding steps, both stationary and removable. Compression legs were selected to go around the perimeter of both the taller platform and the step platforms to allow a flush exterior down the side of the platforms. This decision was intentional, allowing the facing to butt up against a solid piece of lumber to attach with staples and not have to add an extra block of wood or spacer to get the sides plumb. There were several compression legs required for this construction, but not in stock. These were made from scrap stick lumber. Some of the in-stock legs had to be rebuilt because of their construction condition when they were pulled from storage. Overall, the compression legs were quicker to install, flush to the edge of the platform, and resulted in an overall time saver and cleaner look. After all the platform sections were bolted

together and legged to the proper height, they were set up on the far side of the shop just as they would be in the theatre space and labeled for a straightforward installation.

After the build construction was well on the way, Harmoni and I taped out the Black Box Theatre designating where the step platforms and the large platform were to be positioned according to the design. I measured the theatre to find the center of the room. This had to be accurate, as it would affect the positioning of all the platforms, the water barrier, and the hose. I emphasized that placing our tape lines had to be accurate and square. We had very little room for error when setting the step, inserting the water barrier, and then inserting the taller platform. If the corners were not square and the placement correct, there would be very limited time to make adjustments.

After we taped out the stage, we laid out rope where the garden hose would ideally run, from the closest utility sink, through the closest doorway, up the garden and on to the theatre grid. I pinpointed a structural I beam and cross brace that would be ideal to rig the color delivery system I had designed and added a few extra feet of length for safety. We then ran the rope from the utility closet out the closest exterior door to measure how much garden hose we would need to test the water pressure and the soaker hose outside and ideally not have to clean up large amounts of water inside the building until things were in place to do so. I took the longest measurement and added that length of rubber black hose to my shopping list. I then went to work to determine how much soaker hose would be needed. I did not know how intense the director visualized the rain being, the time he would like it to rain, or how much of the stage he ideally wanted covered in rain. I knew that considering two of the four sides now did not have troughs designed to gather and direct the water to the reservoir; I mapped out different layouts the soaker hose could take and what the potential outcome of each layout would look like. After a

conversation I had with Joel, we decided we would both like to see the rain tested in the theatre space and we would decide after that.

It was time to turn my attention to the water, color, and the delivery system for both. I had previously researched both powder and liquid dyes to determine the safety concerns along with the color variation and intensity that was available. From our first production meeting, the director had requested that it rain and rain in the color red. Joel did not want the illusion of rain, for there to be curtains of rain only outlining the stage area and not getting the actors in the center of the stage area wet, he also did not want the rain to appear red from the stage lights only for the color to disappear when the lights changed. Joel requested the water falling as rain be red; red dripping down the actors, red pooling and puddling on the stage. Joel really wanted it to rain in red during the ultimate climax of the show.

This brought up many questions in my mind: what coloring would be safe for the actors? Eyes, skin, hair, potential ingestion? What type of coloring would come out of non-natural fiber materials? I had already spoken to the costume shop manager, who confirmed that the cast members on stage would be dressed in a non-natural material, probably polyester. The color would have to be water based or at least water-soluble as that would be the delivery method. Is a red color available that does not appear orange when diluted with water? If it was slightly orange, could a bit of true blue darken it closer to a deep red color? We would also need a substantial amount of color for the intensity that was desired, to test with, and to make it through the run of the show. Could I keep the cost down and still get the desired effect? I did my research with these questions and criteria in mind. The sooner we could order the color, the sooner it could be tested and truly determine if it would work.

Our timeline was short if the first product did not work as intended or was delayed during the shipping process. Narrowing it down, I determined we would try a tomato red food coloring. It was a liquid and would not have to be premixed with water to be easily used and introduced into the delivery system; it was a food coloring, so it is meant for safe ingestion and was water based. It could be ordered in 1-gallon sized container that had both a narrower lid and a handle for earlier pouring. The questions remained: would the color come out of fabrics? Would it be more red than orange? I could order it from an online food service equipment and supply store that shipped daily and stayed within my budget, including shipping. I ran this by my technical supervisor, Chad Gross, and we had it ordered shortly thereafter.

Rigging the Rain System

A few of the shop crew members Harmoni Thompson, Joe Beutler and I pretested the garden hose and the soaker hose on the lawn of the building prior to setting them up for stage tests. We connected the garden hose to the utility sink closest to the theatre to test the water pressure through the hoses and to ensure that we had not purchased a defective hose prior to rigging them to the grid. I knew that a defective hose or a soaker hose that had holes pointed in multiple directions could potentially allow the water to spray in undesired directions in the theatre, potentially damage lighting and sound equipment. I wanted to minimize the chances of this happening, doing as many tests as I felt necessary. The initial hose tests went well; the water pressure from the utility sink provided the desired effect on the grass, no defects in both the soaker and rubber hoses were found, and we had a singular directional drip the entire length of the soaker hose. Now to move inside the theatre, rig it up, and test it in the space.

Determining where to initially hang the soaker hose for testing could save time and get usable test results that may only need slight modifications for the desired outcome. To accurately hang the soaker hose, I wanted to consider the ‘splash zone’ that would inevitably happen when the water hit the platform. I did not want the water to splash the entryways or the audience, as it would not only make the walkways slicker, but the water was also going to be colored and would not easily come out of any natural material. I also later learned that there wouldn’t be ground row seating, but that strip lights were to go in their place on two of the four sides. Many variables can play a part in how far a liquid will splash. Not only the height is it dropped from, but the pressure behind it, the surface it is landing on, along with the airflow of the space just to name a few. I felt that taking a bit of time to gather information and make an informed decision would be better and would achieve a more desirable result, while perhaps causing less overall frustration and a better use of time.

I rigged a home-made plumb bob from tie line and a pencil. I then lowered the pencil from the grid to the floor on all four corners that were taped out, designating the taller platform to more accurately determine where the water would likely land. I then made marks on the grid with tape designating these corner points. I decided to initially hang the soaker hose two feet towards the center from what would be the lowest edge of the platform. Each line of the hose would then run about 17’ before taking a 180 degree turn to return in the opposite direction. Each line of the soaker hose would be initially spaced about 12” apart.

Harmoni and I used the better part of an afternoon to hang the soaker hose to the underside of the tension grid in the Black Box. We began with the soaker hose laid out on the Black Box floor directly beneath the area where it would be rigged. With one of us on the grid and the other on the floor we then dropped an end of a spool of nylon line through the grid, tied it

to the end of the hose and lifted it up to the grid to then be attached with a cable tie. It would be a better use of time to lift the hose from the floor and attach it to the underside of the grid using the cable ties than it would be to start with the hose on the grid and feed it through the cables on the grid to the underside to be attached.

We lifted the first row and attached both ends and a couple of mid points to the grid using cable ties. We then moved about 12" closer towards the center and made another row, tacking the soaker hose to the grid with zip ties. We continued doing this back and forth until we had 150' of soaker hose intermittently attached with cable ties to the underside of the grid. We then went back and added additional cable ties about every 12" apart so that the hose would be more supported and would not create a bunch of low-lying areas where the water would pool and run from instead of dribbling the entire length as intended. With the soaker hose in place, we were ready to rig the garden hose in place, connect it to the utility sink and test the rain effect.

It was then time to spread a layer of the water barrier out on the Black Box floor and test the water delivery system in the theatre space prior to bringing in any platforms. I used black plastic sheeting 6 mil thick and 20' wide as the water barrier. The width would be enough to cover the entire water containment area under the main acting platform without a seam that could potentially create a weak point, and we could also make it as long as necessary. I also wanted to use two layers of the plastic sheeting as it would give an extra layer of protection to the stage floor while working with water. We used the same product for the water test as used for the installation and run of the show.

