THE PENNSYLVANIA STATE UNIVERSITY
SCHREYER HONORS COLLEGE

SCHOOL OF THEATRE

Technical Direction of *Urinetown*

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SPRING 2024

A thesis
submitted in partial fulfillment
of the requirements
for a baccalaureate degree
in Theatre Design & Technology
with Honors in Scenic Technology and Scenic Design

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ABSTRACT

Every theatrical production takes a large team of people to bring it to reality. One key job in most productions is the technical director, who is responsible for executing the scenic designer's vision and physically creating a show's set. For Penn State Centre Stage's Spring 2024 production of *Urinetown: the Musical*, I was given the responsibility of working as the technical director. In this thesis, I will be going through my work in this role throughout the entire production process, from budgeting through the run of the show. I will also be reflecting on my experience, including what went well, what could have gone better, and what I have learned.

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ACKNOWLEDGEMENTS

I am extremely grateful to all my many mentors during my time here at Penn State, especially to Chris Russo and Ashley Hungerford for this project; as well as Jay Lasnik and Milagros Ponce de Leon for all their guidance and support throughout my four years here. Additional thanks to the assistant technical director for the production, Nick Baror; scenic designer Alivia Cross; and my Honors advisor, William Kenyon. There were so many additional people that came together to make this production happen, onstage and off, without whom I would not have much to show at all.

I also would not have been able to do any of this without those who supported me every day in my life beyond just in my theatrical work: my parents, my sister Julia, and my incredible friends (especially Lauren, Vega, Hailey, Harrison, Judson, and Nicole).

Chapter 1

Background

Penn State Centre Stage's 2024 production of *Urinetown: the Musical* ran for one week, from February 23rd to March 1st, for a total of 7 performances. To make this one week of shows happen, dozens of people, including students, faculty, and staff from the Penn State School of Theatre, worked diligently for months on end. I worked on this show as the Technical Director – this thesis will be a deep dive into my process.

I found out that I would be working on this show as the Technical Director in the spring of 2023, though my work did not begin until October. At this point however, the design team had already been working for several months on their early designs. The start of the production process begins with a Kickoff Meeting – for us this was August 31st – where the director sits down with the design and production team for the first time to share a concept and general vision for the production. While a script of a show may remain the same across many different iterations of the production, the concept, designs, and direction are where the creatives get to play and to make a show their own. For this production, it all began with Director David Kersnar, who is a professor in the School of Theatre, sharing his broad ideas and hopes for the show. From there, the scenic, lighting, sound, and costume designers had a few months to work with David and with each other on formulating their preliminary designs for executing this concept.

The next time that the whole team came together was on October 12th, at a design presentations meeting where each designer can share what they have been working on. This can include script analysis; visual research (which can be photography, paintings, or anything else that may have inspired the designers); sketches; CAD drafting; and more depending on the design area. Usually the scenic and

costume designers have the most to show at this point, as lighting and sound kicks into high gear much later in the process. Once the designers show their work, the production side of things – myself included – can begin their work.

Urinetown: the Musical

Urinetown was written by Greg Kotis and Mark Hollman and originally premiered on Broadway in 2001. Before that, it debuted at the New York Fringe Festival and quickly became an unlikely hit. The show takes place in a not-so-distant future, where, after a 20-year drought, private toilets have become 'unthinkable' – and now a corporation controls all the public bathrooms, requiring citizens to pay to pee, or else be exiled to the mysterious Urinetown. *Urinetown* uses an absurd premise to talk about themes of oppression, capitalism, poverty, revolution, and ecological disaster, and much more, while its social commentary is wrapped up in a grimy, satirical comedy and an unlikely love story.

Figure 1. poster for Penn State's production of *Urinetown*

The Role of a Technical Director

As the rest of this thesis will be discussing my work as a technical director, it is worth first touching on what it is that a technical director does. Simply put, the technical director of a theatrical show is responsible for making the scenic designer's vision of the set a reality, and coordinating between departments to make it all happen. The way I like to think about it is that if a scenic designer decides that they want a show to have a square shaped platform, then they would draw a cube with some overall dimensions and and hand it off to the technical director (also referred to as the TD). Then, the TD would have to figure out exactly what it takes to make that cube – should it be made out of wood or steel? Do we have enough money for those materials? Enough time and people to build it? Can it fit in the door of the theatre? How many actors does it need to be able to hold? Essentially, the technical director and their team figures out all the logistics of a set, and contributes to the success of the overall design of the production by supporting the artistic efforts of the scenic designer. A TD is not just a carpenter with an extra title, but a critical member of the design team who is equally responsible for understanding and executing the director's vision for the show

My work on this particular show specifically began after the first designer presentations on October 12th, where scenic designer Alivia Cross, who is a 2nd year MFA Scenic Design candidate, shared the first iteration of her set design. This is when the budgeting phase began. The initial budget for the scenery that we had to work with was $6,000, though we ended up having access to $7,500. It took three budget passes over three weeks and some major scenic revisions to get the set into a feasible scale. Once the budget was approved and the scenic design finalized, we went into the drafting and build phase. While Alivia had created a drafting package that detailed the designed 'look' of each scenic element, myself and the rest of my team – assistant technical director (ATD) Nick Baror, and my mentors, Chris Russo and Ashley Hungerford – created our own technical drafting of each element. The drafting that we did was

done using a Computer Aided Design program called AutoCAD. With AutoCAD, we created technical drafting that broke down exactly how each part of the set would be built. A 2D or 3D model of every part of the set was created, and then transferred to 2D layouts that included all the necessary information that the carpenters would use to build everything. These printable layouts are called ‘sheets’ or ‘plates’. There were a few weeks between the designs being finalized and the start of build to give us a head start on drafting, and then 8 weeks of build leading up to load in. During this time, there were weekly production meetings where the design and production teams could come together with the director to address any interdepartmental questions and concerns and update each other on progress. Following build, there is a week of Load-In, where the set is transferred from the shop to the theatre and installed, this occurs on an 8 hour weekend call and then throughout the week as well. Finally, once the set is loaded in, the performers have a week and a half of rehearsal on the actual set and stage. This is the first time that everyone who has been working on the show, on both the performing and production sides of things a, come together in the same space, and work through putting the acting together will all the technical elements including the set, costumes, lights, and sound. By the time the show opened, my job was essentially complete.

This thesis will go in depth about my process for each step in production: budgeting, drafting, build, load-in, tech, and the run of the show, as well as cover some retrospective thoughts on what I learned, what went well, and what could have gone better.

Chapter 2

Budgeting

For any part of a show to move forward from design to reality, the production team must first make sure that the designs fit within the scope of resources, in terms of money, labor, and even physics, before the show is drafted and built. The monetary budget for each technical/design area is determined at the start of the season of shows by the production manager. Funds are distributed based on a variety of factors, including how much money is available for the entire season, what venue the show is in, how big of a cast is it, and how many locations does the show take place in. Musicals usually cost more than straight plays because of the size of the cast and the need to transition between multiple scenes. In the scenic department, the money goes towards building materials more than anything. During these budgeting phases, the TD department can begin to determine what the ideal materials would be for each unit, as well as what construction method would be best. The first budget pass often looks at building each piece of the set as efficiently as possible and as the designer intended. During later passes the TD team begins to consider alternatives and creative solutions to cut material, time, and labor costs. The props and the scenic paint treatments are designed by the scene designer too, although these budgets are typically separate from the actual set budget and budgeted by other departments.

Each department budgets labor a little differently. When budgeting labor for set construction, the TD first considers how many hours a day over how many weeks carpenters are available in the shop. Next, the TD evaluates how long each part of a set may take to build. The TD must consider roughly what construction methods will be used, how complicated processes will be, and how much materials and money will be needed. It is also a good rule of thumb to account for labor as if your slowest member of the team was building it, and perhaps account for some additional time for them to learn new or complicated techniques.

A final consideration that we start to encounter during the budgeting phase, especially for the set, is physics. Naturally, scenery must conform to what is possible and what is safe. Platforms and stairs must be built with enough structure, walls and doors need structure to support their weight, and things that fly in and out with rigging need to be light and thin enough to do so. All of these physical limitations can limit labor and material choices and affect the aesthetics of the set. Stronger, safer, and more gravity-defying structures are often possible, but will require significantly more money or time.

Designers may sometimes keep these limitations in mind when working on developing their designs prior to budgeting, though this can be challenging, as you do not want to limit creativity. What typically happens is a first budget pass based on the initial scenic design will be significantly over budget. Subsequent budget passes require close collaboration between the scenic designer and TD in order to adjust the scenic design to be within available construction resources.

A final interesting consideration about the School of Theatre shop is the availability of additional labor hours from students who come to work and learn in the shop. Although this can be considered additional labor, their hours can sometimes be unreliable. When they are there, it is important to account for time for them to learn and be taught by the experienced carpenters, which can take away from the time both parties can spend building. Even though I was the TD on this production, I am still a student, as is the assistant technical director, or ATD, of the production, Nick Baror. We are learning every step of this process as we are going through it, and we can make mistakes that affect the shop and the build process. Therefore, we include quite a bit of contingency in the budgeting process to try to prepare for these unknowns and for any additional challenges that inevitably come up during the process.

Narrowing in from the general limitations that theatrical designs must conform to, let's look at what *Urinetown* had to work with at the start. The original budget targets are first presented to the production team via a 'one sheet' document distributed to everyone working on a show which includes

the heads of each department for the show, as well as important deadlines, and budget goals. Below is the initial budget breakdown that we had to work with, as well as important dates of the production:

PRELIMINARY BUDGET

SUBJECT TO CHANGE DURING BUDGETING

DEPARTMENT	PRELIMINARY TARGET
TOTAL:	$18,750.00
SCENERY	$6,000.00
PAINTS	$2,000.00
PROPS	$1,750.00
COSTUME/HAIR	$6,000.00
ELECTRICS	$1,500.00
PROJECTIONS	$0
SOUND	$1,500.00

PRELIMINARY DATES

BEFORE ENTERING THE VENUE

EVENT	DATE
KICK OFF MEETING*	8/31/23
DESIGN PRESENTATIONS (COSTUME AND SCENIC PRELIM DESIGNS DUE)	10/12/23
FINAL DRAWINGS	11/6//23
FINAL ELEVATIONS	1/8/24
PRELIM LIGHT PLOT	1/16/24
FINAL LIGHT PLOT	1/22/24
FIRST PRODUCTION MEETING*	12/5/23
FIRST DAY OF REHEARSAL	1/8/24
DESIGNER PHOTO CALL	2/26/24
WEEKS OF REHEARSAL	5

PRODUCTION DATES

EVENTS HAPPENING IN THE VENUE

EVENT	DATE
LIGHT HANG	2/3/24
SCENERY LOAD-IN	2/4/24
LIGHT FOCUS	2/6-9/24
CUING DAY	2/10/24
QUIET DAY	2/11/24
SITZPROBE	2/9/24
SPACING DAY	2/12/24
FIRST TECH	2/13/24
FIRST PREVIEW	2/20/24
OPENING	2/23/24
CLOSING	3/1/24

Table 1: Initial budget targets and key production dates

Throughout the budgeting process, we were aware that the production allocation was very firm and that there were no addition funds to use. So, if designs did not fit the budgets, either designs would have to change, or money would need to be redistributed through departments if possible.

When it comes to labor, we initially determined that we had about 960 hours of build time to work with. This was determined by estimating how many hours a week each carpenter would have to work on the build for this show. This was adjusted for some weeks, as there were sometimes times when our build overlapped with other things happening in the shop. Below is the table outlining our available labor for the build of *Urinetown*.

URINETOWN

Written by Mark Hollmann and Greg Kotis

Direted by David Kersnar

Scenic Designer: Alivia Cross
Technical Director: Emily Simpson. ATD: Nick Baror

Updated 10/18
Budget Pass 1

Available Hours

Staff	Build week 1 nov27-d1	week 2 dec4-8	week 3 dec11-15	week 4 dec18-21	week 5 jan8-12	week 6 jan16-19	week 7 jan22-26	week 8 jan29-f2	Load In		Tech/Notes		Strike	
John Geisz	38	18	30	30	38	20	20	20		48				8
Chris Shuey	38	18	30	30	38	20	20	20		48				8
Cassidy Lilly	38	18	0	0	38	20	20	20		48				8
489 Students	10	10	0	0	10	10	5	5		52				32
Ray Reehill	20	10	15	15	20	10	10	10		28				8
		CC load	CC tech											
Subtotals	144	74	75	75	144	80	75	75						

	Build	Load-In	Tech/Notes	Strike	Totals
Total Hours available	742	224		64	

Table 2: Available Labor Breakdown

First Budget Pass

Six weeks prior to the budgeting process, the design process began with the director, David Kersnar, presenting his production theme. Over the next six weeks, David met with individual designers while they put together their designs. The budgeting stage began during designer presentations on October 12. This is when the entire production company gets to share and observe each other's designs for the production. Alivia's design presentation featured guiding words, script analysis, visual research, a props list, and then finally her initial drafting package of the scenic design.

Figure 2 - Excerpts of Alivia Cross's initial designer presentation.

The initial drafting package, which Alivia created using the 3D CAD software Vectorworks, consisted of 15 plates, or PDF sheets of drafting, as well as a table of contents. These sheets broke down each piece of her first design of the set and how they would interact in the space. She also included a few screenshots of the full set rendered in 3D greyscale.

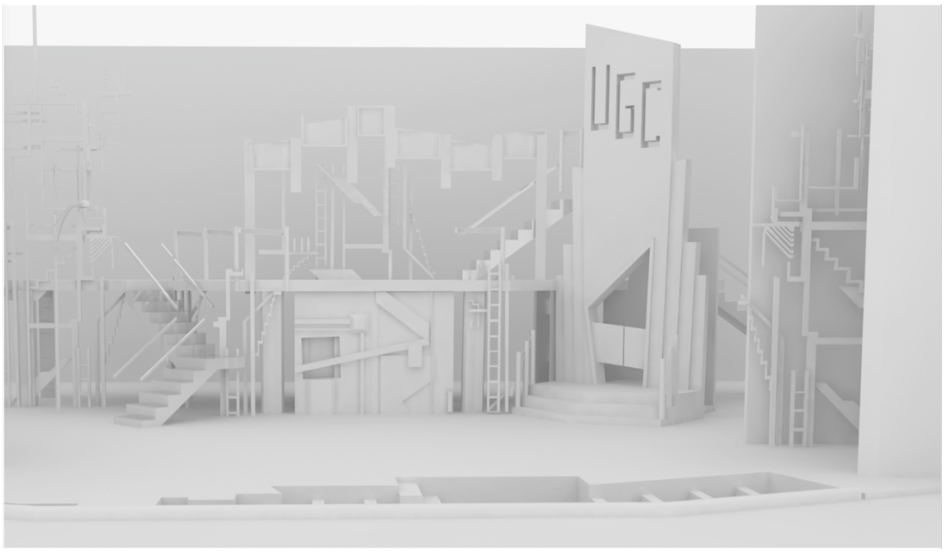


Figure 3: Initial full stage front elevation/white model rendering

These renderings are useful for getting a quick look and overall understanding of the space, but less useful for budgeting. After the designer presentations, Nick and I had a week to analyze the Vectorworks drafting package and work out how much it would all cost. After this first week, we would then need to present our estimations to the production team during the first budget pass meeting. The first step towards budgeting is breaking the set down into units, or elements. Sometimes the way that a scenic designer conceptualizes different pieces of a set is different than how it makes sense from a building perspective. Based on the initial scenic design, we determined that the set consisted of the following elements:

- Deck
- Main Platform
- Stairs to Main Platform
- Company Topper (header)
- Reveal Wall
- Platform Level Stair
- UGC Tower & Platform

- Public Amenity Steps & Exit Stairs
- Sewer Wall & Platform
- Pit Beams & Custom Pit Platforms
- Aesthetic pipes
- Escape Stairs
- 2 Split Drops
- Railings
- Foot Light Pipe

Additionally, Alivia's drafting package included some things thatwe decided were to be handled by props instead of us. We collaborated with Jack Briggs, who was the props manager, on the signs, the desk, and the lamp post.

Once we had defined each element based on Alivia's design, Nick and I divided the elements between us so that we would each be responsible for budgeting a few units. We then scheduled a meeting with Alivia to go through every detail of the drafting with her, to make sure that all of us were on the same page about what she wanted for each part of the set. For this, I like to create a document with all of my questions for each plate of the drafting package beforehand so that we can efficiently figure out the unknowns during the meeting.. These questions consisted of things that I was unsure of based solely on the drafting, inconsistencies between different sheets or between the sheets and the 3D Vectorworks model, potential safety or logistical concerns, and what might be our material choices . I like to thoroughly go through the entire drafting package, reading every note and looking at every drawing to make sure I am not missing anything. Below is the overall ground plan as an example, and then the excerpt of my document with questions. I have added an additional column to this table that summarizes the answers I received to those questions.

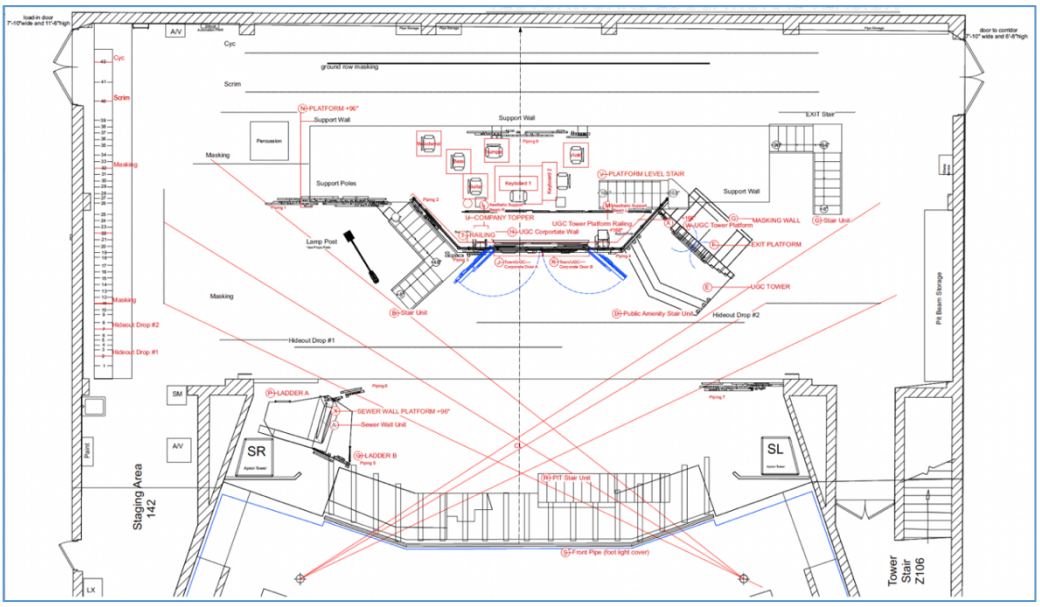


Figure 4: Alivia's original ground plan.

Plate	Notes/Questions	Answers
01 - GP	- Space between theatre plaster wall and sewer wall unit is less that 1'6" – very tight spot to navigate - Lamp post – TD or props? - Drafting package includes some signs but they are not shown here – are they going to be flown on a lineset, deadhung, etc or always there? - Only around 1'10" to 2'8" from back wall to cyc – is this the primary crossover? - Is there drafting for the ground row masking? - Placement of sewer wall means apron truss will not be able to fly in – problem with hang and focus for lights there	- This unit may get moved/redesigned based on this depending on budgeted cost. - We determined props will do this. - One sign is attached permanently to the set, other may need to fly. Both are also props. - Cyc may move to lineset 41 to accommodate this. - No – stock ground row is okay. - Re: this will have to get redesigned or shrunk down.

Table 3: Questions on design drafting sample

Once we had all our questions answered, it was time to start budgeting. I went through a similar process for each unit I worked on. From my experience working in the props department, there are two

main questions I was taught to ask about each prop, and I think it ends up being the same for scenic elements as well: what does it look like? And what does it have to do? The goal of what something should look like can affect the material choices, but what it has to do is really what comes into play when thinking about how structural something has to be. For example, a wall that stands on its own may be made differently if no one ever interacts with it compared to if several actors are supposed to lean against it or are pushed into it for part of the show. For each element, I looked very closely at Alivia's drafting, both the PDF plates and her 3D Vectorworks model, and considered what the visual and practical goals of each element were. From there, I started to select what I thought would be appropriate materials based on these needs, and considered what construction methods we would use so that I could get an estimate of how much material to buy. I did not fully draft things at this stage, though I did sometimes create rough sketches on paper or digitally to help estimate things like linear footage of lumber or steel, or how many sheets of plywood or Masonite might be needed. The shop has a compiled spreadsheet that is updated often of the costs of different materials that we tend to order a lot. For less common materials, I still sought out different vendors for quotes and price points. I started to estimate how much time it will take to build each element based on each stick of lumber or steel, and each sheet of plywood. For this, we tend to break down the build process into rough steps, such as measuring & cutting lumber, or gluing and screwing pieces together. We then add a generous time estimate of how many people are needed over how much time to accomplish the step. For the sake of budgeting, it is also worth considering how much time and how many people an element will take to be loaded in and eventually struck. I must admit, thoroughly considering the load-in time of everything ended up being a massive oversight on my part, and load-in took quite a bit longer than I budgeted during any pass of the process. Generally, as part of the budgeting process, we should consider taking advantage of the build weeks as much as possible since the load in process is very limited.