I was uncertain how the water pressure might alter traveling the distance to the grid, with a height increase of 20' and a steep incline to get there. Would I have to go back to the drawing board or consider using a fountain water pump? We tested the water delivery system with both

cold and hot water separately and then both together to determine visually what the differences may be. We also tested the timing of how long it would take to start visibly seeing droplets after the call was given and how long it would continue to drip and look like rain after the water had been shut off. It was determined that the use of both hot and cold at the same time was the way to go. This would give us the greatest and quickest pressure for water delivery and, as an added benefit, we could keep the wet actors as warm as possible. The question was asked if the system could be "primed" so it would not take as long for the water to be visible, but due to my previous testing I communicated that this was not possible as there was not a built-in mechanism to keep the water from dripping from the hose simply due to the system being gravity and pressure fed. The Stage Manager would simply need to call the rain queue a bit earlier than expected, allowing for the internal hose pressure to build until it was released as rain.

The water on the stage area was cleaned up using the equipment that would be used during the run of the show to ensure it was in proper working order. Most water would be removed from the staging area via mop and bucket or shop-vac for underneath the platforms. Both worked well, but the mop was later traded out for a long-handled squeegee for use on the top of the platformed area and the mops used on the surrounding step units and stage floor. Four to six shop fans were also left running on any night to help dry the remaining water residue. It came to my attention after the first water test in the space; the hoses were not blown out enough using the shop air compressor to eliminate dripping water during the evening rehearsal. This is something I adjusted and emphasized on the nightly clean-up list and to the stage manager after any water was used to prevent potential future problems and damage. Stage management did their best for the evening by putting containers under the area that were dripping for the

weekend. I arrived Monday, used the air compressor to blow-out the remaining water from the hoses and clean up the residual water in the theatre.

We now knew visually the water would work in the space and appear to be rain, as the director requested, without the additional help from a water pump. There would need to be some hose placement adjustments done after the platforms were installed, painted and sealed so the wood would be protected and absorb as little moisture as possible and that the water would run off the platforms in the desired direction. This meant that once platform installation began, no additional water testing could be done on the staging area until it was fully installed and sealed much closer to tech week; the rain color would not be tested using the designed system in its entirety in the theatre space until tech week.

Platform Installation

All hands were on deck for the installation of the steps and the main acting platform. The goal was to get the water barrier, the main acting platform and the surrounding stationary steps in place within one afternoon so the actors and director could begin using them during the evening rehearsal. The platforms would still have rough edges and the removable step would not be secured, but the actors could begin working with the different elevations. We moved in three stationary step platform units separately, lined them up with each of their corresponding tape lines making sure they were square and then attached them all together on their connecting sides. We then toe-nailed the legs to the floor before laying out a double layer of water barrier. Each water barrier layer was laid out, smoothed firmly into the corners so when the legs of the main acting platforms were placed, the corner of the legs would not puncture the water barrier, and then individually attached with Gorilla tape to the lid of the step platforms. The edge of the water

barrier and the tape would later be covered with a masonite top or in the areas where masonite would not be used, would be sandwiched between the platform lid and a secured 1’x3’ piece of lumber.

We then began moving in each bolted together pair of 16” tall legged platforms according to their predetermined placement to maintain the rake on the main acting area sandwiched between the opposing step platforms. The six separate platform pairs were then attached to create the main acting area measuring 16’ x 24’. The 2” compression legs along both shorter sides of the main platform were secured into the lids of the corresponding platform, creating the desired step. The platforms were not tied into the theatre floor as it would have punctured the water barrier, potentially allowing water leakage and damage.

The platforms were to be faced with lauan first then topped with masonite, so the facing pieces were not easily dislodged along the top edge by anything being drug over top of it and less potential of water infiltration if any of the tape came loose. We pulled as many clean and usable scraps of lauan as possible and cut the rest from full 4’x8’ sheets of lauan. I did not want to have the crew patch holes from previous uses in the lauan. It would take unnecessary time to patch and sand any visible holes.

Due to the main acting area being at a slight rake with troughs along both longer sides, the unevenness of the theatre floor and deciding the transition between the stage floor and the step would not be taped for an invisible transition, I requested the crew begin facing the stationary steps surrounding the main platform with the facing elevated just off the floor using narrow crown pneumatic staples. The pieces of the removable step were faced individually, as they would need to be removed nightly to clean-up the water in the reservoir. When the step was used, the wood steps and platforms would have a slightly inherent amount of flexibility. If the

facings were touching the floor and sandwiched between the floor and the future masonite top, they may strain, resulting in cracking or popping off. For these reasons, many of the facings around the step were cut just shy of 8” wide prior to being attached. The lengths of the lauan facings varied due to the size of the materials we had on hand while keeping the length as long as possible and with my desire to overlap as many joints between the platforms as possible.

The facings on the shorter sides of the main platform were individually measured and cut so as not to result in a 1/4” gap on the raised side of the platform or an overhang on the shorter side. The main platforms' longer sides with troughs were faced with pieces about 7 1/2” wide so as not to restrict as much of the trough area as possible, leaving more room for the water to run unimpeded and drain. The facing for the taller portion of the raked main acting area was directly attached, the side with the removable step would later be attached once the masonite was in place using Gorilla tape on both sides of the flap adding 2 inches of clearance for cleaning out the water from the water barrier.

The crew and I pulled as much clean 1/4” scrap masonite from stock as we could find. All visible horizontal platform surfaces were to be topped with clean smooth masonite as most of the actors would not be wearing shoes for the performances. All the stationary plywood platform seams were to be straddled with a masonite top attached with narrow crown pneumatic staples and the seams taped a layer of either gaffer’s tape or Gorilla tape depending on the seam location and if the area was expected to get wet.

After cutting the scrap masonite to size for both the stationary and removable steps, the full sheets of masonite were attached. Chalk lines were applied to give a visual representation of where each of the full and trimmed sheets of masonite were to be attached on the main acting platform. We started 1foot inset from the edge going the longest length of the acting area, evenly

straddling the center platform seam and based every one of the masonite tops for the large platform from that. Unlike the step areas, the masonite attached to the main platform area was slightly thinner at 3/16”, which was not stocked in the scene shop. This meant that because of the thickness differences, pieces would not be interchangeable. After all the sheets of masonite were attached, the edges were cleaned up using a router and the seams were taped.

For the removable step, I needed to have a stationary “fencing” that could be concealed under the platform step to attach the water barrier to. It would have to be split into sections to accommodate the structural components, such as the framing, joists, and legs of the platform. I attached pieces of 4”x 4” to the stage floor lengthwise, Gorilla tape the water barrier to 1” thick pieces of scrap lumber cut to length and sandwich the tape and the water barrier between the two corresponding pieces of lumber. The removable step was held in place using multiple loose-pin hinges attaching the main acting platform compression legs to the backside of the removable step. The mobile lauan facing was held in place against the side of the platform with 2” screws with the heads painted to help camouflage them. The entire platform was then base coated with “slop” paint and ready for the crew to paint and seal.

After a rain test or performance, the mobile facing screws would be removed, the loose pins on the hinges pulled out and the required 4”x4” detached allowing more room for a member of the run crew to crawl under the platforms and clean up most of the water using a shop vac. The shop fans would then be turned on, helping to evaporate the rest of the water residue.

Adding Color

I went through many considerations of the best way to rig the bucket that would hold the red color securely over the staging area for distribution while making it easy enough to fill or

check nightly before each show and maintaining a distance from as many of the electronics in use as possible. The solution that I chose was to treat the rope and bucket like a cord plant hanger and a pot. This would allow multiple points around the bucket to be secured with knots, have cord crossover underneath the bottom of the bucket for added security, and I could then make the rope extend above the bucket as long as needed to loop over the beam and bring it down to an easily reachable securing point. I tested this rigging initially over the shop sink and paint area at about the height it would be above the grid with clear water so that if an accident happened, it would be easier to clean up.

The color delivery system comprised a 2-gallon food-grade bucket with lid, a 10-foot length of 3/4” inner-diameter clear, reinforced braided tubing, a 3/4” male hose mender with corresponding threaded female ring to connect the bucket to the tubing with an adjustable hose clamp creating a spout, a metal quick connector set to connect the tubing to the soaker hose and have quick release when necessary, and a brass 2-way “Y-joint” restricted-flow water shut-off connector with two independent internal brass ball valves for the merging of the color and the water together in the soaker hose. The metal construction gave me more confidence and security than any plastic model.

Initially, I was able to drill a 5/8” hole in the bucket's side about an inch up from the bottom, just large enough for the threaded male hose mender to fit in to. I also scuffed up just around the drilled hole, creating some additional tooth for the sealant to adhere to. I then used a white kitchen and bath waterproof sealant inside and outside the spout of the bucket and the threaded ring. The sealant would remain flexible when dry and visually contrast with any potential color leaks, no matter how small. After a few test runs with the sealant, it pulled away from the outside of the plastic bucket. I tried to patch it, but the result was not ideal. I then

moved on to my backup plan. I removed the leaking sealant, added a rubber O-ring between the spout and the outside of the bucket, and resealed both inside and outside with white silicone caulk. This again worked for a limited time, and then I located a small hole in the caulk. Again, I tried to patch it, but the wet and dry caulk did not want to adhere to one another. Attempt number three, I asked Harmoni to go pick up some epoxy putty from the store and we would give it a shot. It claimed to seal in wet conditions, was drinking water safe, and would dry in 25 minutes and cure within an hour. The epoxy putty worked for our purposes and held up through the run of the show.

My intention in using a 2-gallon bucket was to exceed the nightly capacity and not rig a container excessively large above the stage. The remaining air space in the bucket allowed for the potential of human error if the stage crew member could not close the Y-joint connector before the water reached the grid, leading to a small amount of backfill in the bucket. The clear tubing was used as a visual gauge for introducing the color to the soaker hose. The quick connector allowed for a quick and simple release if any adjustments needed to be made to the bucket rig that were not easily done on the grid. The bucket, rope around the bucket and spout were enclosed in a large black trash bag to help camouflage the bucket above the grid and create an additional layer of protection from any potential color leakage.

The bucket containing the color was hung about 7’ above the soaker hose and the grid. Nightly about a gallon of non-diluted color was poured into the bucket, the lid secured to the top on one edge so air could still filter in from the top, allowing the color when released to flow freely out of the hose. When instructed, the color was released by opening the Y-joint flow valve connecting the clear tuning and the soaker hose together. This would allow the color to be gravity fed into the soaker hose before the water was turned on. The color valve in the Y-joint

was then closed around the same time the water was turned on from the utility sink fed into the rubber garden hose and subsequently the soaker hose. This allowed for the purity of the color to be achieved time after time in the soaker hose and blocked the water from being reverse fed into the color bucket. Through tech week, it was determined the rain would be run at full strength between 2 and 2 ½ minutes at the end of the show depending on the delivery speech pace of the actors. The residual raindrops would continue through the end of the show. For each performance with colored rain, about 1/3 to 1/2 a gallon of color was. Although the entire gallon loaded into the bucket, each night was not used, the additional liquid weight in the bucket helped gravity feed the color that was used into the system.

Strike

All the platforms were from the department's stock and would go back into stock if they were not damaged. Much of the facing would be discarded due to it being smaller pieces, but the masonite would be kept if it was in usable condition when removed. The hoses and components would all be dried and kept if they were still in working order.

Strike began by using the air compressor to blow out most of the water from the hose system and removing the color bucket and tubing from the grid so the electricians could begin their strike list. Since the performance was one in the round, the fourth bank of seating was removed to allow the large doors to be accessed. Many crew members helped to remove the standing water from the large platform area, steps, and theatre floor with mops and squeegees. The soaker hose was detached from the grid and taken to the shop sink to clean, let drip and dry. Crew members crawled under the larger platform and used the shop vac to clean up most of the standing water.

The masonite and lauan were removed from the platforms. Staples were removed from the lids of the plywood lids of the platforms. The removable step was detached and taken to the shop. The 4’x8’ platforms were detached from each other from underneath. And taken in sets to the shop there the legs were removed. The water barrier was detached from the step platforms and thrown away. The step platforms were then detached from the floor and moved to the scene shop with the others to dry. The trash bins were emptied, the theatre swept and mopped, and some of the shop fans left in the theatre space to help evaporate any remaining moisture. All pieces were taken to the shop and placed with like items spread out as much as possible to dry out for the rest of the weekend. The following week the shop crew would help to break everything down and if it was being kept, store it in the appropriate areas. Strike was quick and efficient, with many hands helping from the cast to the crew with no personnel injuries. This brought an end to a successful and personally rewarding show.

Chapter Three: Evaluation

Once the production was over, Chad and I met to discuss what worked and what could be improved on, what I could have done better, and what I would change.

Looking back on it, since the theatre floor was not flat from one side to the other, I would not worry so much about the preciseness of the rake of the platforms to the stage. We achieved the desired effect, but the time used could have been reduced.

In choosing to use thinner masonite, I could not use the smaller pieces available in the shop because of the depth difference. Thicker pieces may have allowed additional grip and hold from the staples and perhaps using fewer staples overall. The additional thickness may have helped with slight warping in areas, but I was happy with the cost savings.

I would have liked to have spent more time troubleshooting the removable step unit; how to best fasten it to the platforms, how to prevent small tears in the water barrier from its removal each night, perhaps another layer of water barrier surrounding the ends of the legs like socks and stapled in place could have added a smoother surface.

I would have cut a wider trough on the main drainage side increasing it from 1/4" to 3/8" or 7/16" to allow for greater drainage. Not large enough for someone to get their toe stuck in but enough to compensate for potential human error in repositioning the mobile flap. I would seal the flap separate from the platform to help reduce the absorption of water and potentially look at the use of thin hinges for more durability.

Facing the rake on the main acting platform could have been sped up by cutting the facings to 8.5" wide and routing off the extra at the plywood lid. The corners were covered in tape anyway for a seamless transition, so it was not visible in the end.

During tech week for the show, it came to my attention that some of the paint was repeatedly peeling off from the Gorilla tape even with the top-coat sealer. The paint areas were touched up, another coat of sealer applied to the taped areas. After another rehearsal, the paint began to peel up from the tape again. The crew and I covered the Gorilla tape with a layer of gaffer's tape in the hopes the paint would not peel off again. We then "slop" painted the reapplied tape in areas and the paint crew came back to repaint and reseal the platforms. I would have invested into more intense testing of the paint and sealants.

I feel I should have fought more for the use of one of the sealants that were originally tested. After the fact, it came to my attention that the initial sealant used was a poly acrylic. This is not one that I had tested in my original water test over the gaffer's or Gorilla tape.

At the end, an exterior polyurethane was used to seal the platforms. It was smelly and not ideal

Perhaps use white Gorilla Tape instead of black as it would not show as intensely and be more camouflaged if the paint was scraped off. Potentially less touch up paint.

Working with running water was a new one for me. I knew the water and color systems would work. What was hard was putting the control for the performances in someone else's hands.

Every production has areas where that can be improved on. A few of these lessons for me include, it is best to draw for the lowest denominator in the shop and build for an inexperienced run crew. Students come in with all different levels of experience. Some arrive not knowing the difference between a hammer and a screwdriver, let alone how to properly use them. But if they are willing to learn and take direction, it will all be worth it. And lastly, as my mentor has told me multiple times, “embrace the suck, some days just do.”