For many of the units, I also spoke extensively with Chris and Ashley about what each element would entail. I find it very helpful to talk through my ideas, and especially as they both have more experience with technical direction and construction than I do. I received a lot of insight and help from both of them. Nick and I touched base about his units to an extent, but I also trusted him to communicate with Chris and Ashley as needed to ensure accurate budgeting and so that he would get the full experience of budgeting several units.

While working through what goes into each element, Nick and I used an Excel spreadsheet to keep track of and calculate everything. I like to start a budgeting process by building my budgeting spreadsheet from scratch, so that I can be sure it is laid out in a way that makes sense to me and in a way that I think makes it easy to communicate with the production team. This spreadsheet contains, in order, the following sheets: cover sheet, labor overview, summary, and then individual pages for each scenic element as we decided. This spreadsheet could be found in the TD folder of the Microsoft Teams channel for the production, so that it would be easy to share at the budget meeting, easy for any other production departments to reference it if needed, and so that everyone on the TD team and the shop could access and update it as necessary.

At the first budget pass meeting, I presented the summary to the production team, and then talked a bit more in depth about the elements that were taking up the bulk of the budget. Below I will also just focus on interesting key elements.

SCENERY BUDGET ESTIMATE: FIRST PASS			
Last Update: 10/19			
URINETOWN			
Written by Mark Hollmann and Greg Kotis			
Director: David Kersner			
Scenic Designer: Alivia Cross			
Technical Director: Emily Simpson Assistant Technical Director: Nick Baror			
	Current Total	Alloted	Difference
Materials	**$11,630.50**	$ 6,000.00	**$(5,630.50)**
Build Hours	360.8	969	608.2
Load-in Hours	173.8	224	50.2
Strike Hours	68.2	64	-4.2

Table 4: 1st Budget Pass Cover Sheet

So, this started with showing the cover sheet of the spreadsheet, which shows a general overview of where we are landing with everything, shown in Table 4. As it is clear to see, we came in way over budget with this first pass, by almost double our allotted $6,000. Looking back at this after the fact, I think it is also clear to see that we did not account for labor or load-in nearly as thoroughly as was realistic. Regardless, the next main thing to discuss is the summary shown in Table 5. This shows which elements were drawing the most resources and serves as a launching-off point to be able to discuss things more in depth with the production team. This page also included a pie chart, as seen in Figure 5, that graphically illustrated where the money was going. In addition to the costs of each unit, a 5% contingency is added to each element to account for potential hardware costs, and an overall 10% contingency is added to the total budget that accounts for any unexpected changes, or anything that we did not fully account for correctly.

URINETOWN				
Scenery Budget Summary				
Director: David Kersner	Scenic Designer: Alivia Cross			
TD: Emily Simpson	Scenic Budget Estimate: 1st Pass			
ATDs: Nick Baror & Hailey Sanchez	Last Update: 10/19			
Scenic Element	**Materials**	**Build**	**Load-In**	**Strike**
Deck	$ 585.65	4	10	0
Main Platform	$ 1,880.95	45	26	10
Stairs to Main Platform	$ 461.87	15	4	2
Company Topper (Header)	$ 702.53	22	8	2
Reveal Wall	$ 550.37	24	2	2
Platform Level Stair	$ 288.48	9	5	4
UGC Tower & Platform	$ 682.95	34	34	11
Public Amenity Steps & exit stairs	$ 356.82	12	4	2
Sewer Wall & Platform	$ 514.90	28	20	4
Pit Beams & Custom Pit Plats	$ 1,002.96	18	15	6
Aesthetic Pipes	$ 559.46	72	16	8
Escape Stairs	$ -	2	2	1
2 split drops	$ 1,701.00	0	4	4
Railings	$ 1,141.76	35	6	4
Foot Light Pipe	$ 143.48	8	2	2
SUBTOTALS	10573.19	328	158	62
10% Contingency	1057.32	32.8	15.8	6.2
Hours Total		360.8	173.8	68.2
Materials Total	11630.50			

Table 5: 1st Budget Pass Summary Sheet

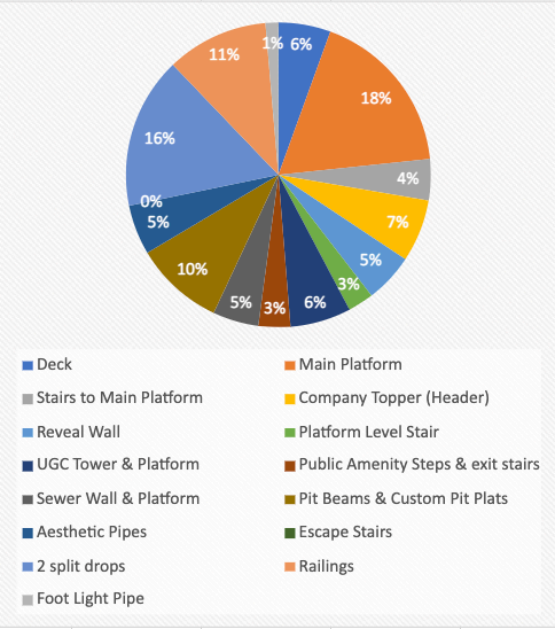


Figure 5: 1st Budget Pass Summary Pie Chart

Looking at this summary and the pie chart, it is now quick to see that there are four things that are really consuming the majority of the budget: the main platform, the pit beams & platforms, the 2 split drops, and all the railings combined. In Table 4, it is also interesting to note that, while not a very expensive element, the aesthetic pipes were slated to take up more time than anything else. At this point, we can look at bit more at these to see what really makes these elements so costly.

Main Platform

The original main platform that Alivia designed was 48’ wide, 8-14’ deep, and 8’ high. This giant platform would cut through the whole length of the stage, providing a large visual separation between the classes of the characters; the wealthy ‘haves’ whose scenes would take place mostly above, and the poor ‘have-nots’ in the show, whose scenes would mostly take place on the stage level. Since most of the platform was 8 feet deep and rectilinear, Alivia hoped that stock 4’x8’ platforms could be used for most of it, thus lowering costs. ‘Stock’ scenery refers to common scenic building blocks in standard shapes or sizes that a theatre keeps so that they can be used repeatedly in many shows. Included in the platform plate as well were callouts of where support walls and legs could be, in red in Figure 6 below. Ideally, one would mostly be able to see through much of the lower part of the platform so that the cyclorama, or cyc, was visible behind it. This platform would be an acting space, be were the musicians were located, and have a few stairways leading up to it.

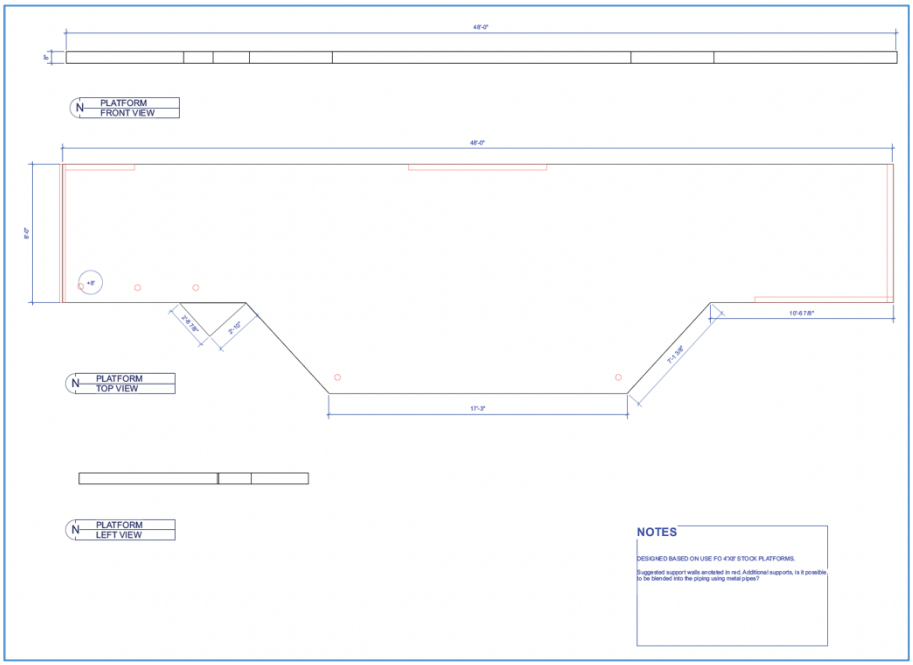


Figure 6: Original main platform design

The immediate issue that we ran into as soon as Chris and I started looking at the technical design for this platform, was the support structure. Unfortunately, the support walls and legs drawn in by Alivia would not be enough to support the long spans between them. They also do not provide much lateral stability, which would be needed for such a large and tall platform. While using stock platforms certainly helped lower costs of this whole unit, the bulk of the materials or costs for a unit like this came from the support structure. The stock platforms would need to be supported by large beams, and more legs or stud walls. No matter what, we knew some design changes would be necessary; possibly letting go of the goal of being able to see through underneath the platform to the cyclorama. For the sake of budgeting, we planned to build it at face value, with the minimum amount of additional support walls and legs added. While talking through it with Chris, he sketched out a potential beam and leg layout, seen in Figure 7 in the lower right side of the page. This page also features some of the calculations we did while figuring out the amount of material needed for everything.

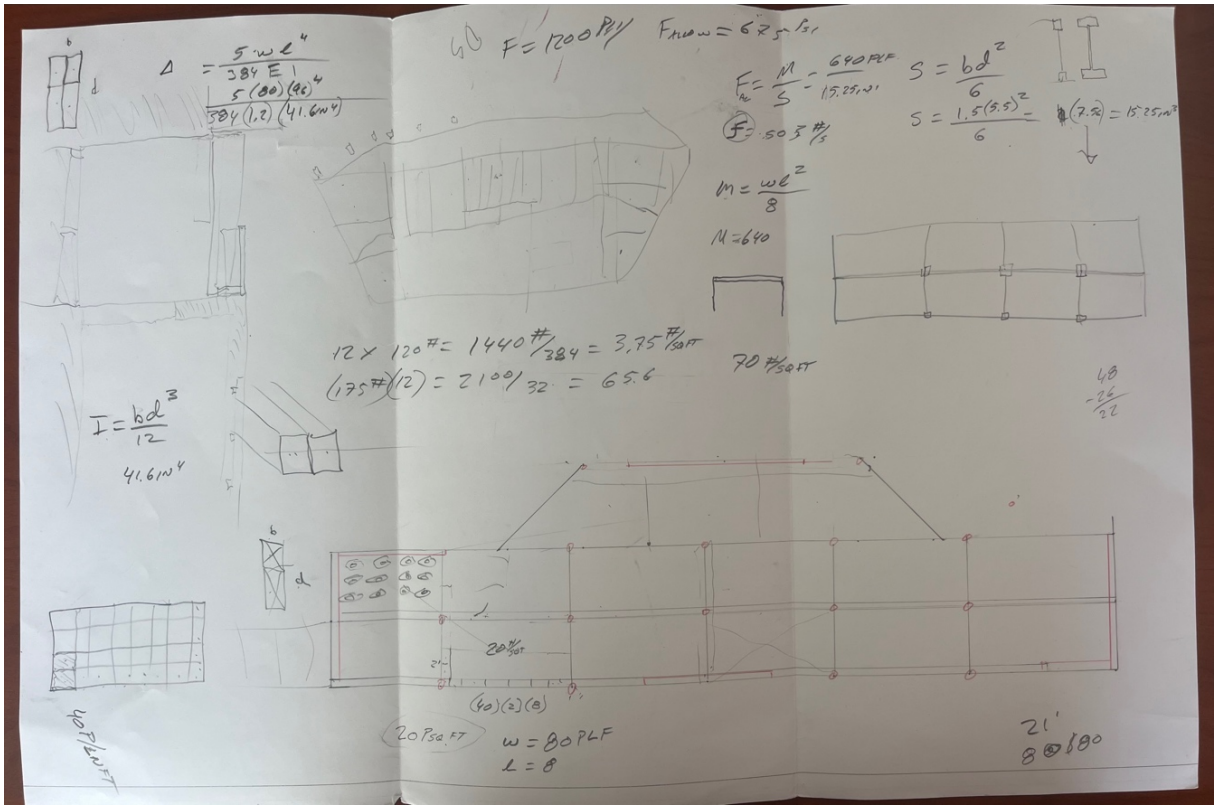


Figure 7: Original main platform budgeting calculations and planning - drawn by Chris Russo

Based off this, we determined the necessary support materials. We accounted for an additional structural wall at the front of the bump-out of the platform, and 1-1/2” pipes as legs located at the corners of each stock platform. Then, spanning between the legs and stud walls would be beams each made out of two 2x6 pieces of lumber laminated together. This was the minimum beam size that we determined to be strong enough to support the weight load we calculated. There would likely still need to be some additional angled bracing or lateral support between some of the pipe legs, but this was nonetheless accurate enough for a rough structural design plan of the unit. Combining all of the materials and elements of this build, the total budgeted cost for the main platform came to $1,880, nearly a third of the entire budget.

Pit Beams and Platforms

Alivia shared with us during her design process that she had found some production photos of a past production of *Sweet Charity*, produced by Penn State School of Theatre in 2005. In that production, pictured in Figure 8, the apron of the stage had been dropped down to make use of the orchestra pit, though instead of having the full pit open, there were partially exposed beams installed running up stage/down stage and supporting custom platforming to create a new stage apron.

Figure 8: Show photo from *Sweet Charity*, 2005. Orchestra pit beams seen bottom right in image.

Alivia and David were both interested in this use of the orchestra pit from an aesthetic and performer entrance standpoint, as opposed to putting the orchestra down there. They preferred having the band visible and up on the main platform instead. The idea of a murky and unknown underground world for characters to emerge from felt fitting to the industrial aesthetic of the show. Based on the possibility of recreating the pit configuration used in *Sweet Charity,* Alivia's goal for this space was as follows:

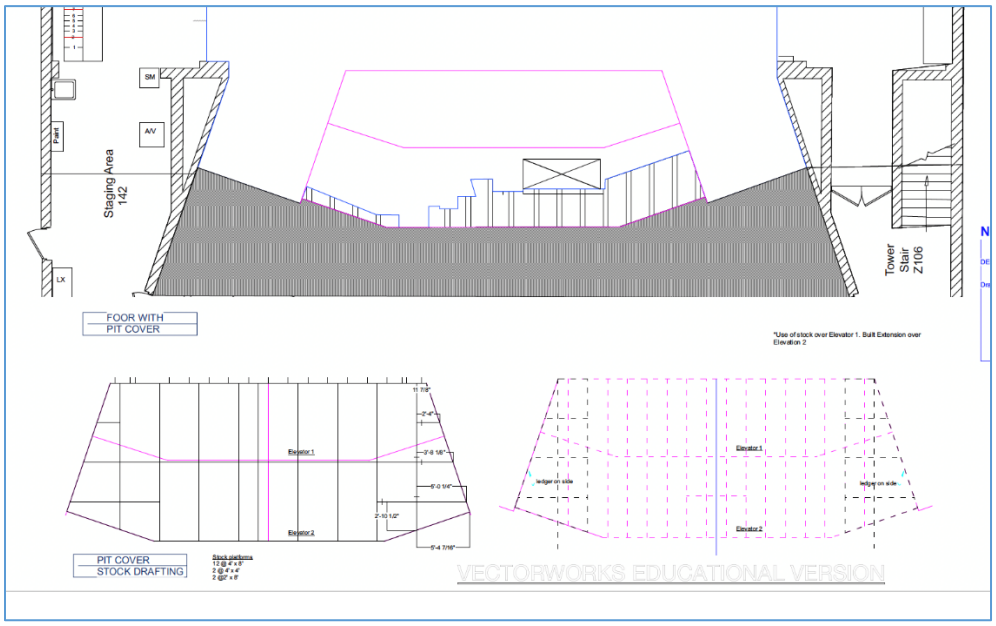


Figure 9: Pit Beam Layout Top View

Alivia hoped that by covering the open parts of the pit with the beams, it would not be necessary to put our stock plexiglass pit barrier up at the downstage side of the apron. This is the typical safety measure that usually goes up when the pit is dropped, which creates a fall hazard to the audience. These barriers are barely visible in the *Sweet Charity* picture in Figure 8. However, since the beams would be on two-foot centers, there would still be significant open space that would present a fall hazard. A compromise we landed on to avoid using these barriers was to cover the exposed beams with chain link fencing. This would provide enough of a layer to stop a fall, and would fit with the general aesthetics of the show.

While budgeting the pit platforms and beams, I accounted for the material needed to build the custom platforms making up the abnormal shape of the pit, buying rolls of chain link, buying new 2x10s as the beams, and additional 2x4 lumber for stud walls that would support the beams. This was a lot of material, which made the cost for this section quite high. Part of the infrastructure that made this beam orientation possible still existed and so we did not need to account for it, though I do wish I had investigated this set-

up and the load in process of all of this much more thoroughly back at this stage. The stock infrastructure was not well documented, which led to some confusion and inefficient use of labor.

Split Drops

The 'Split Drops' refers to the two half-stage drops on staggered linesets in the ground plan that were intended to come in for the scenes taking place in the hideout. Linesets are independent counterweighted rigging systems that allow scenery and lighting to be suspended above the stage. The split drops would be painted drops, likely made of painted muslin, and Alivia and David wanted them to come in on different linesets so that performers could enter through them. This rendering in Figure 10 from Alivia shows what the space would look like when these drops were flown in with the counterweight rigging system:

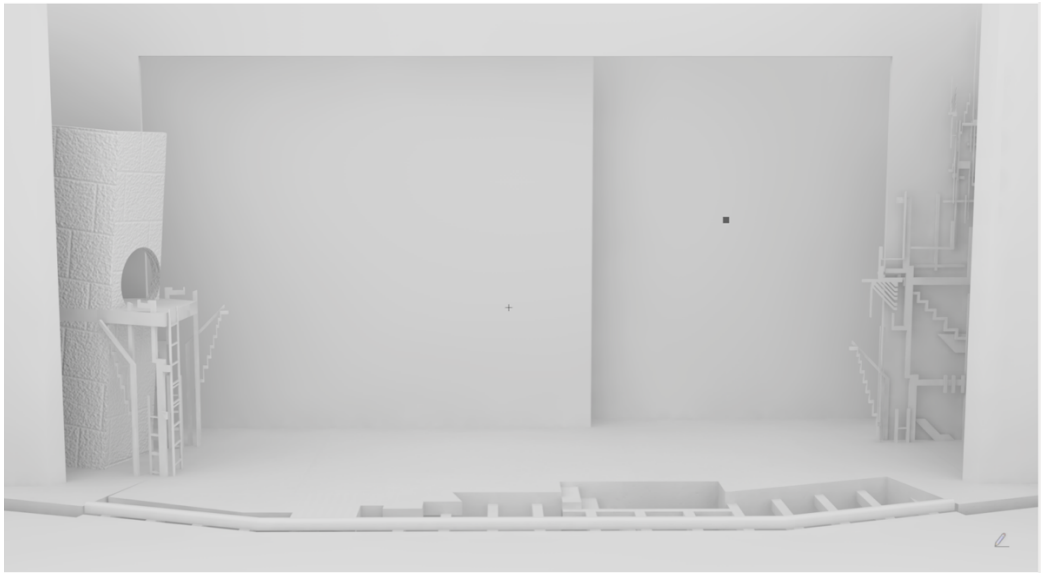


Figure 10: Original Hideout drop elevation

As can be seen above, these drops would be quite large, masking the bulk of the set so that just the sewer wall on stage right, some of the aesthetic pipe masking on stage left, and the custom beams and platforms making up the pit and apron would be visible. This was an effective plan for creating a new

location but was also quite expensive. Though we do have one or two plain muslin drops in stock that could be painted, they are not ones that we were willing to cut into the two separate drops. Therefore, we would need to purchase new ones. Any fabric scenic elements on stage must be flame resistant, so Ashley got a quote from Rose Brand, a theatrical fabrics company, for what the cost of two flame resistant medium weight muslin drops in the necessary size would be. Our stage is quite large, so each one of the drops was quoted at $750. The combined cost, plus shipping came to be around $1,720, which was nearly a third of our total budget.

Railings

The design of *Urinetown* features several platforms and staircases, and therefore, several railings were required for safety. Though there were a few different types of railings included in this design, we lumped them altogether for budgeting purposes. Some of them are illustrated below in Figure 11.