Works Consulted

Carter, Paul. Backstage Handbook: An Illustrated Almanac of Technical Information. 3rd Ed. Shelter Island: Broadway Press, 1994.

Gross, Chad W. A. Blood, Sweat, and Fog: Technical Direction of *Dracula*. Master of Fine Arts Thesis, Southern Illinois University: Carbondale, Illinois, March 2002.

Johnson, Anthony A. Restoring Comedy for Today's Audiences: Technical Direction & Lighting Design: *The Country Wife*. Master of Arts Thesis, Idaho State University: Pocatello, Idaho, May 2010.

Palmer, Angela M. The Director's Paintbrush: A Journey into the Creative Process. Master of Arts Thesis, Idaho State University: Pocatello, Idaho, April 2010.

Patrick, Kelly. "What is the difference between duct tape and gaffer's tape?" Tape University, September 23, 2018. www.tapeuniversity.com/industry/industrial-mro/difference-duct-tape-gaffers-tape/#:~:text=Because%20it%20does%20not%20have,moisture%20resistant%20in%20most%20cases. Accessed July 20, 2021.

"Project Runway: S13 rainway." *YouTube*, uploaded by ILUV NYC, September 24, 2019, www.youtube.com/watch?v=pldPusH7F4k.

Appendix A

Budget Estimate

Lumber and Scene Shop Materials for *The Burial at Thebes*
ISU Theatre Fall 2021

Theatre:	**ISU Black Box**		**Production:**	**The Burial at Thebes**	
Date:	**Aug 2021**		**By:**	**Liz Christensen**	
Unit:					
Notes:					
Call Name	**Materials**	**Unit**	**Unit Price**	**Quantity**	**Cost**
Masonite_1/4"	1/4" Tempered Masonite; 4' x 8'	Sht.	$28.00	8	$224.00
Masonite_1/8"	1/8" Tempered Masonite; 4' x 8'	Sht.	$18.98	13	$246.74
Lauan_1/4"	1/4" Lauan; 4' x 8'	Sht.	$35.00	16	$560.00
	6 mil Water Barrier	Ea	$115.98	1	$115.98
	Wet/Dry Shop Vac	Ea	$89.98	1	$89.98
	Heavy Duty Garden Hose 5/8" x 25'	Ea	$19.98	2	$39.96
	Neverkink Hose 50'	Ea	$24.98	2	$49.96
	Hose Fittings and Connectors		$34.56	1	$34.56
	Cable Ties	Bag	$15.28	2	$30.56
	Bucket and Lid	Ea	$7.66	1	$7.66
	Clear Tubing 10'	Ea	$23.48	1	$23.48
	Soaker Hose 50'	Ea	$10.99	3	$32.97
	Black Cable Ties	Ea	$13.98	1	$13.98
	Replacement Router (Tool)	Ea	$139.00	1	$139.00
	Gorilla Tape	Ea	$15.00	6	$90.00
	Gaffer's Tape	Ea	$19.00	4	$76.00
	All platforms pulled from stock				
	Use as much scrap lumber as possible				
				Sub-Total:	$ 1,774.83
				Contingency:	$ 88.74
				Total:	$ 1,863.57

Appendix B

Scene Shop Calendar/Task List

The Burial at Thebes ISU Theatre Fall 2021

I Spoke with Chad during the spring and summer of 2021 deciding what would be my thesis show and preliminary design ideas.

Monday, August 23-Thursday, August 26

- Gorilla and Gaffers tape tested with paint with and without indoor/outdoor sealer.
- Pull 12, 4'x8' platforms from stock and all 11-12" deep rectangle platforms available from stock, put to the side – Do Not to move to storage. Fix and adjust pulled stock platforms to be used for the show. Clean Shop.

Thursday, August 26 - Receive Ground Plan from the designer Paul Yeates

Friday, August 27 - relocate department platforms, doors, windows…to external storage unit

Monday, August 30 - clean shop and ready space for build

- Inventory supplies and needs

Tuesday, August 31- Fix and adjust 4 additional 4'x8' prebuilt stock platforms for steps

- Connect 4'x8' platforms lengthwise (8' sides) in pairs using hex bolts
- Fix/adjust 12" deep step platforms
- Pull and fix required 4"x4" legs and compression legs

Wednesday, September 1 - Make new required compression legs for facing to attach to

- Tape stage platform placement in Black Box area with Harmoni
- Dry fit rope to hose length, measure ideal needed length
- Continue adjusting removable step platforms

Thursday, September 2 - inquire about water access for water tests, rehearsals and show run

- Decide on coloring and have it ordered
- Layout 12, 4'x8' platforms lid/decking side down, to bolt legs to on a raked slope from north to south by1/4" to shed water without being noticeable.
- Layout step platforms including removable step, leg up step platforms to 8"

Friday, September 3 - continue attaching remaining legs to 4'x8' platforms, attach platforms together in 8'x8' sections

Monday, September 6 (Labor Day) - shop Lowes and Harbor Freight for needed materials

Tuesday, September 7 - shop 3/16" masonite hardboard (not 1/4")

- Test hose and all connections outside w pressure from utility sink
- Construct gravity fed color system

Wednesday, September 8 - hang soaker hose from grid

- Test color bucket rigging over scenic shop sink (rope)

Thursday, September 9 - continue to leg step platforms

Friday, September 10 - lay down a water barrier for a rain test (no color) on stage area. Have water test with hot and cold water, and do clean up

- Finish legging step platforms

- Begin to cut 8” lauan facing for platforms

Sunday, September 12 - shop for black cable ties, additional hose end for backup and gaskets for bucket (plan B) and additional sealant

Monday, September 13 - Blow out the hose above stage area again to eliminate water dripping on stage area, clean-up stage.

- Bucket test, found hole in silicone sealant. Reseal and let dry, retest tomorrow

Tuesday, September 14,

- Move step platforms to staging area, attach step platforms together, secure to floor
- Lay out double layer water barrier, attach individually to stationary step platforms with Gorilla tape, this will be covered with maso or sandwiched between platform and 1”x3”
- Move 8’x8’ platforms into place

Wednesday, September 15 - Fix in place squeaky platforms.

- Add additional legs where needed due to flex and uneven floor
- Work on fencing for the removable platform side for water barrier to attach to

Thursday, September 16 - Attach/Bolt large platforms together

- Replace/adjust broken or cracked legs and toggles
- Tie-in legs from large platform to step platforms where needed

Friday, September 17 - continue to cut and begin to attach facing to platforms covering the platform seams starting with the step working up to the large platform. Finished half the large platform

Monday, September 20 - Fix some bowing facing and finish attaching the remainder of the stationary facing to platforms.

- Begin cutting masonite for steps

Tuesday, September 21 - Shop for remaining needed hardboard (x3) for a total of 13

- Begin attaching with pneumatic staples full/large sheets of maso to the lid of large platform 8’ length being positioned east to west to straddle platform seams down the center and offset 1’ from west edge of platform. Don’t want seams to match on purpose.
- Cut 1.5” strips of maso to sandwich between full sheets of large platform lid maso.
- Time allotted the attachment of 2 full sheets and 2, 4’x7’ sheets of maso with strips on either side.

Wednesday, September 22 - Finish cutting and attaching masonite to large platform lid and stationary step areas up to the removable step platform.

- Clean up edges of masonite lid with router
- Adjust leg placement on the removable step so it fits snug but not tight.

Thursday, September 23 - tape masonite seams with black gorilla tape base coat (slop) paint the stage

- Crew View scheduled to start at 7:30 p.m.

Friday, September 24 - help paint as needed, clean shop, ready for tech week

<u>Saturday, September 25-Thursday, September 30 Tech week</u>

Sat, September 25 Dry Tech scheduled to start at 10:00 a.m.

Sun, September 26 Wet Tech scheduled to start at 1:00 p.m. with rain, no color

Mon, September 27, Start distressed light bowls
Finish mobile masonite facing flap and step
Hang side fabric for lighting effects
Rerig color bucket, initial in place colored test rain during afternoon shop hours
test color before rehearsal (during end of shop) noticed paint peeling off Gorilla tape
even with sealer used, need to rethink sealer and/or tape
Chalk was added during rehearsal to platform stage area, decided it was to
much…needed to scale down the amount
Frist Dress scheduled to start at 7:30 p.m.
Tues, September 28, Touch up paint
Need to readjust placement of the hose allowing rain to be more condensed but allowing
for area coverage and pressure limitations.
Color bucket rigging and adjustments due to hose placement adjustments, gaff tape hose
connections black to seal and conceal, reseal bucket spout to reinforce
Place carpet on grid for stage crew member to sit and be concealed
Pull black entrance curtains for doorways
Add multiple hallway curtain for privacy and changing
carpet on south hallway floor backed with water barrier to catch water and color
Carpet on north hallway for chorus with chalk
Second Dress scheduled to start at 7:30 p.m.
full rehearsal with rain in place and color
Wed, Sep 29, Adjust mobile stage apron and step for run off
Retaped over Gorilla tape with Gaff tape per request
Repaint and another layer of sealant added on top of tape
Larger carpet for grid to conceal stage crew member
Gaff again not watertight on-stage area
Third Dress scheduled to start at 7:30 p.m.
Thurs, Sep 30 Pull carpet for cement floor to go over hose from closet
Adjust practical lights, rope texture requested.
Touch up platform tape areas where lifting.
Repaint and reseal where necessary
Begin to move 4th side of seating risers into performance space
Final Dress scheduled to start at 7:30 p.m.
During rehearsal - determined indoor sealant was used, not indoor/outdoor sealant.
Friday, October 1, Attach curtains and rail connectors to risers.
Glow tape coers of platforms
Touch up paint
Reattach tape, repaint and reseal where necessary,
Reseal top with another coat of poly acrylic and lip of apron with polyurethane
Mop and vacuum risers, steps, back hallways and stage area

October 1, Opening night 7:30 p.m. start time
October 1,2,7,8,9 Run of Show
October 9, Strike
October 15, pull up and replace 2 pieces of damaged masonite on Black Box stage floor
October 17, Paint replaced masonite black to match the rest of the floor.

Appendix C

Scene Shop Inventory and Shop List

The Burial at Thebes ISU Theatre Fall 2021

Inventory (8/31/2021)

4 4’x8’ sheets of ¼” masonite
8 4’x8’ sheets of lauan

Need/Shop List

13 4’x8’ sheets of masonite (3/16”)
Squeegee for stage area, ask custodial
Wet Vac to clean up and remove water from stage under stage area
Gorilla Tape, for dual layer liner attachment and lid seams of masonite
Water barrier
Food safe bucket (2 gal) not too big due to rigging weight and liquid sloshing
Rubber tubing at least 10 feet, bigger diameter = less resistance = more color flow
Hose adapters, connectors and Y-valves with shut-off capabilities for garden hose and rubber tubing
Zip ties for easier hose attachments to grid
Red coloring, safe for eyes, skin, hair, potential ingestion, clothing…
Minimum 65 feet soaker hose, would like 100 feet if possible and some for backup
Minimum 75 feet plain black garden hose (connecting the ground floor sink to soaker hose) one extra hose for backup

Appendix D

Nightly Preshow Checklist
Nightly Post show List

The Burial at Thebes ISU Theatre Fall 2021

Preshow Checklist

- Reattach apron flap and removable step
- Check color bucket level, should be at half full
- Apply chalk as directed by scenic designer

Nightly Cleanup List

- Fill air compressor to 150 psi
- Detach main hose from the sink
- Attach adaptor to the hose and blow out hose with compressed air (10-15 minutes)
- When complete, roll up the hose from the utility sink, wrap together and attach to the back of the stage door - leave hose attached to the leading up to the grid.
- Squeegee and mop the stage area avoiding the taped areas with the squeegees
- Direct water to down-stage area to collection water barrier
- Remove removable step from platform and flip up apron flap
- Clean up standing water with shop-vac, be sure to empty as needed
- Be sure to flip down the apron lip so water is not trapped beneath it
- Mop theatre stage space to remove chalk and remaining water
- Turn on scene shop fans and leave running to dry the area
- Vacuum hallways due to chalk dust where necessary

Appendix E

Strike List

The Burial at Thebes ISU Theatre Fall 2021

Strike List
October 9, 2021
The Burial at Thebes

All Hands on Deck
Strike process to be done in order unless otherwise specified by TD

Blow out hose using hose diameter reducer and 120-150psi pressure from air compressor
Remove color content bucket from rigging
Remove carpet from light grid
Remove center of 4th side seating and chairs, allowing larger back hallway access to scene shop for wet and bigger pieces and not through carpeted hallways
Remove mobile stair

Remove hose from rigging after blown out with compressed air
Clean up water from stage area and water catch area

Remove masonite lids from platforms
Remove lauan facing from platforms
Detach platforms from each other from underneath
Remove staples from plywood deck lid
Remove platforms to shop, starting with 16" platforms first
Remove legs from platforms in scene shop
Detach water barrier from step platforms - roll and toss
Detach and remove north side of stair unit, move to scene shop

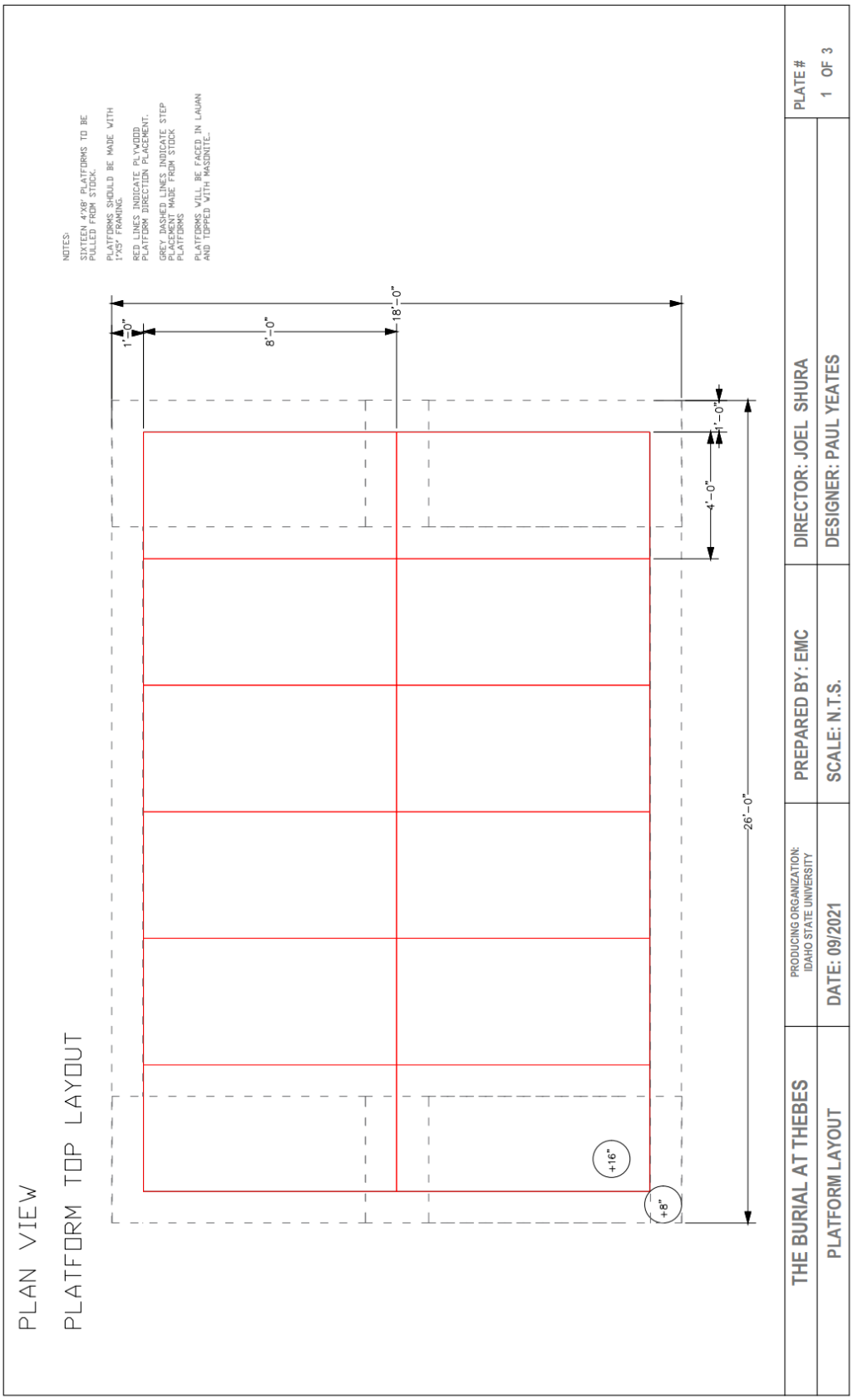
Empty garbage cans from hallway and scene shop in dumpster
Sweep and mop Black Box Theatre floor area
Dry Black Box Theatre floor using shop fans
Use additional shop fans to help dry materials in scene shop area