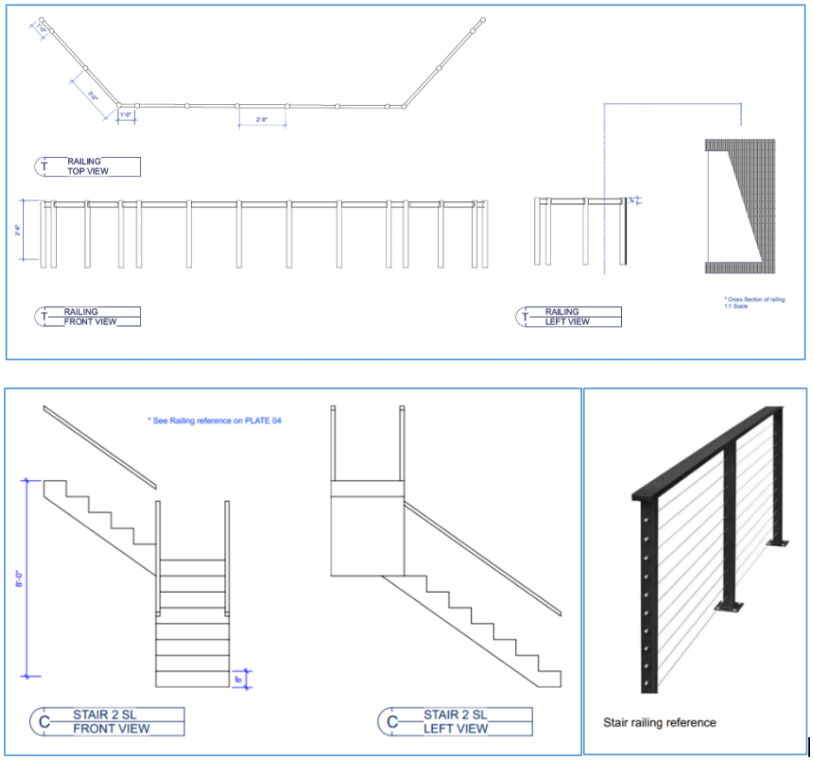


Figure 11: Samples of original railing designs and references

Even though many of the railings had different shapes and designs, all of them would be built with a steel base structure for strength and stability purposes. The high cost of steel is what instantly raised the cost for these as a unit. Based on the length and design of each of the railings in Alivia's drafting, as well as estimates on what additional railings would need to be added for safety purposes, such as at the back edge of the main platform, we determined that we would need about 480 linear feet of the 1x1 16-ga. steel box tube. This type of steel comes in 24' sticks, so we would therefore need 20 of them. Each stick of steel cost $42.50 at the time of costing, putting the total for just the steel for the railings at $850. Adding in the additional materials that would allow us to achieve the differing looks for each railing type put us over $1000 just for all the railings. Plus, anything involving steel also means that labor time would be high, as all of the cutting, prep, and welding involved is quite time consuming.

Aesthetic pipes

The ‘aesthetic pipes’ were an interesting feature of the original scenic design meant only to be set dressing. The intention for them was to add visual interest, build the grimy and industrial setting, and to play into the overt theatricality of the design concept. Alivia also had a strong interest in using repurposed materials to piece together a lot of these irregular shapes and structures. While this is a great idea in terms of recycling material and in theoretically lowering material costs for this unit, it actually means that this element would be more sculptural and therefore more time consuming. We would not have enough money to buy the sheet goods and new materials needed for every part of this set dressing, so we budgeted it as if we would source found materials for most of them but still budgeted some purchased materials.

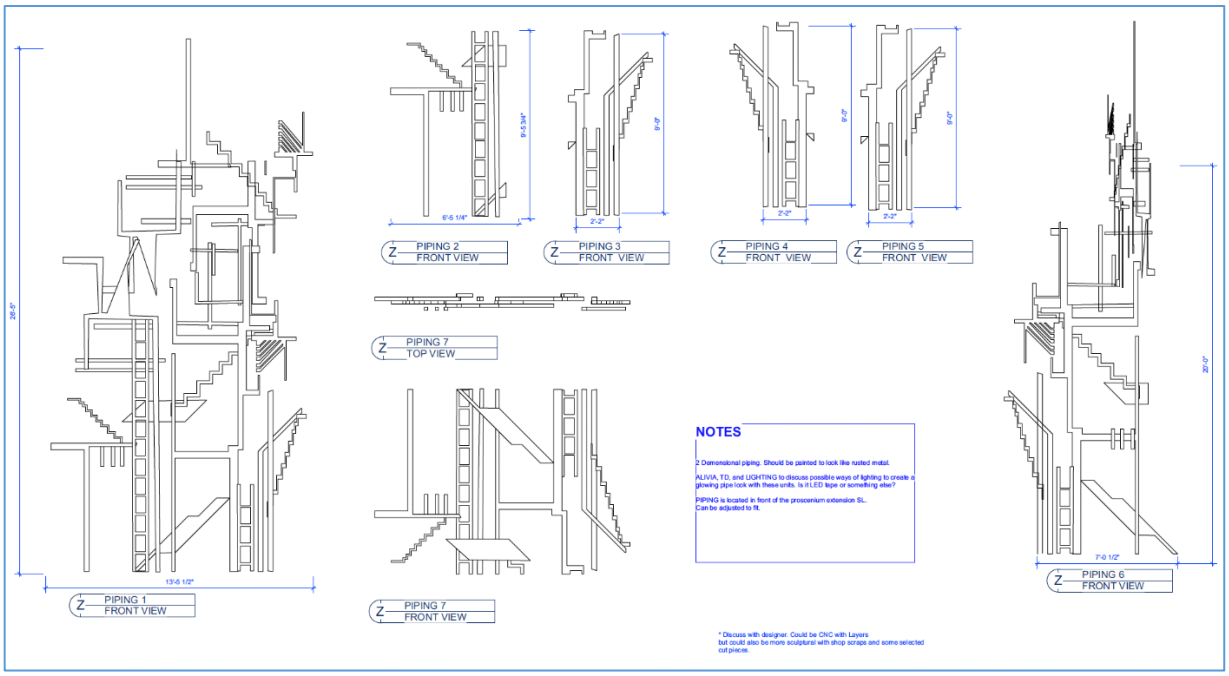


Figure 12: Aesthetic Pipes - Alivia's original scenic design, plate 8 excerpt.

We considered how much time it would take to search the shop for usable scrap and pieces that resembled the desired shapes in Alivia’s drafting, or to change the design of some other elements to try to create scraps or offcuts in better shapes for this. Then, when it would come to assembling these, we would

not be able to have typical build drawings since the compiled materials may not match exactly the pieces in Alivia's design. So, she would likely have to be present for the assembly process and have an active role in dictating how each part overlaps and combines in a way that still fits her vision. We accounted for labor very generously for these units just in case, thinking it would take perhaps 2 people up to 12 hours to find and cut the scrap metal and wood pieces, and then up to 4 people over another 12 hours to actually assemble all of them. There was also an initial interest in having some of the pipes making up these elements glow, likely from LED tape on the back of some pieces. This would add in a whole other process of working with the electrician and lighting designer on the show to add the effect and make this possible.

First Budget Pass Conclusion

Concluding the first budget pass, it was clear that unfortunately, this initial scenic design was going to take some major revisions to become possible. The majority of the other departments came in either at or under budget, so while in some shows there is the opportunity to shuffle funds interdepartmentally, we did not really have that option. For us and a few other departments, it meant that we were to move forward with more rounds of budgeting. Nick and I came prepared to this first budget presentation meeting with a list of ideas of possible scenic revisions that would help shave down costs, and discussed options with Alivia and David as to the best way to move forward and work towards redesigning things to be under budget.

Second Budget Pass

As we moved into the second week of budgeting, Alivia ended up opting to majorly rework some of her main design concepts, resulting in us having a nearly entirely new set to work with. This meant we

essentially re-started the budgeting process. We received the new design package on October 21st, and had until the 26th to re-budget it all. Pictured below in Figure 13 is a rendering of the new design.

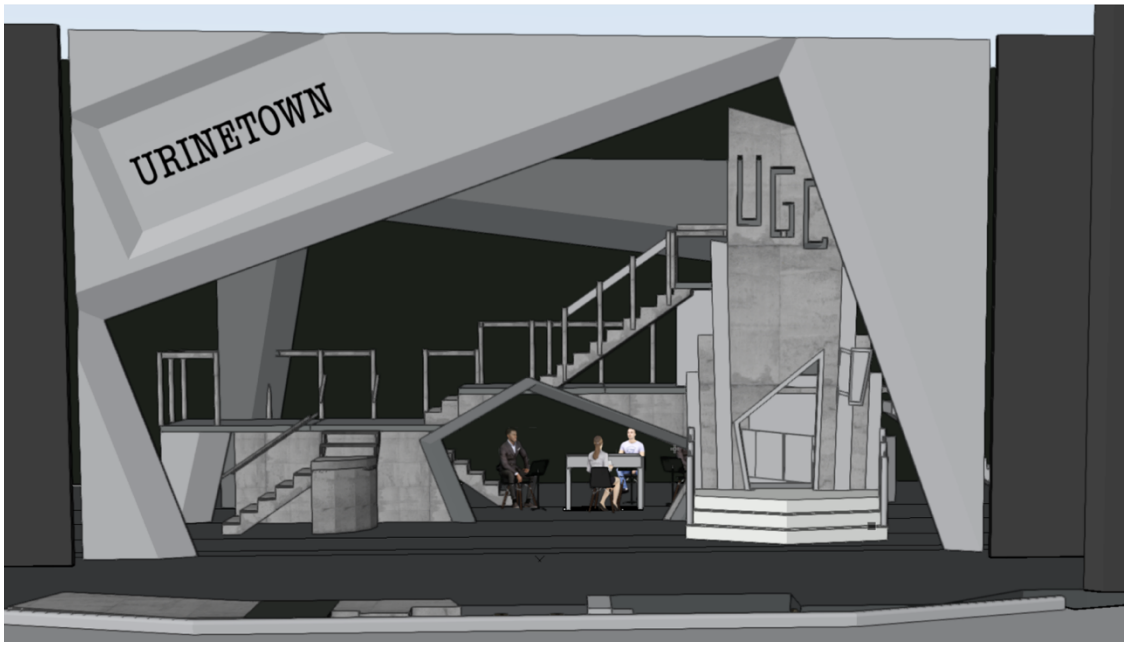


Figure 13: 2nd budget pass design rendering.

As seen in the rendering, some things stayed the same between the original design and this one – like the pit beams, the UGC tower and its upper platform, the general idea of a large main platform, and some of the stairs remain similar. There are some pretty clear differences as well. Once again, Nick and I started by dividing the set into units. Here is the comparison of the scenic element breakdown of this version of the design vs the original:

1st Budget Pass Scenic Units	2nd Budget Pass Scenic Units
• Deck • Main Platform • Stairs to Main Platform	• Deck • Main Platform • Stairs to Main Platform

• *Company Topper (header)* • *Reveal Wall* • Platform Level Stair • UGC Tower & Platform • Public Amenity Steps • Sewer Wall • Pit Beams & Custom Pit Platforms • *Aesthetic Pipes* • Escape Stairs • *2 Split Drops* • Railings • *Foot Light Pipe*	• *Door* • *Portals* • Platform Level Stair • UGC Tower & Platform • Public Amenity Steps • Sewer Wall • Pit Beams & Custom Pit Platforms • *Platform Aesthetic Wall (Band Foam)* • Escape Stairs • Railings • *Hideout Drop*

Table 6: 1st & 2nd budget pass scenic unit comparison (differences italicized)

In the second version of the design, several elements were completely cut, specifically, the company header, the reveal wall, the aesthetic pipes, the foot light pipe, and the 2 split drops. A few units carried over between iterations, but with some major redesigns. The main platform was one of the major differences. It had started as one giant, full stage width, 8’ tall platform with the band on top. In this new version, the main platform was made up of two parts. The stage right side was 6’ tall and had a solid wall at the downstage side, meaning that we would be able to put as much structure as we needed underneath. The stage left side was at 8 feet tall, but also almost 16’ wide, with no legs supporting it in the middle. The band was intended to sit in that space. The sewer wall also changed dramatically. The new design of it was significantly smaller, and was located at the exit of the stage right vomitory, or vom, past the apron of the stage, instead of onstage in front of the tormentor towers. The hideout drop, which was initially going to be the two split drops, transformed into a uniquely shaped frame with a two piece drop inside of

it, which could fly in and out on one lineset. A few elements, instead of just being modified, were completely new. The biggest of these were the two show portals, changing the shape of the frame of the stage. One was to be located right in the proscenium arch of the stage, meaning that it would be 40 feet x 24 feet, and the other, also quite large, located far upstage behind most of the rest of the set. A door was also added on top of the 6 foot section of the platform, and some different aesthetic dimensionality and embellishments were added to various parts of the set in place of the aesthetic pipe masking from the first design.

After a day or two to look over the new design more, we had another meeting with Alivia to go over questions we had in process similar to what we had done durin the first budget pass. After getting our questions clarified, we were able to complete the second round of the budget. The overall budget numbers that we presented to the production team at the next budget meeting are shown below in Table 7.

SCENERY BUDGET ESTIMATE: SECOND PASS			
Last Update: 10/26			
URINETOWN			
Written by Mark Hollmann and Greg Kotis			
Director: David Kersner			
Scenic Designer: Alivia Cross			
Technical Director: Emily Simpson Assistant Technical Director: Nick Baror			
	Current Total	Alloted	Difference
Materials	**$ 8,629.35**	$ 6,000.00	**$(2,629.35)**
Build Hours	294.8	969	674.2
Load-in Hours	164.45	224	59.55
Strike Hours	64.9	64	-0.9

Table 7: 2nd budget pass cover sheet

While we were still overbudget, this version of the set was a lot closer. We were around $2,600 over our target budget of $6,000, as opposed to more than $5,000 over. This version of the design was

starting to feel within the realm of possibility. Below are the Element Summary and Pie Chart in Table 8 and Figure 14 showing how the scenery was broken down

URINETOWN				
Scenery Budget Summary				
Director: David Kersner	Scenic Designer: Alivia Cross			
TD: Emily Simpson	Scenic Budget Estimate: 1st Pass			
ATD: Nick Baror	Last Update: 10/26			
Scenic Element	**Materials**	**Build**	**Load-In**	**Strike**
Deck	$ 418.32	4	10	0
Main Platform	$ 899.12	24	32	10
Stairs to Main Platform	$ 416.07	14	4	2
Door	$ 115.55	4	2	1
Portals	$ 1,435.88	54	24	12
Platform Level Stair	$ 313.24	11	2	1
UGC Tower & Platform	$ 882.59	34	34	11
Public Amenity Steps & exit stairs	$ 356.82	12	4	2
Sewer Wall	$ 238.09	8	8.5	6
Pit Beams & Custom Pit Plats	$ 867.72	18	15	6
Platform Aesthetic Support Wall	$ 534.86	22	4	2
Escape Stairs	$ 36.28	15	4	2
Railings	$ 637.12	48	6	4
~~Foot Light Pipe~~	~~$ -~~	~~0~~	~~0~~	~~0~~
Hideout drop	$ 693.22	0	0	0
SUBTOTALS	7844.87	268	149.5	59
10% Contingency	784.49	26.8	14.95	5.9
Hours Total		294.8	164.45	64.9
Materials Total	8629.35			

Table 8: 2nd budget pass summary sheet

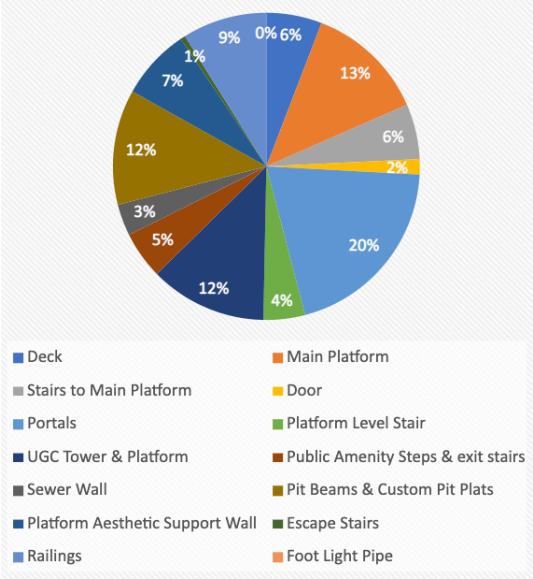


Figure 14: 2nd budget pass summary pie chart

Looking at the unit breakdown this time around, the distribution of costs was looking a bit different than it did the first time around. Now, one of the new elements, the two large show portals, were taking the largest amount of the budget. The main platform, UGC Tower and platform, and the pit beams and custom platforms were the next most expensive. The added costs of the UGC tower and platform this time around were more so due to realizing that we did not account for some parts of it in the first pass. The pit, while the design stayed largely the same, was able to drop in price due to us realizing that we had quite a few 2x10 beams still in stock from an earlier show in the season that we would be able to use instead of buying new. Similarly with the first budget pass, I will go a bit more in depth to the technical design of some of these most expensive elements to explain what drove their cost, specifically the portals and the new main platform, as they are what had changed the most.

Portals

Both irregularly shaped, angular show portals new to this iteration of the design were very large units. Their design purpose was to create a new, visually interesting frame to frame in the large Playhouse proscenium. Due to their size, my initial thought was to construct both of them out of steel framing.. The upstage portal was additionally supposed to have some dimensionality along the angles, which could be achieved with lauan facing. This would make the whole thing quite heavy, but since it would be attached to a lineset and tied into the deck, this did not seem to be an issue. It was the proscenium portal, pictured in Figure 15, that proved to be the larger design challenge. This was because, according to Alivia's design, the portal should be located within the theatre's architectural proscenium arch. Because the proscenium arch is covered in plaster, there is no real way to attach something to any part of it. The next best thing would be to have it hanging directly upstage of the true proscenium opening. This is not possible either, because the fire curtain cannot be obstructed. The fire curtain is lowered at the end of each night, and any other time the theatre is not in use. It automatically deploys when the fire alarms go off,

therefore having any scenery cross the plaster line underneath the fire curtain is against the fire code. We also couldn't rig this portal from lineset number 1, as our grand drape curtain lives there fulltime and cannot be removed. This means we had to get a bit creative.

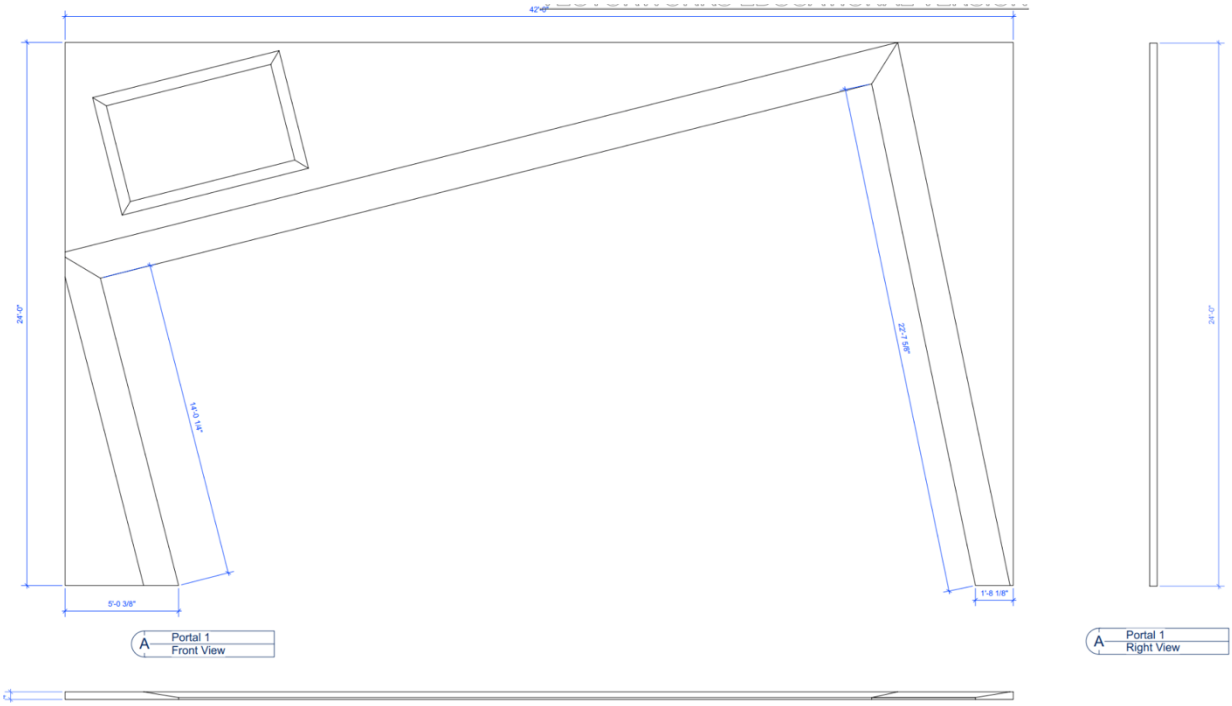


Figure 15: Proscenium Portal Original Design

In order to still have the portal be as close to the proscenium as possible, we decided to dead hang it from the grid. This would have to be done with four motored chain hoists and a 60' batten truss, all of which we luckily had in stock. This combination would essentially let us make our own stronger batten wherever we wanted, in this case, just upstage of lineset number 1. Though the portal itself is 42' wide, the 60' batten truss was still especially useful. Since it was going to be hanging close to a foot upstage of the true plaster line, there was a possible concern of stage lights spilling through around the sides of the portal. The solution we came up with for this would be to hang a masking leg to either side of the framing, and this worked out great with the extra space on either side of the batten truss.