Remove fabric from hanging positions, fold and provide to costume shop

Paint stage area if it is dry and there is time - if not to do on Monday afternoon
Practical lights to be taken down on Monday

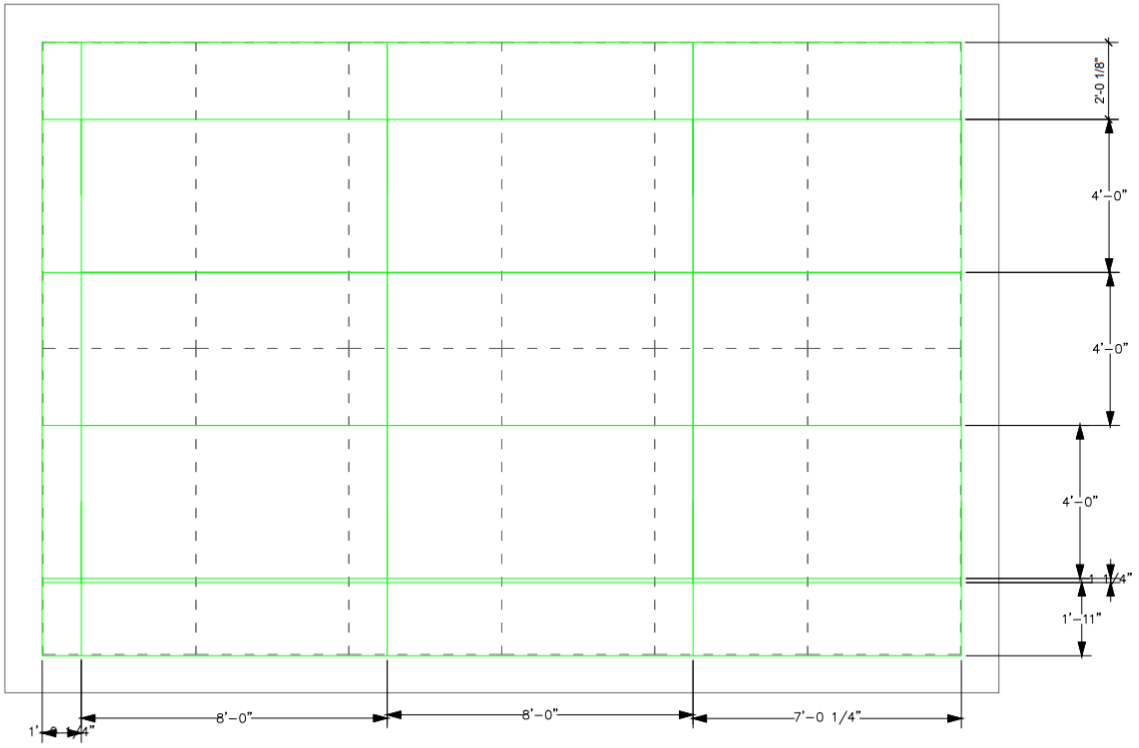
No one leaves until strike is complete or without checking with the Technical Director or Stage Manager.

Construction Plates



PLAN VIEW

MASONITE LAYOUT



NOTES:

GREEN LINES INDICATE MASONITE DIRECTIONAL PLACEMENT.

GREY DASHED LINES INDICATE PREVIOUSLY PLACED PLATFORMS

PLATFORMS NEED TO BE FACED WITH LAUAN PRIOR TOPING WITH MASONITE.

MASONITE SHOULD TOP AND CAP THE EDGE OF THE LAUAN FACING.

THE BURIAL AT THEBES	PRODUCING ORGANIZATION: IDAHO STATE UNIVERSITY	PREPARED BY: EMC	DIRECTOR: JOEL SHURA	PLATE #
MASONITE LAYOUT	DATE: 09/2021	SCALE: N.T.S.	DESIGNER: PAUL YEATES	2 OF 3

PLAN VIEW

SOAKER HOSE LAYOUT ON GRID

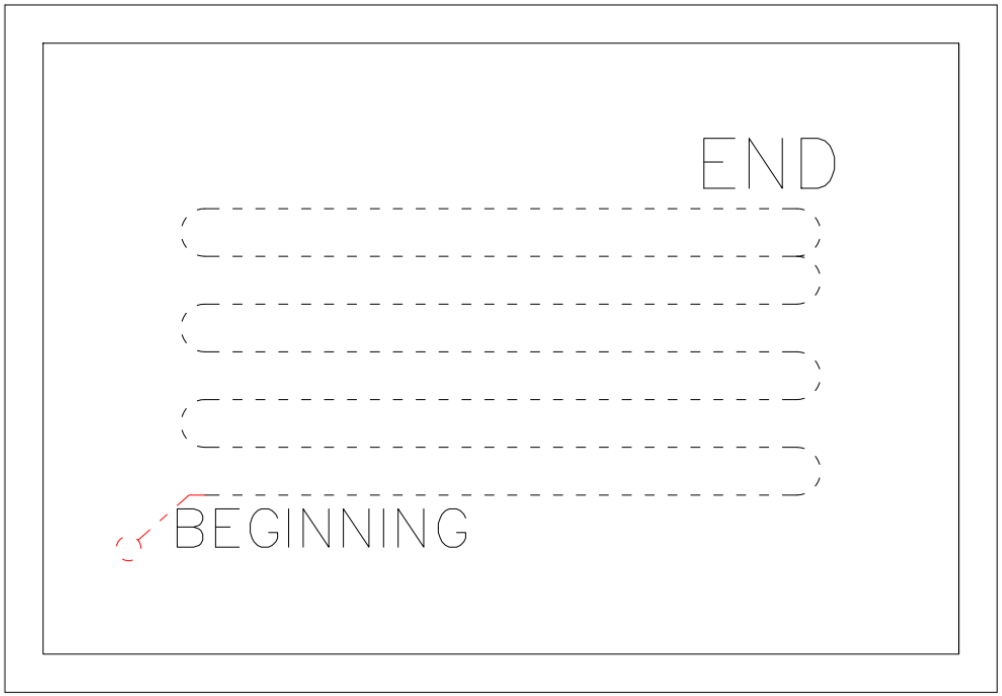
NOTES:

SOAKER HOSE TO SNAKE EVENLY BACK AND FORTH FOR THE LENGTH OF THE HOSE

RED INDICATES THE LOCATION FOR COLOR ADDITION.