We had a good plan for installing the portal, so now knowing it would be possible we could move back to thinking about materials. Most flats that we build are faced with lauan, to give them a solid front side and relatively smooth painting surface. Lauan plywood sheets are not too expensive, but with how many we would need for this portal, and how expensive everything else already was, I thought it may be better to consider alternatives. What I came up with was to do muslin faced framing instead. Muslin, which is just a thin, cheap cotton fabric, can still be painted, and happens to be much lighter in weight and cheaper than any plywood sheet good. It can be stretched taught, wrapped around to the back of framing, and then stapled down to create a smooth and seamless look. This seemed like the best option across the board. The only thing it would complicate would be the load-in process. Ideally, the only breaks in the muslin would be in line with the natural breaks between the sides and the top of the portal. However, due to the scale of these pieces, both the stage left part and the top part of the portal would need to be broken down into several smaller frames that could fit in the truck and then be bolted together in the actual theatre. But this then meant that the muslin couldn't be applied until the frames were there in the space and bolted together. Paints would then also have to paint them in the theatre space. We had to look at the calendar and talk with the paints team to make sure this would be possible, but once this was worked out, we still decided to move forward with muslin wrapped steel framing dead hung from the grid as the plan for this portal.

	Materials Budget	Unit	Quantity	Unit Price	Total Cost
1	1x1 16GA Box Tube 24ft	stick	20	42.5	$ 850.00
2	Heavyweight Muslin 110″ wide	yard	20	12.73	$ 254.60
3	1/8″ Luaun 4x8 sheet	sheet	10	18.79	$ 187.90
4	shipping		1	75	$ 75.00
5					$ -
6					$ -
7					$ -
8					$ -
			Hardware Contingency	5%	$ 68.38
				TOTAL	$1,435.88

Table 9: 2nd Budget Pass Portals Materials Budget

With a solid plan in place – two portals both made of steel, with the proscenium one faced in muslin and the US one faced in lauan, all the pieces were in place to actually budget these units. Table 9 shows the cost breakdown for the portal materials. The sheer scale of both portals meant that it would take around 20 sticks of 24-foot, 1 inch by 1 inch, 16 gauge box tube, which just adds up in cost. The total materials estimate for both portals together was $1,435.88.

Main Platform Redesign

The new design of the main platform can best be seen in the rendering in Figure 13. Quickly, we were able to determine that this larger unit could really be thought more effectively as two separate sections,stage left and stage right (SL and SR). The stage right section had 6 feet of elevation and could be built solidly. The stage left section, which became known as the bridge or band platform, had an elevation of 8 feet, and was completely open underneath to allow space for the musicians.

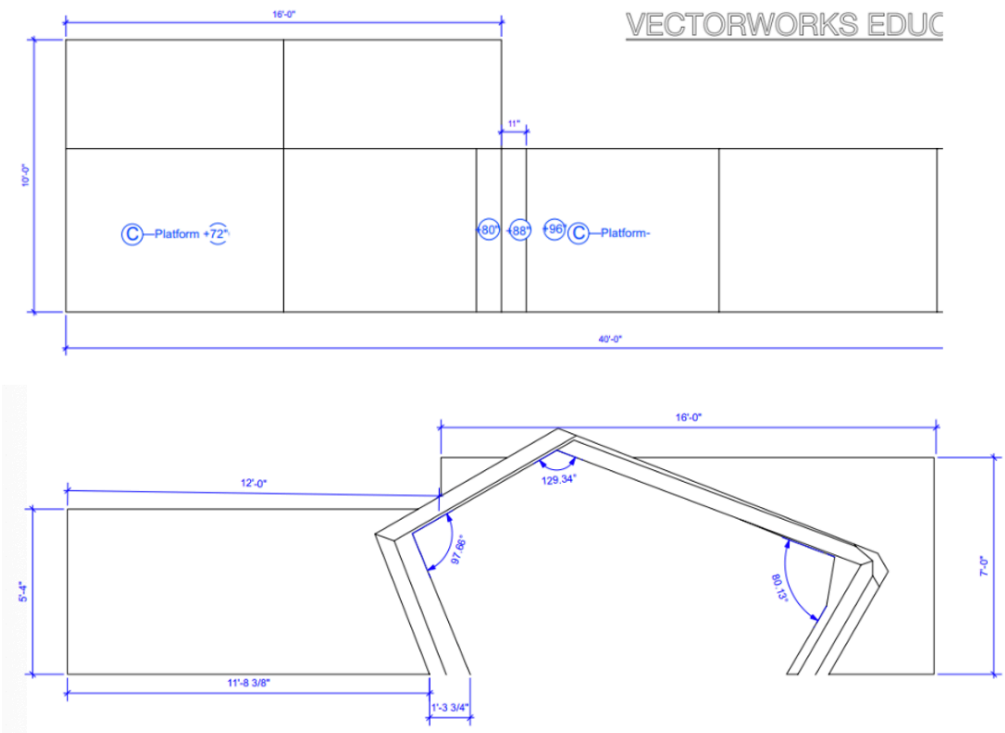


Figure 16: Main Platform 2nd Budget Pass Design Top & Front Views

When considering the SR platform, there was no need to be able to see through the structure of this platform, as the front of it was a solid wall, so we could build up as much structure under it as needed. For the top of the structure, I decided to puzzle it together from various stock platforms. To achieve the 6 foot height, I went with several stud walls. These would be simple to build and, with some oriented perpendicularly and faced with lauan, could provide the entire unit with lateral stability. Materials wise, all the 2x4 lumber for the stud walls would be expensive, but provided a stable and strong structure. At this point we also thought that there would be some tap-dancing happening up on this level, so a strong unit was essential.

The SL platform section proved to be more of a challenge. In order for the band to actually be set up underneath this section with no visible legs, the nearly 16’ long platform would have to be mostly unsupported. After speaking with Chris about the logistics of this, we determined that with the right beam structure, this would be possible, but it would take some structural math to be able to make it work. We

did not know exactly how many performers would be up on this part of the platform at a time, so we decided to account for a load capacity of about 20lbs per square foot, which is pretty typical for theatrical applications. The final structure would ultimately work for 40 lbs per square foot. With help from Chris, I went through structural calculations to determine how many beams and what size of beam would be necessary to be able to support the correct load capacity, and to meet bending, deflection, and strain criteria. From these calculations, I came up with two potential technical designs that would work.

The first option would be to use four stock 3x8 platforms as the top, and then to bridge the span with three 12-foot-long beams, the outer two made of two 2x8 boards laminated together, and the inner beam three laminated 2x8 boards. The SR side would be supported by a stud wall on top of the SR section of the platform, or on separate legs with a perpendicular beam. The SL side would be supported by stud walls, and have the last few feet of the SL side of the platform be supported by an additional stud wall, instead of on the beams. Two disadvantages of this method were that laminating the beams would be pretty time consuming, and it would make the front side profile of the platform quite thick, close to a foot of depth. This did not align with Alivia's design , because her rendering did not really show the platform having much depth at all, especially through the top point of the 'band portal' depth on the front of the platform. I wanted to come up with an option that could be a bit thinner and less time-consuming. Chris recommended that I look into TJI joists (Truss Joist-I), which are engineered wood I-beams, typically used in home construction. These come in a variety of sizes, and due to their different shape and structural composition compared to typical lumber, are rated for significantly higher loads. Based on the structural properties of these joists, I determined that we could achieve the platform with four 16' long 9.5x2.5 joists on 2' centers, and sheets of ¾" plywood, instead of entire platforms, as the top flooring. While this would still make the total side depth around 10.25", this was at least a bit thinner than the alternative. The ready-to-go nature of the joists would also make them easier and quicker to work with; and they were undoubtedly going to be stronger than the laminated 2x8 boards, and therefore the design we chose to go

with. Overall, a pricey unit, but certainly a very interesting one. Below in Table 10 is the cost breakdown for the platform sections.

	Materials Budget	Unit	Quantity	Unit Price	Total Cost
1	Stock 4x8 Platforms	per	4	$ -	$ -
2	stock 2x8 platforms	per	2	$ -	$ -
3	9.5x2.5x16' joists	stick	4	$ 49.78	$ 199.12
4	2x4x16	stick	40	$ 7.88	$ 315.20
5	3/4" 4x8" CDX plywood	sheet	6	$ 39.29	$ 235.74
6	1/8" Masonite 4x8	sheet	8	$ 13.28	$ 106.24
7					$ -
8					$ -
9					$ -
10					$ -
11					
		Hardware Contingency		5%	$ 42.82
				TOTAL	$ 899.115

Table 10: 2nd Budget Pass Materials Overview

Third Budget Pass

Shortly after the presentation of the second budget pass, we received some good news from production manager Ronda Craig. Originally, when distributing funds for each department for the show, she had set aside $1,500 for the purchase of a crash pad, as part of the *Urinetown* script involves someone jumping off a tall building. In many productions of the show, this is achieved by a performer jumping off a high platform and falling out of sight onto a crash pad. However, Alivia and David decided that this scene would be tackled in a different way, and we therefore did not need to spend that money. As scenery was still the most over budget, Ronda redistributed the $1,500 to scenery, putting our new budget target at $7,500, significantly closer to the $8,629 that we had landed at after the last budget pass.

In lieu undergoing another scenic redesign and budget meeting process, we simply discussed with Alivia some of our proposed changes that would change the design in relatively minor ways, but still help

to reduce costs. Once we came to some agreements, we were finally close enough to the target for the budget, and therefore the design was approved. Table 11 shows our final budget summary.

URINETOWN				
Scenery Budget Summary				
Director: David Kersner	Scenic Designer: Alivia Cross			
TD: Emily Simpson	Scenic Budget Estimate: 1st Pass			
ATD: Nick Baror	Last Update: 10/30			
Scenic Element	**Materials**	**Build**	**Load-In**	**Strike**
Deck	$ 209.16	4	10	0
Main Platform	$ 914.61	24	32	10
Stairs to Main Platform	$ 285.90	14	4	2
Door	$ 115.55	4	2	1
Portals	$ 1,362.17	54	24	12
Platform Level Stair	$ -	11	2	1
UGC Tower & Platform	$ 889.52	34	34	11
Public Amenity Steps & exit stairs	$ 359.40	12	4	2
Sewer Wall	$ 235.27	8	8.5	6
Pit Beams & Custom Pit Plats	$ 655.01	18	15	6
Platform Aesthetic Support Wall	$ 534.86	22	4	2
Escape Stairs	$ 32.29	15	4	2
Railings	$ 593.08	48	6	4
Hideout drop	$ 693.22	0	0	0
SUBTOTALS	6880.05	268	149.5	59
10% Contingency	688.01	26.8	14.95	5.9
Hours Total		294.8	164.45	64.9
Materials Total	7568.06			

Table 11: 3rd budget pass summary sheet

Every sheet of the spreadsheet for this third and final budget pass can be found in Appendix B.

You will notice that the final materials total is still $68 over budget. However, as $688 of our projected costs were taken up by just contingency, Ronda agreed to still approve this version of the budget. There were four main changes that were made from the second pass in order to make this possible. Firstly, we re-clarified how far the painted floor deck would extend. It ended up being a smaller space than we had been accounting for, so we were able to reduce the number of sheets of Masonite significantly. Second, we found that we had some chain-link and some expanded steel in stock that could be used to cover the exposed beams of the pit instead of purchasing new chain-link for this. Third, the upstage portal, which was originally supposed to have some dimensionality, was changed to be a flat unit

with the depth detail simply painted on. We also decided to build this portal out of wood instead of out of steel, which would allow it to be built quicker and cheaper. Finally, instead of building a new set of stairs for the platform level stair, we agreed to use and modify a ships ladder that we already had in stock. There were a few other smaller changes that helped chip away at costs as well.

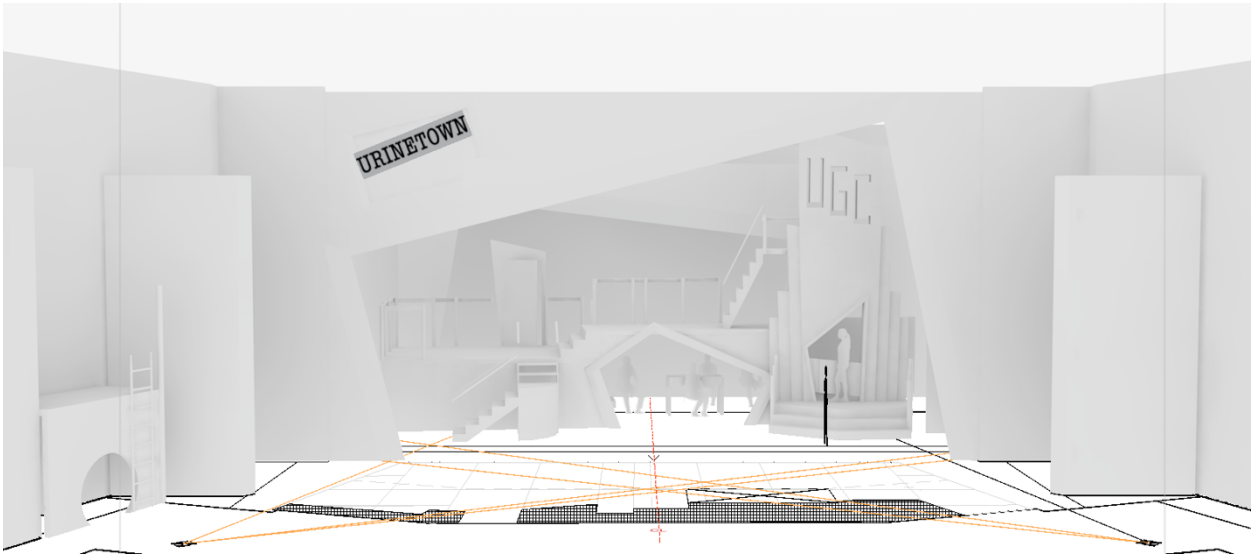


Figure 17: Final design front elevation white model rendering

When everything was decided, Alivia then had about another week or so to make those edits and send us the revised design and the final drafting package. Shown above in Figure 17 is one of her renderings of the final design. The full final design drafting can be found in Appendix A. While waiting for her to finish the final drafting, I added an additional page to the budget spreadsheet, compiling all the materials across all the units, so that Ashley could start ordering materials. This also served as a good way for her to communicate with me about what had been ordered and to keep track of how much money we had spent. Ashely kept track of the expenditures in our shared spreadsheet as she purchased things. Table 12 below is the first part of this table, though the full expanded version that also breaks down materials per scenic element is also located at the end of appendix B.

Material	Unit	Total Quanity (All Elements)	Budgeted Unit Price	Budgeted Total Cost	Actual Unit Price	Actual Total Cost	Ordered?
1/8" Masonite 4x8	sheet	31	$13.28	$ 411.68	$ 13.28	$ 411.68	AH 11-1
9.5x2.5"x16' joists	stick	4	$49.78	$ 199.12	$ 47.29	$ 189.16	AH 11-1
2x4x16	stick	14	$5.98	$ 83.72	$ 5.98	$ 83.72	AH 11-6
3/4" 4x8 CDX plywood	sheet	16	$39.29	$ 628.64	$ 39.29	$ 628.64	AH 11-6
3' stair treads	unit	3	$15.00	$ 45.00	$ 14.23	$ 42.69	AH 11-1
1/4" Lauan	sheet	40	$18.79	$ 751.60	$ 18.79	$ 751.60	AH 11-6
1x1x24' 16GA steel	stick	29	$42.50	$ 1,232.50	$ 25.40	$ 736.60	AH 11-3
1x12x12	stick	10	$29.97	$ 299.70	$ 29.97	$ 299.70	AH 11-6
Medium weight muslin 110" wide	yard	42	$12.73	$ 534.66	$ 12.30	$ 516.60	AH 11-1
1x6x12	stick	20	$13.49	$ 269.80	$ 13.49	$ 269.80	AH 11-6
1-1/2" Sch 40 Pipe	stick	1	$74.00	$ 74.00	$ 64.60	$ 64.60	AH 11-3
1/2" 4x8 Sande Ply	sheet	4	$46.00	$ 184.00	$ 45.55	$ 182.20	AH 11-3
54" Duvetyn 8oz Black FR	yard	2	$8.78	$ 17.56	$ 8.78	$ 17.56	AH 11-1
2" Green foam 4x8	sheet	7	$53.90	$ 377.30	$ 57.46	$ 402.22	AH 11-1
4"dia. carpet tubes	stick	20	$7.35	$ 147.00		$ -	CR 11-6
2x10x8	stick	4	$9.20	$ 36.80	$ 9.20	$ 36.80	AH 11-6
2x4x8	stick	108	$4.09	$ 441.72	$ 4.09	$ 441.72	AH 11-6
2x4x12	stick	126	$5.98	$ 753.48	$ 5.98	$ 753.48	AH 11-6
TOTAL				$ 6,488.28		$5,828.77	
TOTAL SHIPPING						$ 210.00	
						$6,038.77	
				- this total does not include budgeted shipping, 5% hardware contingency or overall 10% contingency			

Table 12: 3rd budget pass materials summary

Chapter 3

Drafting and Build

The next phase of the production process involves a large amount of work drafting and planning the build process. While the scenic designer drafts the whole set, these draftings are suitable to communicate the look and function of the pieces, although are less suitable to communicate how to build them. The TD team must redraft each element down to every piece of material and create layouts and

drawing plates of everything. Once plotted, these drawings should communicate as much information on how to build the scenic elements as possible for the carpenters. While the materials and construction method of a scenic unit are considered during the budgeting phase to figure out the material costs and labor hours, it is while drafting an element that things must be engineered in more detail. This is done with the computer aided design software AutoCAD. In AutoCAD, things are first drawn in 'model space' and then are brought over to 'paper space' layouts that can then be dimensioned and annotated. These layouts are printed and are what the carpenters use in the shop to build things from.

We had eight total weeks of build, with about a week or two before that to get a jump on drafting. I went into those two weeks with the intention to get as much drafting completed as possible before the official start of build. While I did get some done ahead of time, there were definitely sometimes throughout build where we did not have enough drafting plates ready for the carpenters, causing us to fall a bit behind at times. This is something I will consider in the future to ensure I dedicate enough time to these steps.

Every piece of the set was built in-house at Penn State's scene shop, primarily by our three full time carpenters, with additional labor from various students who do shop hours. Instead of typical shop hours spent building, I spent a few hours most days during the build phase working in the shop office. I was able to continue to work on drafting, collaborate with Nick, touch base with Alivia when needed, or get advice from Chris, Ashley, and the experienced carpenters on how something should be built. Additionally, being present while things were being built was helpful for if any of the carpenters needed clarification on any of the plates I drafted. Overall, it is difficult to be part of the build process as a TD because of all the organization requirements with drafing, calendaring, and communicating with other departments.

Just as Nick and I had split up the scenic elements for the budgeting phase, we also divided up the drafting work. The way we divided up the work ended up not being the same as how we broke up the

work for budgeting, which led to miscommunications and differences in the budgeted vs actual materials. Initially, we decided on dividing the elements as shown below in Table 13.

Emily	Nick	TBD – whoever has time
- Ground plan/overall layouts - Proscenium Portal - Main Platform & Band Bridge - UGC Tower & Platform - Public Amenity Steps - Pit Platforms & Studwalls	- Sewer Wall - US Portal - Stairs to main platform - Doorway - Maso Deck Layout	- Hideout Drop - Band portal foam - Railings

Table 13: Initial Drafting Breakdown

We split things up this way for a variety of reasons. Much of it was based off of the initial build calendar that we created. The calendar was based on prioritizing what needed to be done first, how long things would take, who would be available to build them, and how long things would take to be painted. However, despite our best planning, the build calendar changed constantly and there were many unexpected setbacks. Nick and I both got sick at some point in the process, each of us had other responsibilities and often other shows happening at the same time, we wanted to take personal time during winter break, some scenic units changed in capacity, and there were various other setbacks. The division of work ended up not be exactly as we planned. I did eventually realized that I was overwhelmed with the amount of work that needed to be done. Luckily, Chris and Ashley both stepped in when needed and really helped with several elements. Below, Table 14 shows more accurately what was drafted by whom:

Emily	Nick	Ashley	Chris
- Ground plan	- Sewer Wall	- Maso deck layout	- Railings

- Proscenium portal - Main Platform - UGC Tower & Platform - Public Amenity Steps - Pit Platforms & Studwalls - Rough hideout fabric plan	- US Portal - Stairs to main platform - Doorway - Mid platform stairs	- Sewer wall ladders - Hideout drop - Band portal foam & band portal flat - Tower Platform extra triangle support stud wall	- Assisted with main platform stairs - Assisted with pit platforms & stud walls

Table 14: Actual Drafting Breakdown

For the rest of this section, I will be going through my process for each of the different scenic elements that I was the one to primarily draft, as well as anything of note that came up during the build. I will include some excerpts of my drafting from both the model space and from completed plates. However, since the majority of the plates I created were on arch D size paper, which is 24x36 inches, full plates will not be included in this section. All of the final plates that I did draft will be included in Appendix C, though they are scaled down to fit on the 8-1/2x11 inch paper of this thesis. Appendix D will additionally contain early versions of some of my drafting, as well as some referenced plates that Nick, Chris, or Ashley created. I will not be going in depth on the technical design of the elements that I did not draft myself.

Proscenium Portal

The first scenic element that I decided to tackle when drafting was the proscenium portal. This was for several reasons, but mostly because it would be best for the build calendar for it to be done first. Metalwork is time consuming, and, as discussed in the second budget pass section, this unit has atypical

needs from a load-in and painting perspective. The building process for *Urinetown* would start in November, and I knew that we wanted the frames to all be built before the new year. Shortly after winter break, it would be transported to the theatre, faced in muslin, and painted there in the space. For all of those steps to happen, the portal would need to be drafted first.

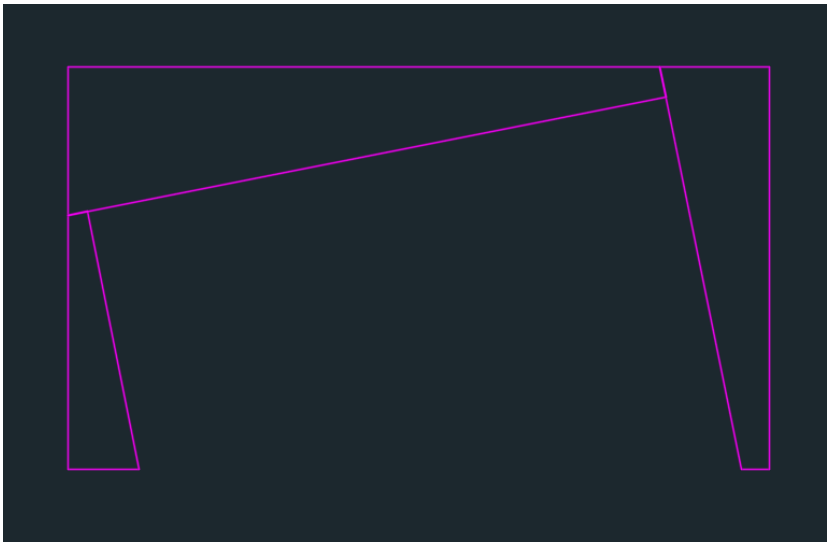


Figure 18: Proscenium Portal outline & division - AutoCAD model space

The first step for drafting this, as with any unit in my process, was to open up a version of Alivia's Vectorworks file into AutoCAD. From here, I copied her drawing of the proscenium portal and traced the overall shape myself so that I could begin to work on it. I then began to create a 2D drawing of what went into the framing of the portal. First, as seen in Figure 18, I divided the portal into three sections: the top, the SR side, and the SL side, and I named these unit A, B, & C respectively. While each of these units may be made up of smaller frames, these units were the divisions of what would be wrapped in the fabric facing described earlier.

The stage right side of the portal, at 15’-4” in height and around 4’-3” in width, is the smallest section of the portal. Since it was less than 16 feet in height and 7 feet in width, this side would be able to fit in our truck to be transported from the shop to theatre all in one piece. This made it the easiest to draft,

with the only tricky part being the angles. This piece essentially consisted just of the outside framing members, and cross-members every 4 feet.

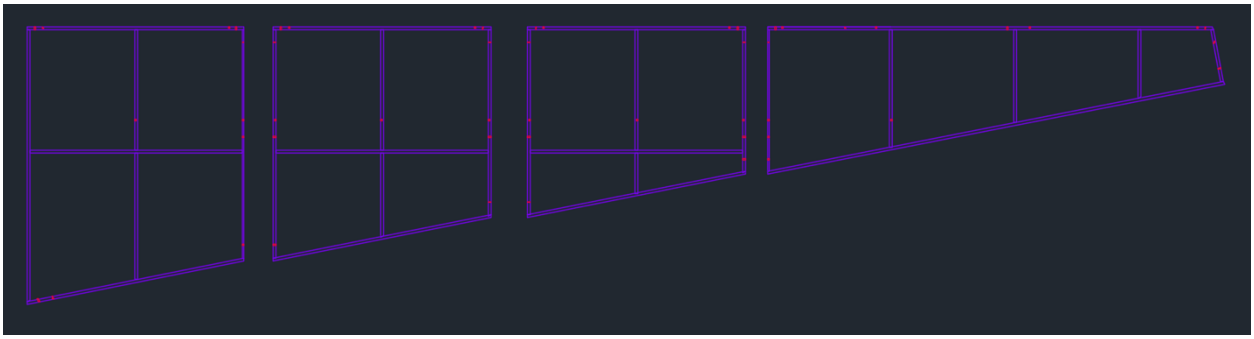


Figure 19: Proscenium Portal Unit A Framing - AutoCAD model space

The top section, on the other hand, would certainly not fit in the truck as one piece. At around 35 feet in width, I decided to break it into four sections. The first three of these I made consistently 7 feet in width. This made them narrow enough to fit in the truck and allowed me to make some of the framing members consistently spaced between them. Having partially repeatable sections that could re-use some jig blocks when welding would make the build for this unit faster. As seen in Figure 19 above, the top section and center crossmember are all the same across the top three frames. The fourth section of unit A is around 14 feet in length but since it is narrower, it would be able to fit in the truck. The vertical framing is on 4 foot centers.

The SL section of the frame is comparatively simple, and it could be made up of just two pieces, one exactly 16 feet and the other exactly 8 feet in height. These also both had consistent horizontal framing members at 4 foot intervals. Once all of the framing itself was drafted, there were a few other parts of the portal as a whole to consider. Firstly, with the plan to have each portion of it wrapped with muslin as a facing surface, there would need to be some material added to the back of the steel in order to be able to staple the fabric to it. For this, I added 7/8” wide strips of ½” plywood to the back of the perimeter of each entire unit of the portal. These could be attached with t-nails and could be mostly made of scrap plywood. Additionally, due to the sheer scale of the portal, it would prove difficult to keep it flat

across the 42 foot width when it was bolted together and hung up. There were going to be some weak points at the seams between individual frames as well. So, three additional lengths of 1x1 box tube steel would be added to the back of the top sections of the portal, bridging the seams between bolted connections. These could be attached with weld nuts imbedded in the frames at designated points. Finally, the last main consideration drafting-wise was bolt holes. There would be holes drilled for the weld nuts, for the bolts that would connect the various frames, and for the eye bolts along the very top of the portal, where it would be rigged from. I then added all the bolt holes into the drafting. Considering all this information, finding the most effective means of communicating these details proved difficult when plating.

When plating, the overall goal is to convey as much information as possible in a relatively concise and easy to understand way. Ideally, the carpenters can build the element in question without needing further clarification; all necessary information should be on the drawing. For the proscenium portal, I was initially unsure about how to convey things like the difference between different sizes of bolt holes, the location of the stiffeners, and the nail strip. The unconventional size of the overall portal also made me question the best way to lay everything out on a page. Chris assisted me in making the drawing plates as efficient as possible. The original versions of my plates for the portal can be found in Appendix D.

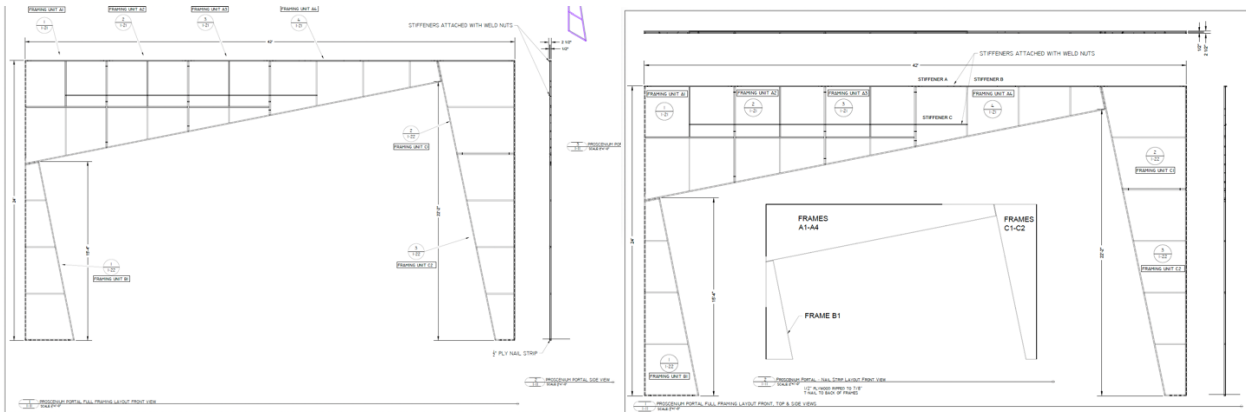


Figure 20: Excerpt of original vs revised proscenium portal plate 1-11

After consulting with Chris and Ashley, I reorganized the information to have a clearer overall layout on the page. I was able to maximize the space better by putting a smaller scale version of the nail strip layout in the whitespace created by the shape of the overall portal and adding the stiffener details to this sheet. I also clarified some of my notes on all of the sheets. The three final revised sheets for the portal are found in Appendix C.

Even with the revised versions of the plates, I found it extremely helpful to have a conversation with the carpenters who would be building the portal. This conversation allowed me to explain my thinking behind its construction, particularly in explaining the difference between the different bolt holes. There were also a few times during the build where the carpenters did come into the office to touch base about a particular dimension or to ensure that they were interpreting drawing details correctly. Overall, I think the final plates for this unit ended up being effective in communicating the build of the portal.

Much later in the process, I also drafted an additional portal-related plate in preparation for its load in detailing the rigging layout. This can also be found in appendix C with the rest of my final drafting.

Main Platform

The main platform unit was one of the first I had blocked out in model space, and was not refined and plated until much later in the process. It was important though to have a more exact plan for both sides of the platform, as it integrated closely with several of the other units, including the public amenity steps, UGC tower and platform, main platform steps, and the doorway.

The simpler section of the overall main platform was the stage right side. As described in the budgeting section earlier, the SR section of the unit was going to be entirely stud walls and stock platforms. Initially, I decided to achieve the structure with four stock 4x8 platforms, 2 stock 2x8 platforms, and then six custom built stud walls. The longest of these stud walls would be the most upstage

and the most downstage, at 16feet in length. The front and the sides of this stud wall block would be faced in lauan, for visual and lateral stability purposes, and the others would only require feature some diagonal cross bracing. A top view of my first version of this block can be seen below in Figure 21,the lumber of the stud walls can be seen in blue and the seams of the platforms are in orange.

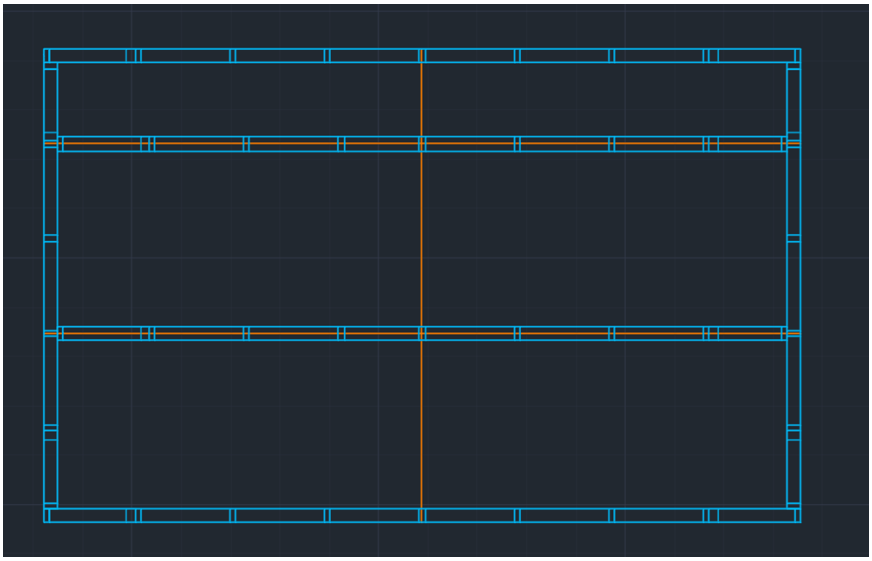


Figure 21: SR Platform top view - first version, model space

However, a few things about this original plan would change before plating and building. Firstly, after some conversations with Chris and with lead carpenter John, I split the horizontally running stud walls into two separate walls. This way none of the stud walls would be more than 8 feet in length. In my initial thought process, 16-foot walls would be fine, as it would mean fewer separate units to build, and they would technically fit into the truck. After talking with them though, it was obvious that this would make them too heavy, gangly, and awkward to move. Luckily, this was an easy change.

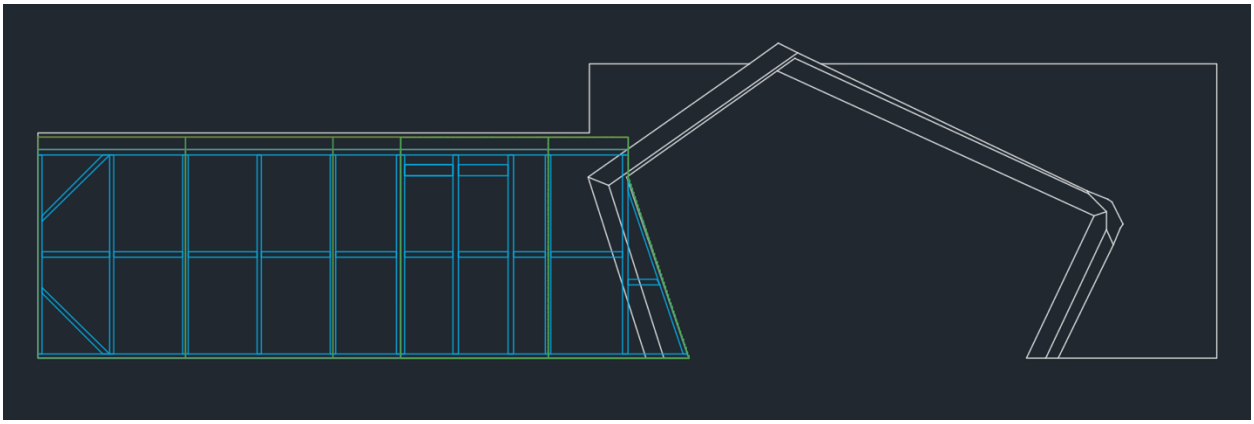


Figure 22: Front View of SR Platform Front Studwalls

The second main change was with the downstage most section. In Alivia's design, the entire front of both sides of the main platform were designated as an 'aesthetic wall', with the SR section being a solid painted wall and the SL side having dimensional foam around the band in a sort of abstract pentagonal shape. Instead of having this entire wall be its own piece, I incorporated the lower angle side of this in with the front structural stud walls of the SR platform. This made the front two a bit different than some of the others, but I think it still ended up being a better way to build this wall. These stud walls overlaid with outline of the entire wall can be seen above in Figure 22. Later in the process, Ashley ended up jumping in with drafting the oddly shaped custom flat as well as the angular foam that made up the rest of band portal shape.

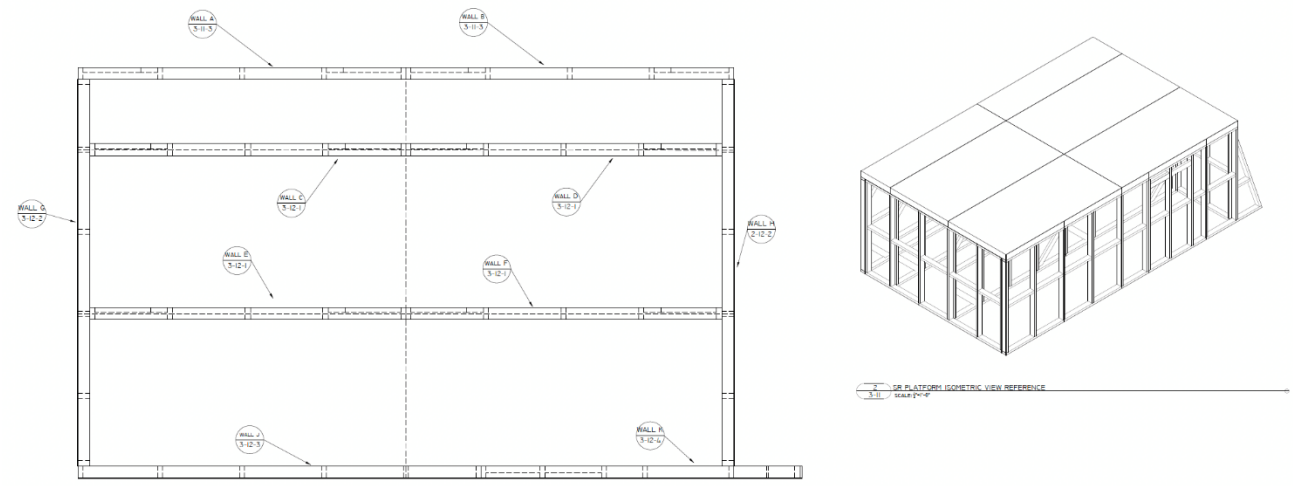


Figure 23: Revised SR Platform Top View & Isometric View – plate 3-11 excerpt

These changes are reflected in Figure 23 above. While the front and back walls capped the side walls, I did not account for the lauan on the side walls to extend and cap the edges of the front/back walls. This led to a bit of a problem when aligning the walls during load-in – I will touch on this more during the load-in section.

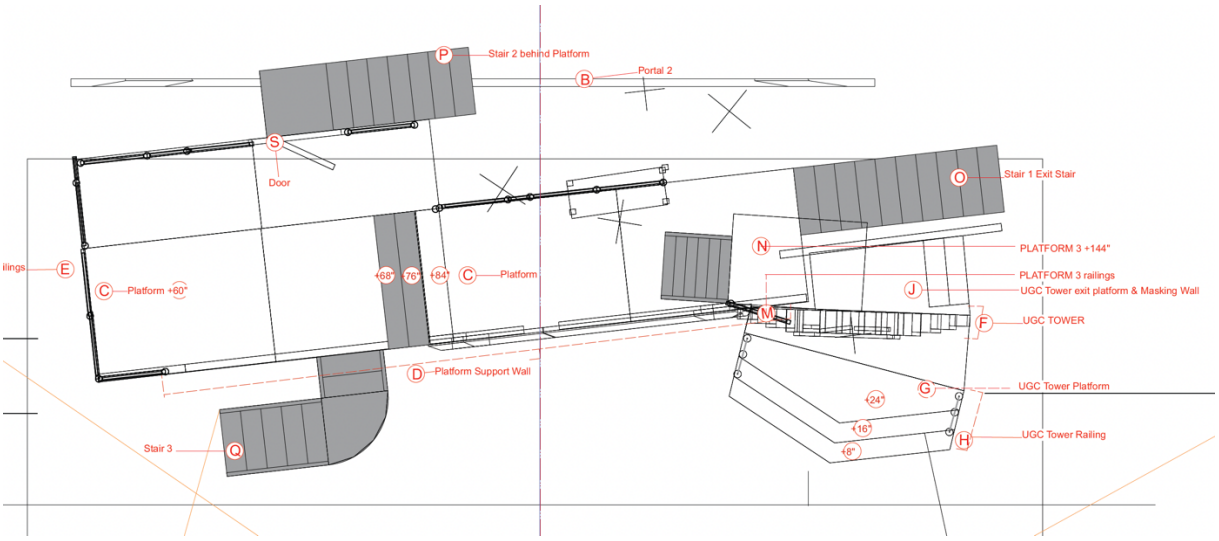


Figure 24: Final Scenic Design Ground plan Excerpt

The stage left, bridge section of the main platform was a bit more complicated to think through, as it overlaps more directly with the UGC Tower Platform and Public Amenity Steps. As seen above in

Figure 24, the way that Alivia had drafted the interaction between the elements all overlapped quite a bit with many different angles and was generally complicated to design around. I decide to alter some parts of the main platform and the overlapping elements in a way that would not be seen by the audience but would clean up the build and load-in process.