BLACK ZIP-TIES TO ATTACH TO THE UNDERSIDE OF THE GRID. ABOUT EVERY 12 INCHES.

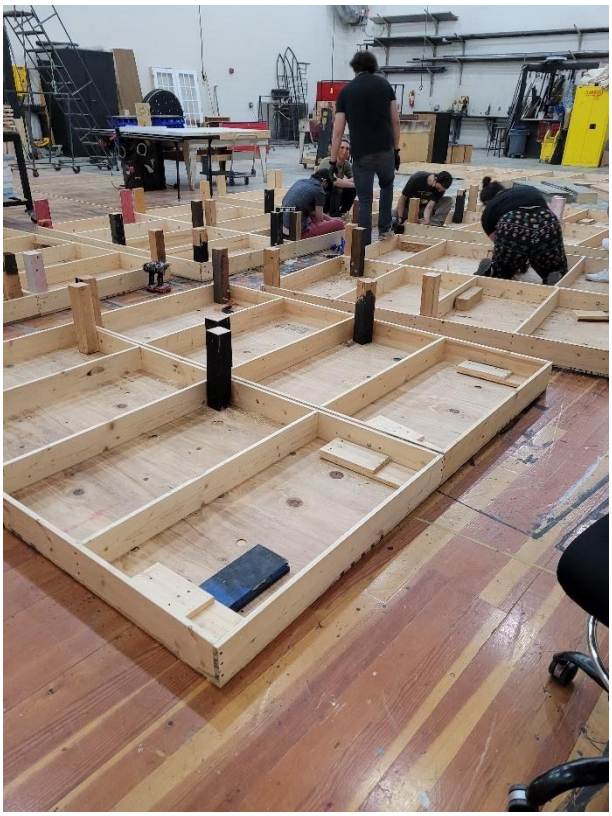
GAFF TAPE ALL SOAKER AND GARDEN HOSE JOINTS.

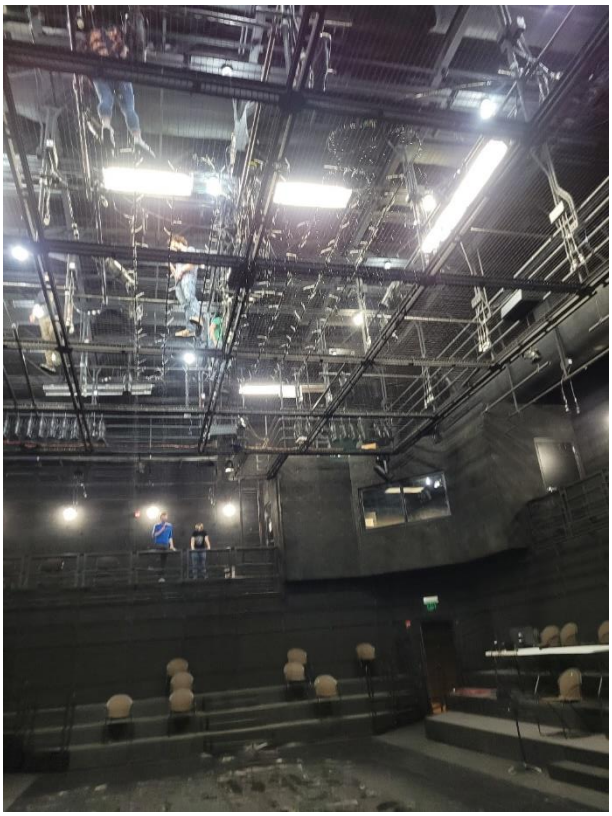


THE BURIAL AT THEBES	PRODUCING ORGANIZATION: IDAHO STATE UNIVERSITY	PREPARED BY: EMC	DIRECTOR: JOEL SHURA	PLATE #
SOAKER HOSE LAYOUT	DATE: 09/2021	SCALE: N.T.S.	DESIGNER: PAUL YEATES	3 OF 3