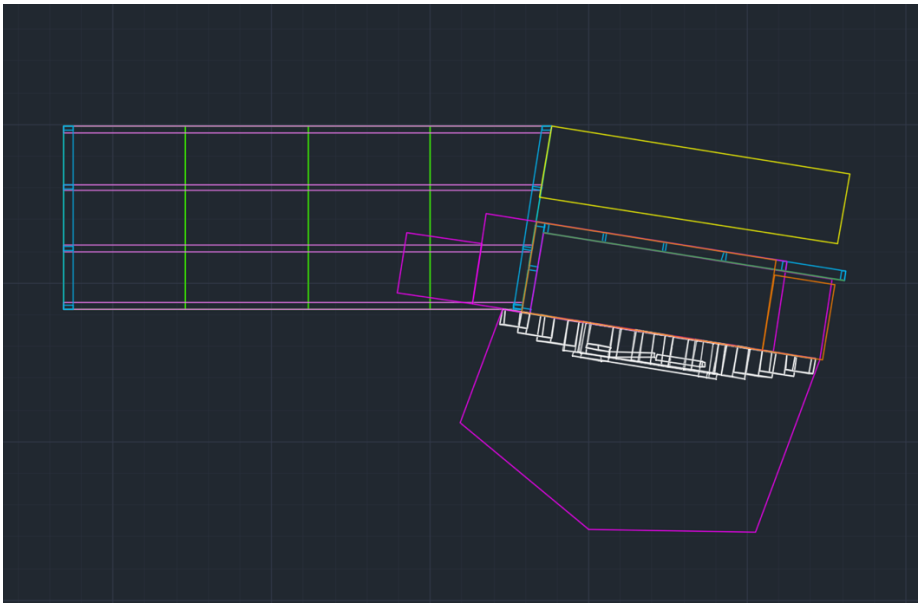


Figure 25: Main Platform Technical Design Changes

The main difference was the angle that I decided to add to the offstage side of the platform. The angle would be unseen by the audience, as it was behind the band portal and the UGC Tower, but would eliminate some of the angled intersections, particularly of the masking wall behind the UGC tower. By making that wall parallel to the tower itself, it would be able to not just be aesthetic but also serve as a support wall to the UGC Tower Platform.

In the drawing in Figure 25, the beam and plywood layout originally described in the 2nd budget pass section can also be seen. The one thing that was complicated a bit by angling the side of the platform was the addition of the stud wall that would now have to be angled as well with studs placed correctly to catch the weight of the joist beams, now also needing to be cut at an angle.

In terms of how the bridge section all interacts with the SR side of the platform, there was a bit of an overlap built in. This was how it appeared in Alivia's design of the space, but it also proved functional, as it made it so the bridge could sit on a short stud wall sitting on the SR platform. An early version of the top view of the whole main platform unified with portions of the public amenity steps and escape stairs can be seen below in Figure 26.

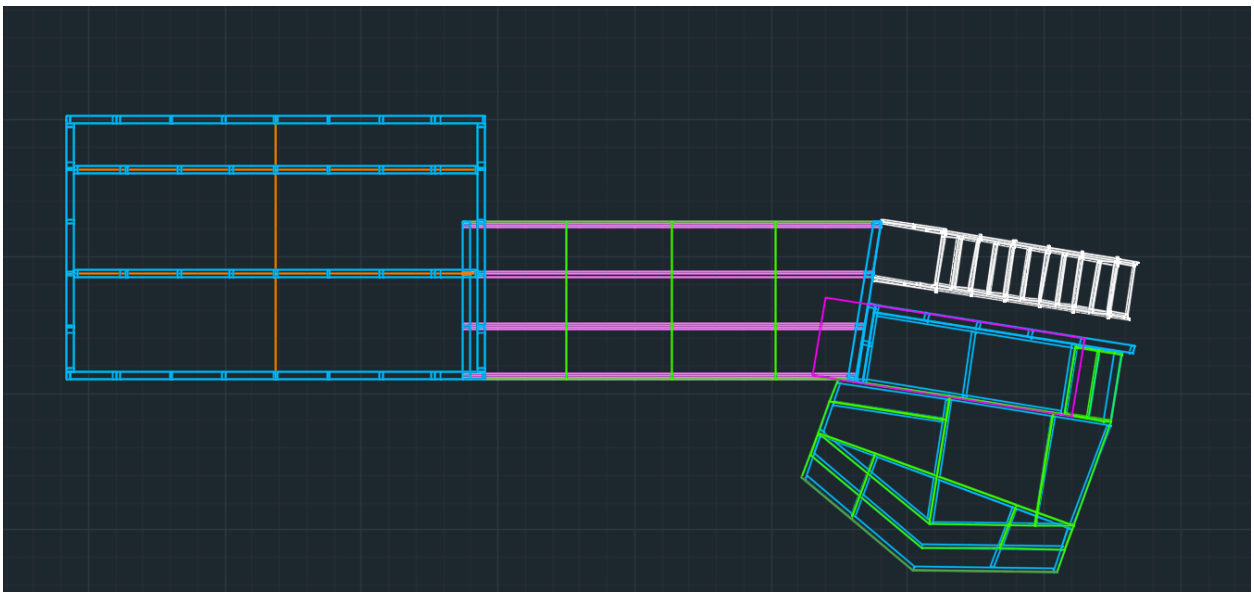


Figure 26: Full Main Platform Model space Drafting

The band bridge section of the main platform was challenging to design, and like the SR platform, I had drafted it in model space well before it was sent to be built by the shop. I ended up not really plating the bridge and the two stud walls supporting either side of the bridge section at all. Rather, when there was a lull during build and the carpenters had caught up to where Nick and I had drafted through, they ended up opening the model space of my AutoCAD file and getting build details from that, instead of a formal build drawing plate. I definitely should have plated it all sooner so they did not have to do it this way, but luckily they were able to still successfully build the bridge section in question.

Figure 27: Bridge Platform During Build - being painted by Anna Lustig

Public Amenity Steps

Having at least some rough drafting of the bridge section of the main platform proved to be important to have worked out prior to starting the public amenity steps. As described earlier, I slightly changed the shapes of several of the non-visible elements of the scenery around the stage left section so that everything would interact a bit cleaner. One of those things that I had changed slightly was the escape steps behind the public amenity steps. The UGC tower was slated to sit on top of this unit, so there was a divide from the on-stage part of the steps to the offstage section that was really only an escape route, making these changes alright.

Overall, these steps were relatively simple from a technical design standpoint, though they still took me longer to draft than I would have liked due to small mistakes I kept making while working on them. The first main decision to make with these was whether to build them like a typical staircase, or to build them like stacked platforms. Due to the somewhat irregular pointed shape, I ended up making the different levels as separate platforms, as they would make the technical design process a bit simpler and would make the steps a bit stronger. By designing them in this way, I could have the lower two steps made of platforms that extend underneath the steps above each, removing some of the tricky angles from the upstage side of each. I additionally ended up splitting the top visible level of the steps into two separate platforms as its large size would make it difficult to move.

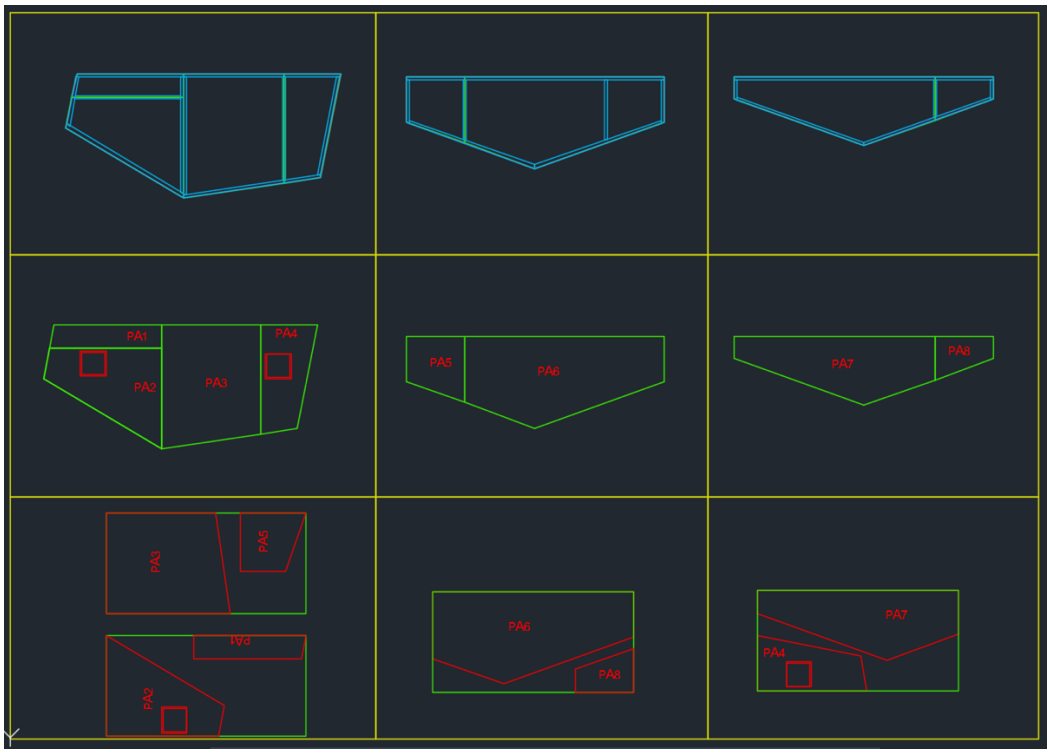


Figure 28: Public Amenity Steps in Model space - Framing, Lids, CNC Sheets

Once I had the overall shape of the steps and the general building method figured out, I could start designing the individual platform. Luckily, from my experience as the technical director of Penn State's production of *Emilia* last fall, I had some experience with working on irregularly shaped

platforms. My process for these started by looking at the lids. I knew that the tops of the platforms would come from 4x8 sheets of ¾" plywood, so I start by looking at how irregular shapes are able to puzzle into plywood. The shape of the lids dictates the shape of the framing. We have a CNC automated routing machine in our shop that allows plywood to be cut into irregular shapes, so determining a layout of each CNC routed piece of plywood is additionally important in conserving and maximizing materials. Figure 28 shows the lid layouts on each sheet of plywood, as well as the framing that I designed around each lid for the three different levels of platforms.

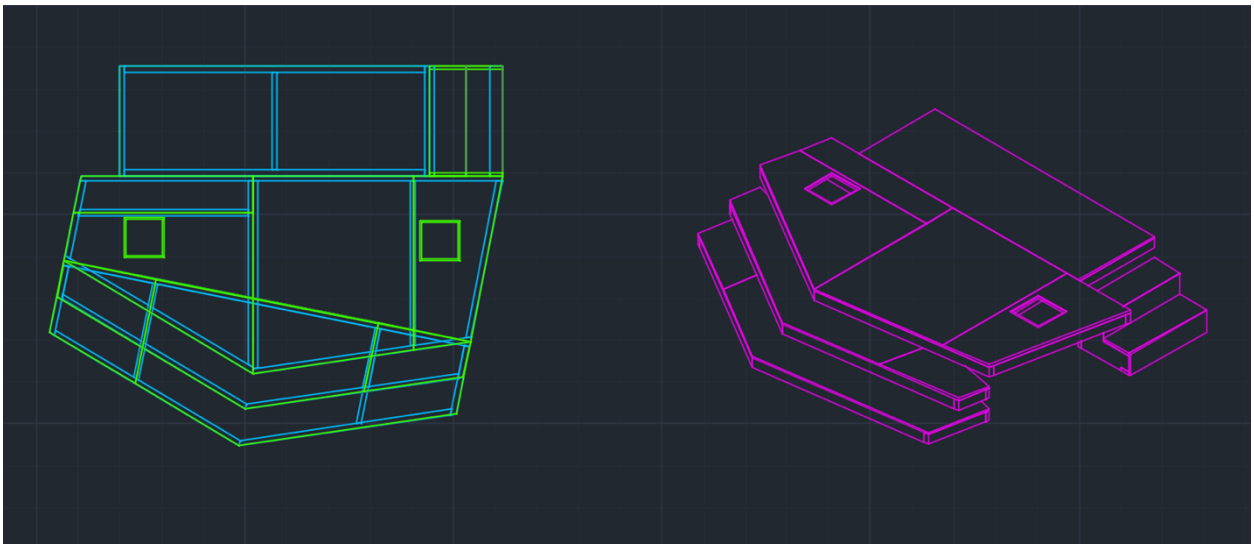


Figure 29: Public Amenity Steps Assembled Top View and Isometric View Modelspace

The non-visible sections of the steps, which would end up falling behind the structure of the UGC Tower, so it was a simple rectangular platform with a small step unit to exit. This rectangular platform purposefully does not extend to the edge of the SR side of the main public amenity steps, as that angle is right where this unit butts against the bridge platform and its' corresponding stud walls.

Directly in front of where the UGC Tower would be sitting, Alivia and Lighting Designer Quinn McDonald had requested a way for light to shine through the platform up to illuminate the columns of the tower. This was achieved by the addition of an extra cut-out in the CNC file for the lids of the platforms –

a square shaped hole with a lip would provide a spot for a piece of plexiglass to sit. Then, lights would be able to be installed underneath the platform and shine through to the tower.

Figure 30: Public Amenity Steps in the Shop During Build

The final considerations for these steps were the legs for the platforms and the facing. While I did end up drafting a leg layout (this can be seen in Appendix C), Lead Carpenter John, who built and test assembled the steps in the shop, ended up more so only adding legs as needed. The same went for the lauan facing. This needed to be routed to fit the side of the steps anyways, so a drafting of it would likely have ended up being imprecise to reality. In hindsight, I think I should have still drafted the facing, and have created the leg layout sooner. I finished that plate a few days after the rest of the steps, so it was a bit obsolete to the needs of the shop, though luckily thanks to John's skill and experience, the steps turned out quite well.

UGC Tower & Platform

The UGC tower and platform was one of the most daunting elements for me to tackle, and as a result I delayed working on it. The tower itself was over 20 feet tall, putting it close to 23 feet when installed on top of the 2-foot-tall public amenity steps. The central part of the tower was to have 1 foot in depth, and then be flanked by three columns on each side that lessened in 2 inches of depth per column. The cut out of the letters at the top of the tower were supposed to have some depth to them, so that light could shine through and create a nice shadow effect, as well as cast the letters onto the ground. In addition to all of this, there are essentially no right angles in the tower. The columns and lower section of the tower all slant out at 2 degrees. The top of the tower straightens and becomes parallel for the last 6 feet. Additionally, the doorway was a very irregular and angular shape.

Suffice it to say, I was very unsure about how to approach the construction of this tower. It was also made more difficult by the fact that this was an element that Nick had worked on during the budgeting stage instead of me, so the initial rough build plan he had originally come up with and budgeted from didn't end up being exactly in line with what I ended up designing. I had several conversations with Chris and Ashley to get their advice on how to approach this. After brainstorming several different approaches, I ended up going with a combination of a few different methods. For the columns, I would modify a technique that Chris used in an earlier show of the season that used flat package CNC construction of ½" plywood and 1x3 lumber. The primary central tower would then consist of several Broadway style flats that when put together would build up the necessary 1' of depth, these would be made of 1x3 lumber and lauan. Finally, the tower platform would be a primarily separate unit, consisting of several stud walls and the platform itself, built of 2x4 lumber and 3/4" plywood.

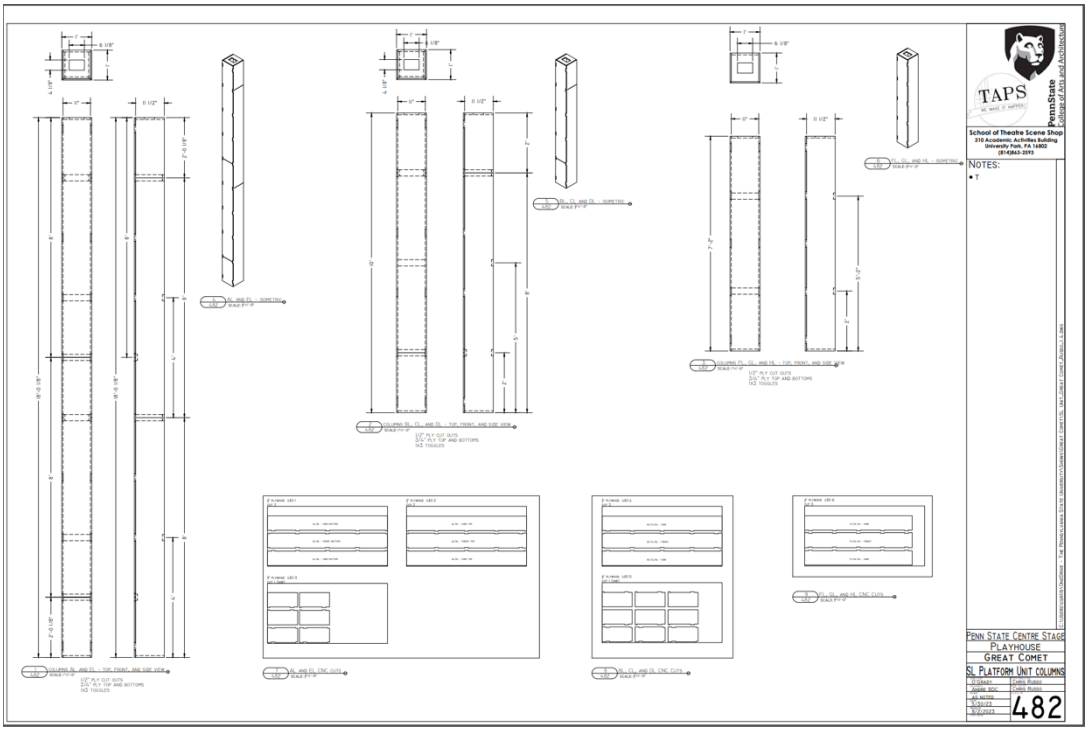


Figure 31: Chris Russo's drafting of the columns in *Great Comet*

The columns were the first section of this that I worked on. I heavily referenced the above plate that Chris had created for our fall production of *Natasha, Pierre, and the Great Comet of 1812.* The square columns that he drafted for *Great Comet* were constructed with CNC routed ½" sande(d) plywood, from Home Depot (we call it sande ply, although its name means sanded). The panels that made up each side featured tabs that would allow the sides to notch together. By offsetting the seams in the plywood for the different sides, this method creates a solid and strong structure, that is relatively lightweight.

I was able to use the same essential idea of Chris's columns for those in the UGC tower, with the 2 degree slanting angle being the key difference. The angle was the most challenging part of these, as it meant that an angle would need to be cut into the top and bottom of each side panel of the columns so that they would be able to sit flat. My completed plate for these columns, which can be found in a larger size in Appendix C, ended up being quite similar in format to Chris's plates. Despite the added challenge of

the angle, building these columns went very well and I was extremely relieved when everything fit together correctly.

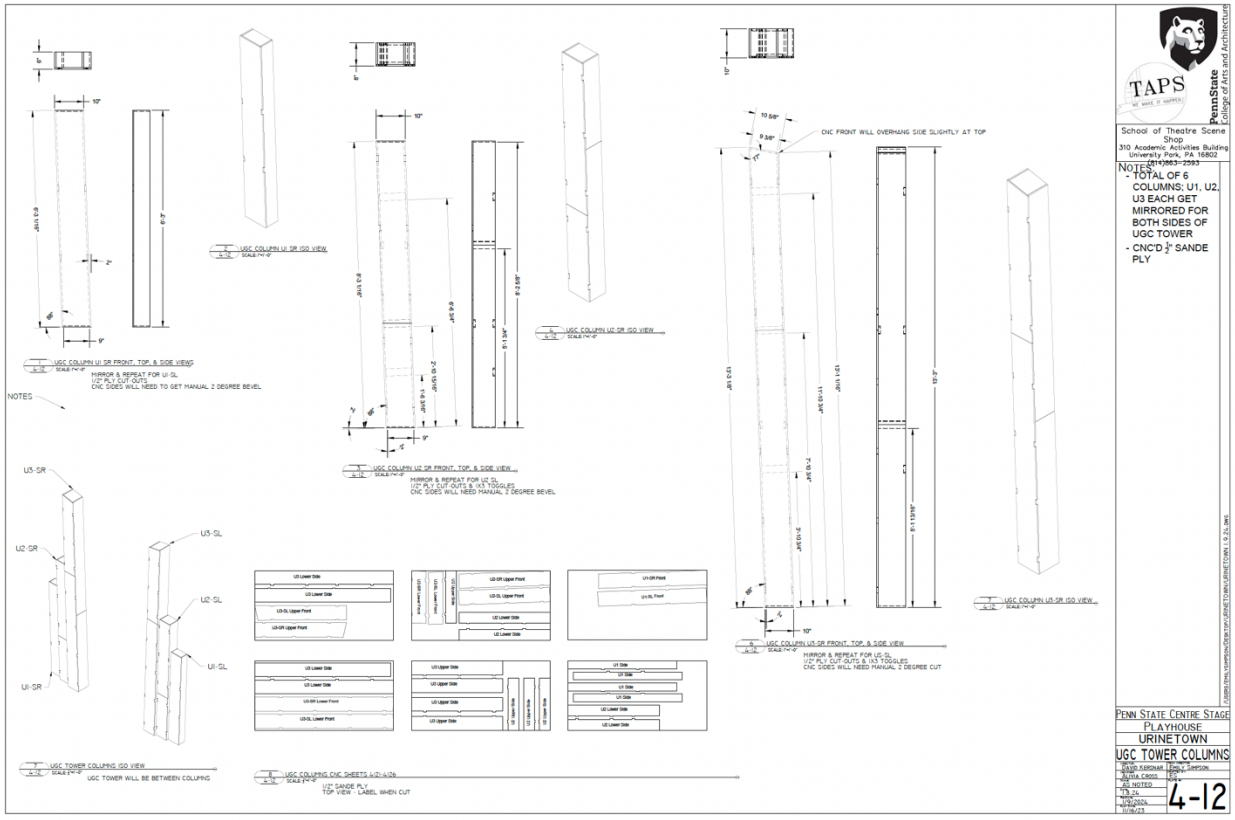


Figure 32: UGC Columns finished plate

Following the columns, the next piece of the tower to work on was the actual tower itself. The first step was to decide how to divide the main tower section, as it was far too large to fit in the truck or to install easily as one piece. Due to the angular nature of the rest of the tower, Alivia requested that the tower split at an angle as well. This made both drafting and building it more challenging, but doable.

Beginning with the lower section of the tower, my first step was the same as with the lids of the public amenity steps. I had to figureout how 4x8 plywood sheets puzzle together to create the surface. In this case, it was with lauan instead of plywood for the facing of the flats. The framing was once again dictated by these sheet good seams. This flat ended up being challenging on the build side, as there were so many different angles. I think I may have missed a few dimensions on my plate for this one as well.

The sides of the main part of the tower and the reveal of the doorway. Luckily these were primarily rectangles, which did make them a bit simpler, but just like the columns, they would have to sit at angles, meaning a slight angle would have to be cut at the bottom of the small flats.

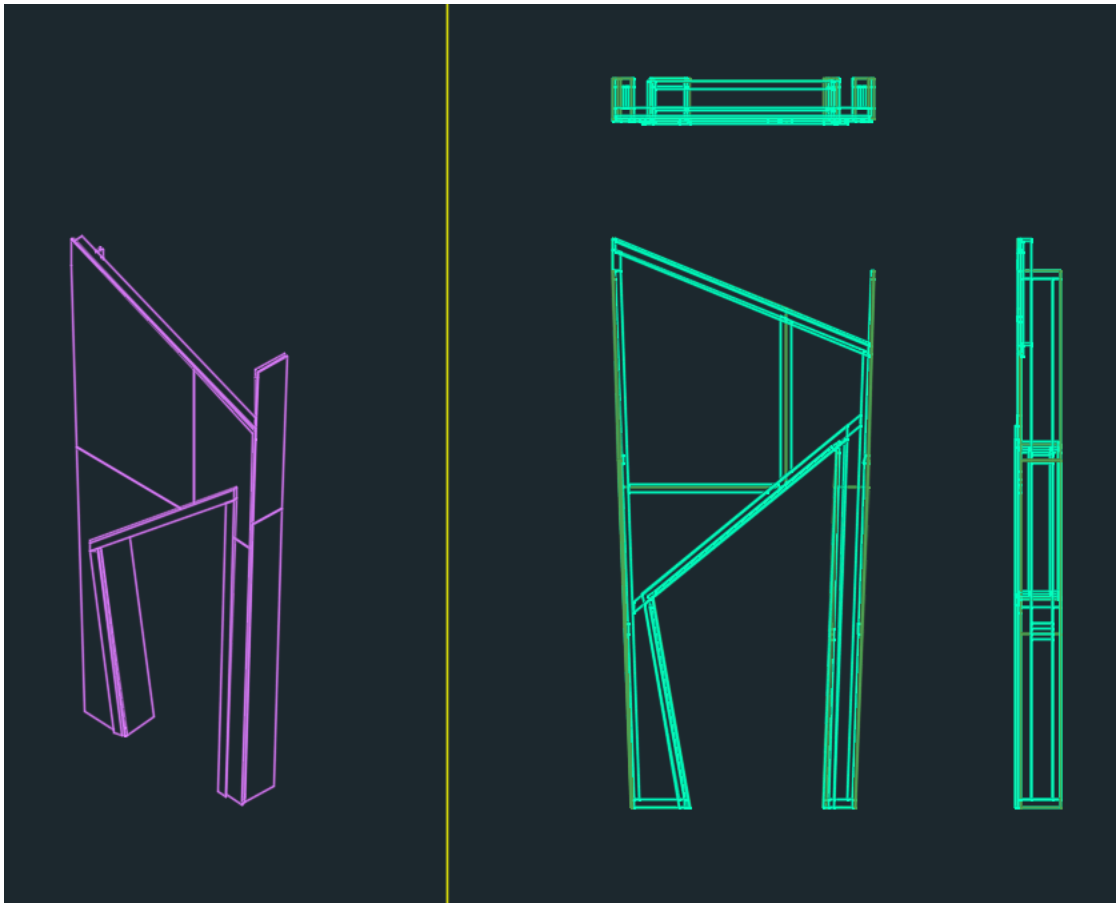


Figure 33: Lower UGC Tower Isometric and Orthographic Drafting – Model space

Once all flats were built, they were able to be assembled in the shop as one unit for the whole lower section of the tower. An angled hogs-trough (a long L-shaped assembly of two pieces of 1x3 lumber) was added along the top edge of the unit, which would be used to tie in the top section of the tower during load in.

The top section of the tower I drafted with the same general idea, with the main difference being the letters. I went back and forth with a few different lauan layouts, trying to find a middle ground where there were not many unsupported areas. I also had a few different thoughts on how to achieve the depth of

the letters. It didn't feel necessary to have the letters cut through a full foot of depth, despite that being the depth for this section of the tower, as then the desired light effect would only work with a fixture nearly directly behind it. So, I landed on one layer of ½" sande ply and a layer of 1 inch green foam, for a total of 1-11/16" of depth when accounting for the lauan as well. Using CNC routed outlines of the shape of each letter would also let the sande ply serve as additional framing, attaching the few unsupported parts of facing with the rest of it.

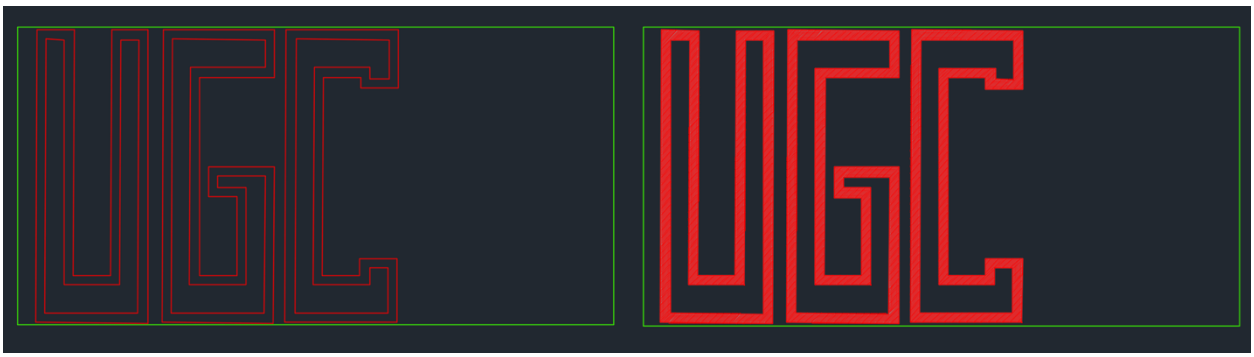


Figure 34: UGC Upper Tower CNC routed Letter depth detail

This ended up working overall, but did have a few issues in build. Firstly, communicating my intention with the CNC routed letters proved challenging. In the left side of Figure 34 above is the drawing that I used to create a CNC sheet, and on the right is shaded the section that I wanted to be kept and cut. However, I did not provide the shaded view when turning this over to the carpenter. Since the CNC is a router, it is important to account for which side of a line the router bit will be cutting on. The carpenter was initially unclear what part of the letters was supposed to be kept, and so did not program the file with the router bit always on the correct side of the lines. We realized this mix-up when a different carpenter went to assemble the flat, and the letters did not fit exactly as they should have with the back of the CNC routed facing of the upper tower flat. Luckily, we had another sheet of the ½" plywood and were able to re-cut the letters, though it did take up some extra build time in determining where the misalignment had come from and then re-doing everthing.

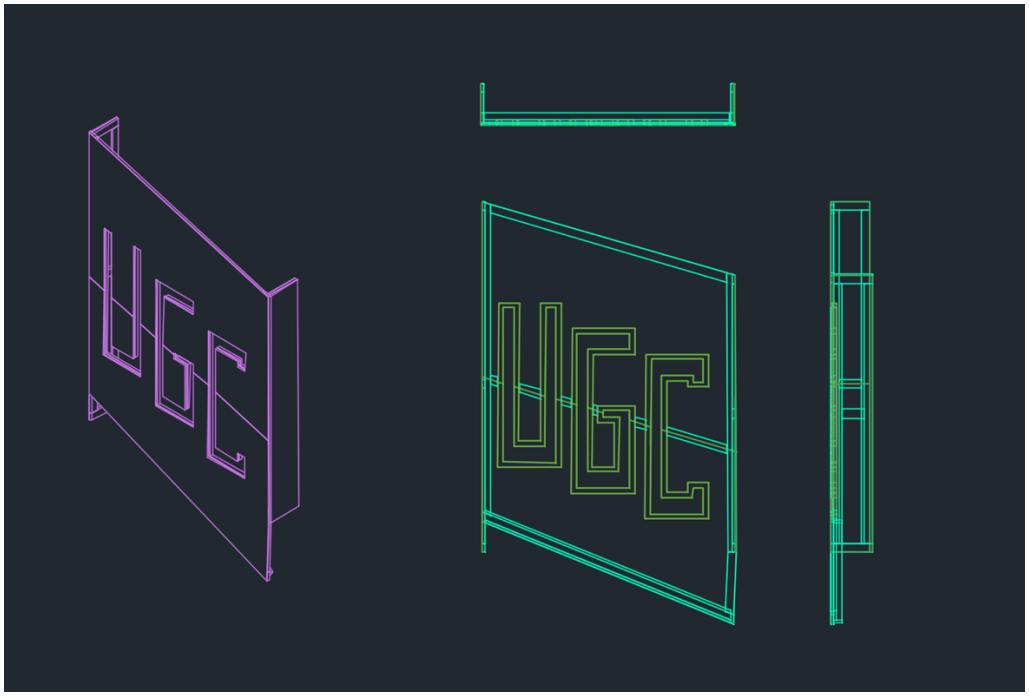


Figure 35: Upper UGC Tower Drafting – Model space

During build, one of the carpenters ended up adding some additional framing within the upper tower flat that I had not expressly drafted. The actual built unit for this is therefore a bit different than what I had drafted, but the additional structure was definitely a necessary and welcome addition.

Figure 36: Upper UGC Tower Additional Framing

Having drafted both sections of the central tower, the columns, and the public amenity steps, I could then put all the pieces together in AutoCAD to see what the whole thing would look like.

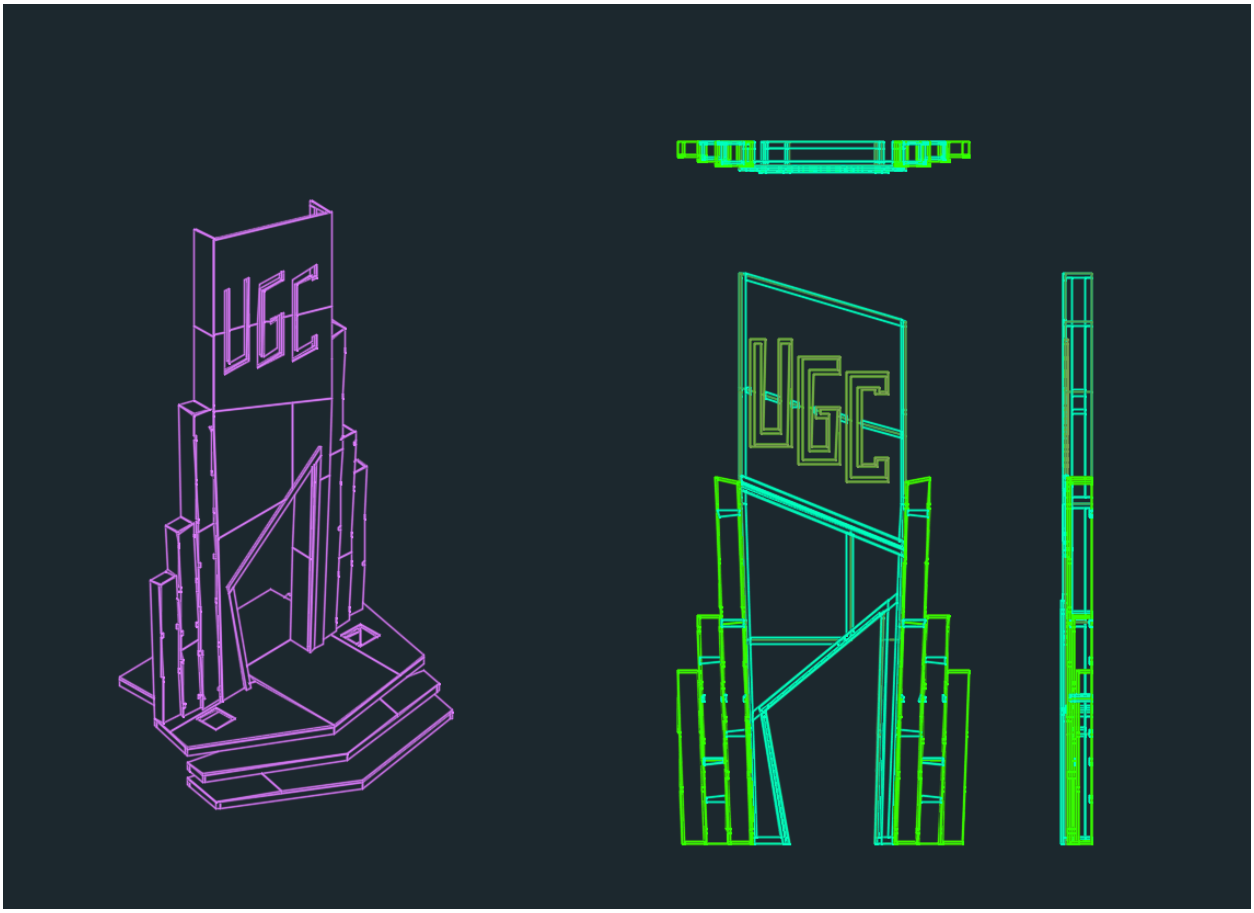


Figure 37: Full UGC Tower Isometric and Orthographic Views - Model space

Overall, I think the tower was successful, though in hindsight, I think there are a few things I would change. Firstly, I think I should have designed the doorway reveal flats differently, maybe with ½" ply instead of lauan, or maybe just with more built up structure inside, to better support the swinging saloon style doors that were added later. I also think I could have added some additional cross bracing spanning the inside between the flats making up the sides. Despite these thoughts, and my initial trepidations about the UGC tower, I am all in all pretty proud of how the tower turned out, especially the columns. I think the tower as a whole is one of the most complicated scenic units I have ever drafted.

After all the columns and the flats making up the tower itself were drafted, there was still one more large section of this unit, though most of it would not be seen, the structure holding up the UGC tower platform. This platform was to be 13 feet high from the deck level, putting it at 11 feet up from the public amenity steps. It was designed to be mostly behind the tower, with about 2 feet extending onstage over the bridge part of the main platform. A masking wall already existed in Alivia's design to be what was seen through the door of the tower. In my designs of this structure, I extended this existing wall up to support the platform. Originally, I made this wall a bit too big. I drafted it to be 10 feet wide and almost 13 feet tall, and forgot to consider how difficult this would be to lift or the fact that it would not fit in the truck. Luckily John caught this and split it in two during build. I also drafted two more stud walls to be a part of the platform structure; one very narrow one that would sit on the ground perpendicular to the masking wall, and one doorway stud wall that would sit on top of the public amenity steps directly behind the tower.

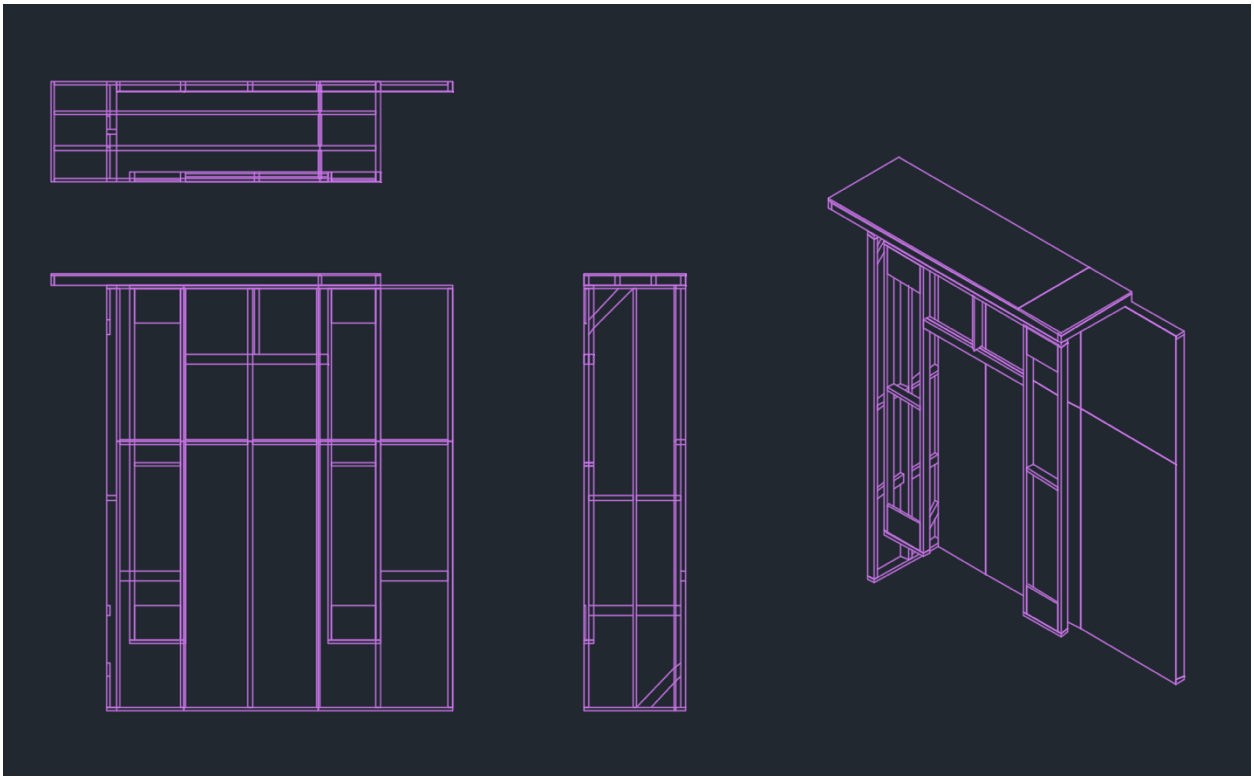


Figure 38: UGC Tower Platform Support Drafting, Orthographic and Isometric Views - Modelspace

The platform itself was also a bit different than the typical platforms that we build. Usually, framing for platforms goes perpendicular to the grain of the plywood. However, since nearly 2' of the platform would be overhanging, I made the framing go parallel to the grain of the plywood. This way each piece of framing would act as an additional beam supporting that overhanging section. I additionally made this platform significantly longer than it was designed. While most of it would not be seen, having a longer platform helped to act as a counterweight for the overhang.

This was the extent of the drafting that I did for the UGC tower and platform units, though there did end up being one extra support structural wall added for the upper platform. At the beginning of the process, we were under the impression that only one person would ever be going up to the high UGC platform at a time. However, at a production meeting only a few weeks out from tech, we learned from David that the intention was for three actors to be able to be up there at once. This was not a concern in terms of the strength of the platform, though my first thought to learning this was that there would not be enough space for the three of them. Only a 3 foot by 2 foot section of the long platform is visible around the tower. The larger concern that Chris brought to my attention was lateral stability.

Because how narrow and how tall the platform was, there was going to be some movement of the platform once people climbed up there. The placement of the SL escape stairs, however, made it difficult to add jacks or other typical support structures. Ashley ended up designing a stud wall-jack-doorway combination, pictured in Figure 39, that would be able to go over the escape stairs and serve as extra support for the tall stud walls and platform. While a bit of a last-minute addition, this was a very effective solution.