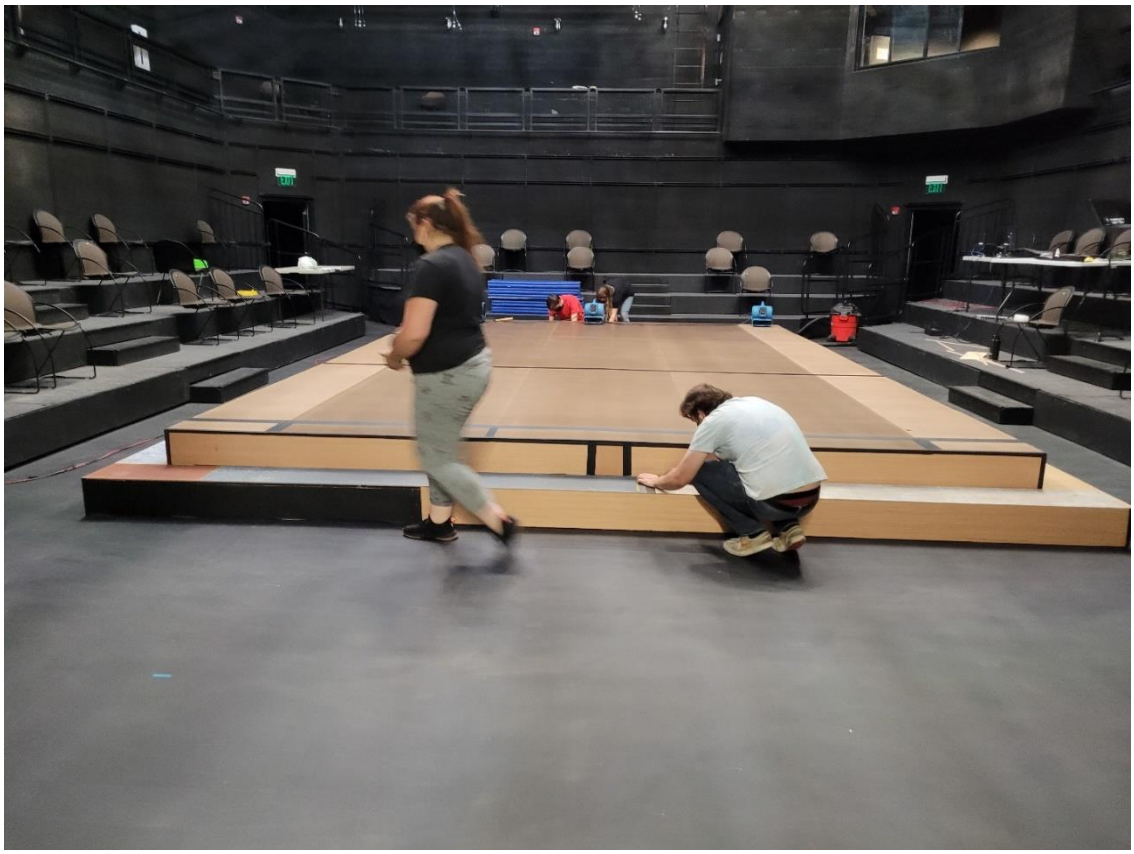
Photographs

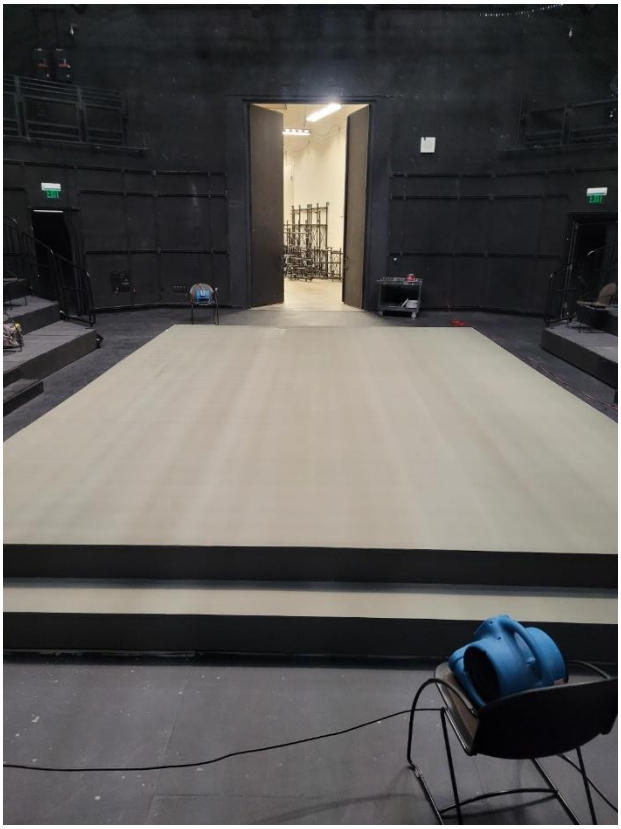
The Burial at Thebes ISU Theatre Fall 2021

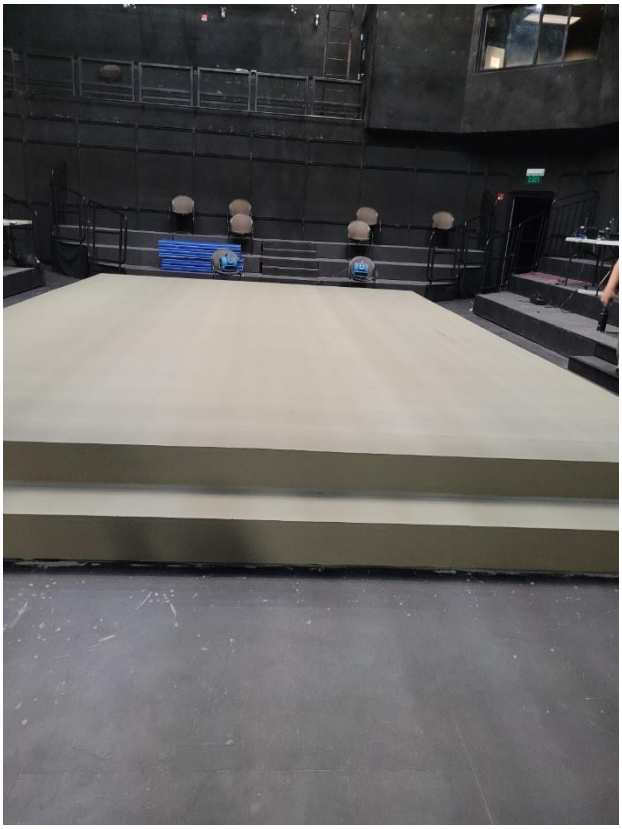


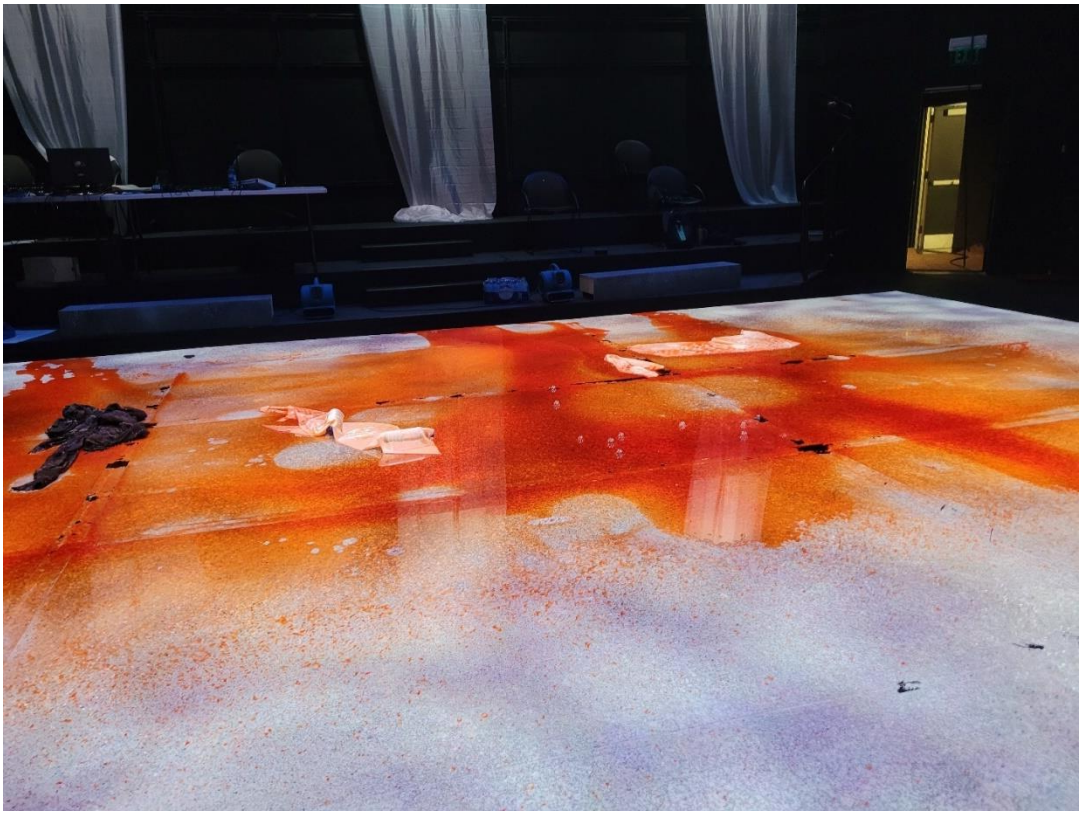


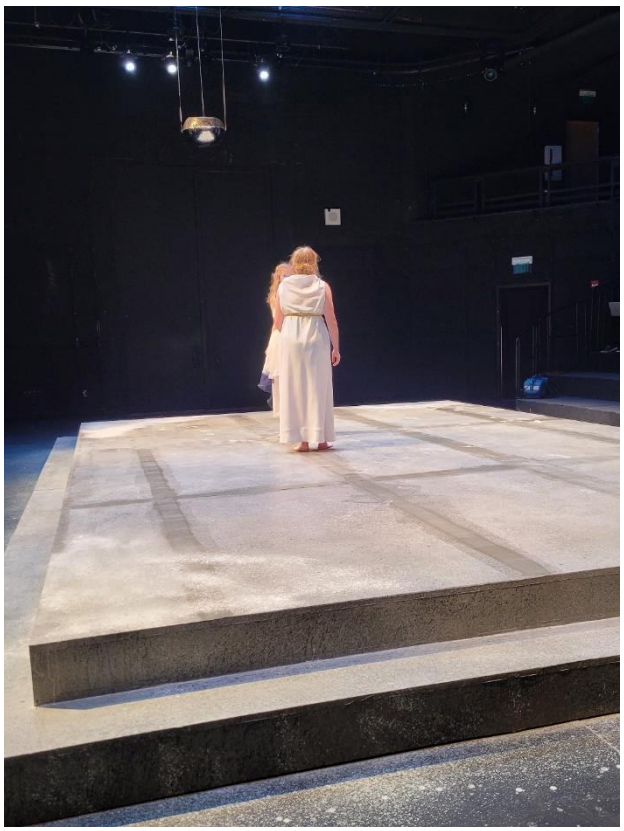

EXIT












EXIT