Figure 39: Backstage picture of the stud wall-jack-doorway supporting UGC platform

Pit Platforms and Stud Walls

The last section of the set that I drafted was the pit. Though certainly daunting task from the start, I severely misinterpreted the challenge that this was going to be. As described in the budgeting section earlier, the beam configuration of the pit was something that had been done before, so we knew it was possible. However, we quickly realized that there was no true documentation of the process for this installation, rather, the process was mostly stored within the mind of Carpenter John Geisz.

After speaking with John and Chris, we came up with a general plan of what would go into the pit. First, the pit would have to be dropped all the way down – based on field measurements that Nick and I took, this was between 11'-3" and 11'-4" at different spots of the pit. Then we had to start thinking

about how to platform up the deck level that was now over 11foot above our heads. Working from upstage, the first eight feet of the pit could be filled in on top with stock platforms. These would be held up with a combination of lally columns and stock I-joists and I-beams. I did not draft the exact details of this section of support, as it was a system that, according to John, would 'happen almost magically' from the carpenter's memories.

At the center line running parallel to the apron of the stage, where the row of stock platforms ended, is where I had to start drafting new elements. As decided in the budgeting phase, this center line would be supported by a series of stud walls. 6 stud walls ended up making this span. The downstage edge of this line of stud walls would have an additional ledger attached to it, which would hold joist hangers. These joist hangers would support one end of the 2x10 beams, the other end of which would be held by stock joist hangers that could be attached directly to the infrastructure of the pit. On top of the beams would be platforms, some from stock and some custom built, the shapes of which were determined by Alivia's design. Two additional stud walls would support the sides of the platforms along the edge of the pit. Finally, a set of escape stairs descended from deck level to pit level, so that actors could exit into the depths and leave through the basement room adjoining to the pit. One more stud wall fell on the downstage edge of these stairs to catch the shorter beams, since no beams would be over the stairway.

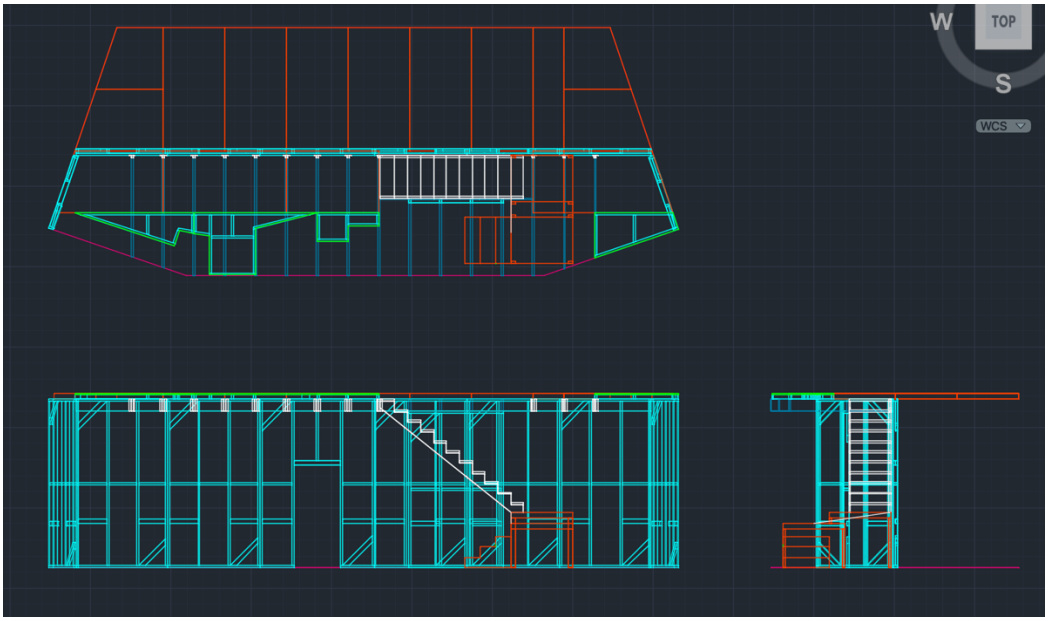


Figure 40: Pit model space drafting - top, front, and side views

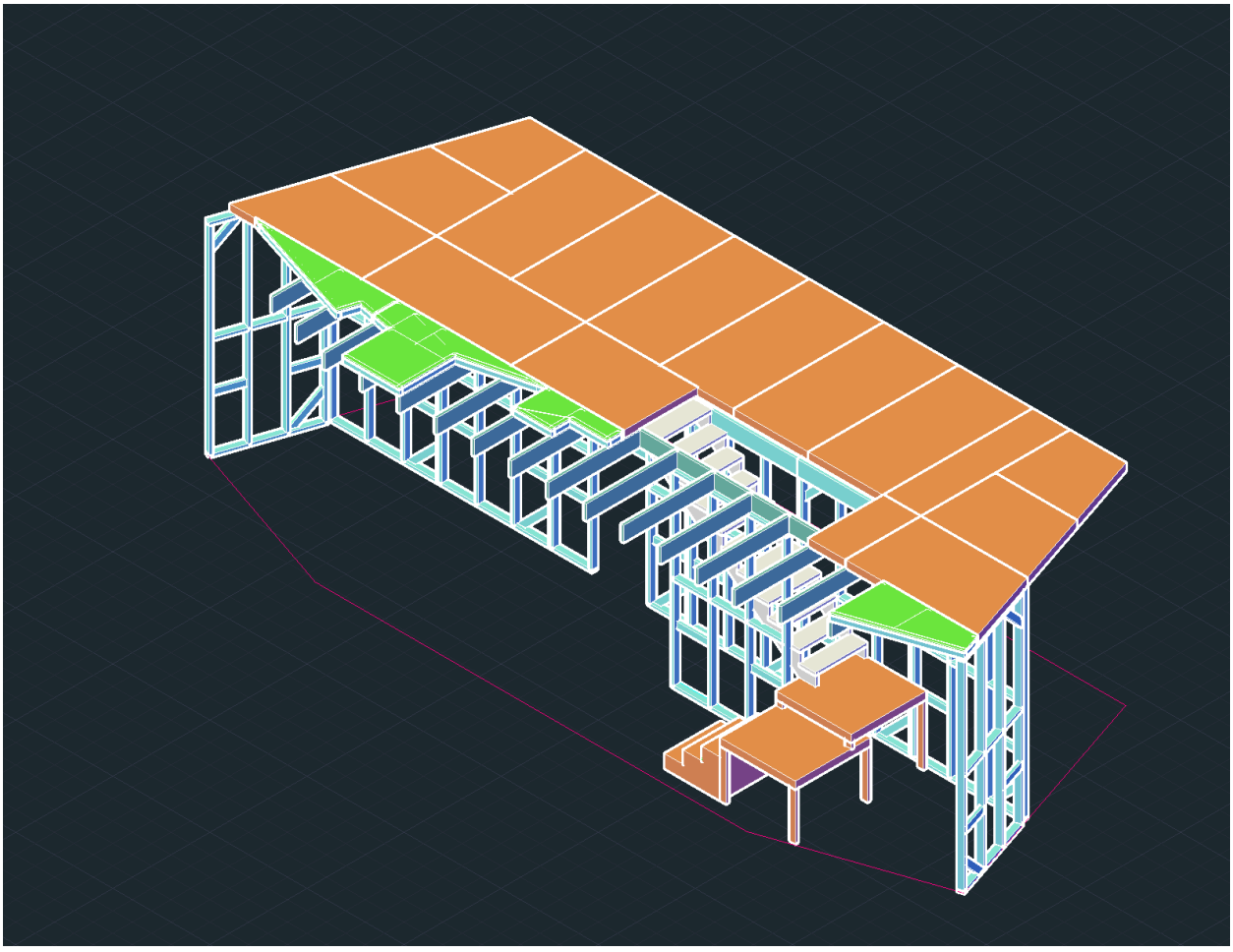


Figure 41: Conceptual 3D rendering of the pit

The sheer number of elements that went into the pit made the whole thing very complicated and left a lot of room for error. Figures 40 and 41 above show the complexity of stud walls, platforms and stairs that create this installation. Most of this structure would never be seen by the audience. While this was the downstage most scenic element, only the platforms and the beams are at the same deck level as the rest of the stage.

The structural system described above was the final iteration of the planning for the pit, though there were a few struggles getting to that point. Originally, instead of stock and custom platforms making up the deck on top of the beams, I drafted it as if just plywood would sit directly on top of them. This would technically work, as ¾" plywood is fine unsupported for 2' spans, which was the distance between

the beams. However, just using plywood would require the addition of more lateral cross bracing between beams and an extra stud wall to catch edges of plywood that fell between the beams. I designed it in this method after an earlier conversation I had with Chris about the technical design of this beam structure. However, this ended up being a miscommunication. The extra bracing would be time consuming to add, and we would be better off just continuing with platforms for the entirety of the pit deck. This was a doable change, but it came at a bad time. Shortening all the stud walls to account for platforms on top of them instead of plywood and drafting the additional platforms took a night to change, when I had hoped to get the sheets to the floor the same day I finished the initial version. Chris jumped in and ended up helping to draft some of the joist hanger layout and the route of the escape stairs that went down into the pit, which was a big help in making sure that these drawings would get to the shop. They ended up having barely enough time to build all the stud walls and platforms, resulting in a more time consuming and stressful load-in process for the pit.

Chapter 4

Load-In

Load-in is when all the built pieces of the set are transported from the shop to the theatre and are installed in the space. In the School of Theatre, we usually schedule an official load-in call on a Sunday the week before the start of technical rehearsals. For *Urinetown,* load-in was on February 4th. This is typically a call from 9 am to 6 pm, and all the carpenters and TD students are expected to come. We also have a number of students who take an elective class in the shop and are present to help as extra hands the day of load-in. The week following the Sunday call is designated as scenery load-in week during the days, though lighting focus does begin to happen during the evenings later in the load-in week. Due to just how big the set for this show was, we had some additional pre-load in days before February 4th, particularly to hang the two portals and other masking. This section will go through the various stages of load-in particular to this show.

Early Load-in: Portals and Soft Goods

The portals, especially the proscenium portal, were elements that I predicted would be very time-consuming to install. Load-in day was looking like it was going to be busy enough with the installation of the main platform and all associated elements, so I wanted to get as much done ahead of time as possible. Having an extra weekday call for hanging the proscenium portal was something that I had put in the calendar from the beginning. However, finding an actual day for this proved to be a bit difficult, particularly in trying to work around my mentor's teaching

schedules and unexpected illnesses. Eventually though, we were able to move forward with the installation of the proscenium portal on Friday, January 26th.

That day, the carpenters and the other TD students all met at the Playhouse in the early afternoon. The carpenters brought up all the additional materials and hardware that would be needed for the installation, as detailed in the rigging plan plate that I drafted. At this point, the actual pieces of the portal had already been transported up to the theatre a few weeks prior, so that they could be assembled, wrapped with the muslin facing, and painted. After unpacking all the supplies and opening the fire curtain, we were ready to get started.

The first step was to assemble the truss batten. One half of it was hanging in one of the wings, so a crew of a few people got started on lowering that down. This took a little while, but once it was down, it was pretty simple to bolt the pieces together into the full 60' span. Meanwhile, Chris, Ashley, Nick, and I started setting up the motor distro box, which would supply power to the chain motors. We initially had some issues with getting the power connections made correctly, but eventually we figured it out and were able to move forward.

At this point, John and two TD students headed up to the grid with ropes that would be used to haul up the rigging slings and chains. On the ground, we started running the chain until it was extended nearly fully out of the motors. The chains would be the part that the grid crew would be hauling up to attach to the grid. It was here that we ran into our next problem. When the chain was fully extended out of the motor, we realized that we were suddenly unable to reverse the movement. Even when switching the direction of the power, the chain would no longer go back through the motor, which is the essential feature that would be needed to lift the portal into place.

Figure 42: Chris, Ashley, and I working on fixing the chain motors

After a lot of troubleshooting with the power distro, Chris realized that it may actually be an issue within the motors themselves. This ended up being exactly right; upon opening up the motor casing, we found that the limit switch, which controls how far the motor can run in either direction, was not set up quite right. We were able to manually adjust the sprockets that set the limits of the motor, and thankfully this solved the problem.

Finally, we were able to move forward. The grid crew lowered down a rope above each rigging spot. On the ground, we tied the ropes to the sling and chain assembly, so that they could haul each motor up and secure them to the grid. When all four chain motors were rigged to the

grid, we were able to raise the motors about a foot above the ground and secure the bottom side of them to the truss batten. Raising the motors and the truss batten a few more feet then gave us a good working height to tie the legs up on either side. With the chain motors, the truss batten, and the legs now off the ground, we could start actually rigging the portal.

Figure 43: Proscenium Portal Load-in Process Photo – legs attached to truss batten

Our next step was to layout the large top frame of the portal face down just upstage of the truss batten, so that we could make all the rigging connections. I had detailed in my rigging plan drawing all the hardware that was needed for each pick point, so these connections went up relatively quick. Once

attached, we could fly the truss batten up enough to guide the top of the portal into the air, and then use the chain motors and the adjustable rigging hardware to level the frames. We had to be extra careful during this whole process to not accidentally break through the muslin facing when picking up or handling the portal pieces.

The stage left section of the portal was next, and it was a bit trickier. It took a lot of hands to be able to stand up the large frame, and it was a bit precarious due to how narrow the bottom of this side is. We could not make the rigging connections so close to the ground for this one, as the truss batten and top of the portal would need to be flown almost all the way up in order for some of the carpenters to be able to bolt the side frame to the top one and to add the additional wire rope pick points. They were able to get to this by using our SkyJack scissor lift.

Figure 44: Proscenium Portal load-in process shots

Installing the stage left side was as far as we got into loading in the proscenium portal on that Friday call, which was decent progress considering the setbacks and the late start to the day. The following Monday, the carpenters and I were able to go in the theatre to finish adding the final stage right frame. After some final leveling and adjusting, the portal was done. It was very exciting to see this

massive piece that I had spent so long drafting and working on finally come to life in the space. I am very proud of how it turned out, despite the load-in taking longer than anticipated.

There were a few other things that were able to get done prior to the official load-in day as well, particularly the hanging of the other portal and the soft goods changeover. Prior to any part of load-in, especially before anything went in the air on linesets, I worked with Alivia and Quinn to create a 'lineset schedule'. This document lists what every lineset in the theatre is being used for, whether it is soft goods, electrics, scenery, or anything else. It also shows what was on the linesets from the previous shows, so it is easy to see if a soft good is moving to a new lineset or of being fully taken down. The lineset schedule for *Urinetown* can be found in Appendix D. Unfortunately, I was not able to be present at the installation of the US portal or the soft goods changeover, but luckily Ashley was able to lead these calls with the carpenters. It ended up being especially good that the US portal was able to be installed sooner than load-in, due to some miscommunications, it had been drafted and built to be 6' taller than it was designed to be. Cutting the portal down to the correct size would have been a major setback to come up during load-in on Sunday, so it definitely worked out for the best that we were able to look at this ahead of time. Thanks to these additional pre-rigging calls that Ashley led, the only rigging that we had to do on the day of load-in was the hideout drop; having so much else ready ahead of time was a major help.

Load-in Preparation

The week before the actual day of load-in was spent planning for the day. While it is impossible to be completely accurate in estimating how long it will take for things to be installed, having a general plan helps the day to stay on track. Nick and I created a rough load-in

plan that was mostly structured as goals of what to be completed in each two-hour stretch of the day. We also planned for one of the carpenters, Cassidy, to spend the majority of the morning going back and forth with some of the elective students to be continuously transporting the many scenic pieces. I created a list of all the stock scenery that would be needed (this list can be found in Appendix D) so that things could be picked up from the warehouse and everything could be ready when we needed it on the Sunday load-in.

A rough summary of the load-in plan can be seen in the table below, with the more extended plan document found in Appendix D.

9-11	11:15-1	2-4	4:15-6
- Plot points on ground as needed - Fly frame of the hideout drop - Sewer wall & ladders	- SR main platform (stud walls, platforms, Maso) - Public amenity steps	- Main platform bridge (stud walls, hoist bridge platform) - UGC Platform	- UGC Tower (columns, lower unit, upper unit)
Miscellaneous/Anytime during the day: mid-platform stairs, main platform stairs, escape stairs, railings, door			

Table 15: Rough Load-in Plan Summary

The main considerations when creating this plan was determining which elements depended on each other. In other words, what could not be installed until something else was installed. For example, the UGC tower could not be installed until the public amenity steps were installed, and the bridge could not be installed until the SR platform was completed. We also identified a few miscellaneous tasks that did not rely on as many other elements, which could be worked on at any point during the day if people

were looking for jobs. We knew that the pit would not be able to be worked on at all during the day of load-in, since some of the stud walls still needed to be built, so for the Sunday call, the general goal was to finish working on all of the main on-stage scenery elements.

Load-in Day

On the actual day of load-in, we were able to successfully stay pretty on track overall with the schedule that Nick and I created, despite several setbacks. The first setback was that Nick unfortunately had to call out sick. We had planned for him to lead the installation of some of his units, so this made things a bit tricky at times. Regardless, when I arrived at the theatre, I got right to work with some of the other TD students at plotting points while we waited for the first truck load. 'Plotting points' in this case refers to using tape to mark out spots on the floor that would be key placements for the edges or corners of different set pieces. We set up several measuring tapes from the zero-zero point of the plaster line, and then were able to triangulate all of our points from this spot. I had my TD ground plan drawing open on my laptop, and I was able to pull measurements as needed while Hailey and Vega placed and labeled points including the corners of the SR platform block, the edges of the public amenity steps, and the corners of the SL stud wall support of the bridge. Once we had the bridge itself in the theatre space, we were also able to physically set it over our points to verify that they were spaced correctly.

For most of the day, I jumped between crews working on different parts of load-in so that I could keep track of progress and answer questions as needed. I would then jump in to help with installation as needed throughout the day. Once points were plotted and the first truck loads started to arrive, we could get started on the scenery. As planned, we started with the hideout

drop, and getting the framing pieces rigged and flown up above head height. This unit was drafted by Ashley, and it came together well. It took a bit longer than anticipated to assemble, but it took less people than planned, allowing a crew to get to work on the SR platform early.

Simultaneously, John and a few students started work on the sewer wall – this unit faced many challenges. Though I had estimated that installing this unit, which consisted of a few stud walls, a platform, and two ladders, would not take more than an hour and a half. It ended up taking around five to six hours total. The challenging thing about the sewer wall was that it was not freestanding, but rather had to fit into the architecture of the theatre. When the built pieces did not fit quite right into the space, they essentially had to be disassembled, cut down, and reassembled. Almost every piece of the sewer wall unit was practically rebuilt to fit. A few people were stuck working on this for most of the day, giving us less hands in other places at times.

Figure 45: Sewer Wall loaded in (before adding ladders)

While the sewer wall and the hideout drop were being worked on, the stage right platform began to go up. I had high hopes that this would be a painless section, though unfortunately, we ended up facing some problems with the interior stud walls not quite fitting. They were all a bit too long, not by more than ½", but this was enough to stop the walls from lining up correctly. This was going to be a problem, as the stock platforms were supposed to fit on top of the stud wall structure square and precisely. Chris jumped in and took the lead in cutting down some of the interior walls and making it work.

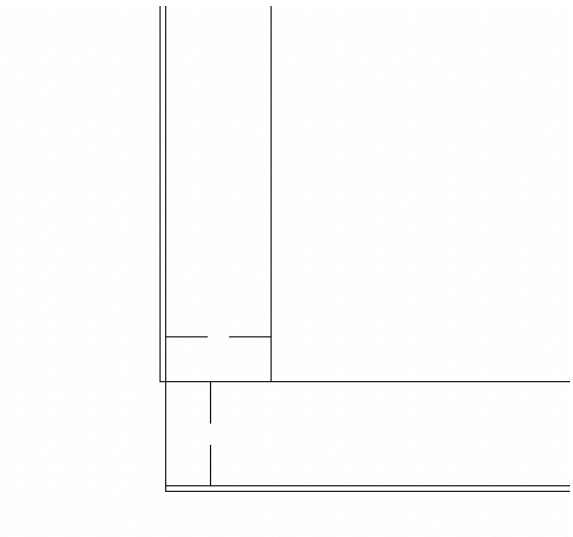


Figure 46: Zoomed in drafting detail of DSR corner of SR platform stud walls

There are a few things that could have caused this issue, though I think the main contributing factor was the way that I had drafted the lauan facing of the side walls. In my drafting, it is technically the framing of the side stud wall that is flush with the edge of the front, though during load-in, the side wall was aligned to the front by the lauan. This makes intuitive sense when working with the physical walls, though it was unfortunately just an oversight on my part when designing them. This shift may have only pushed things over by 3/16", but that is enough to start building up if there were any other build issues with the walls.

One thing that did go very smoothly was the installation of the public amenity steps. These were able to go up while we were fixing the SR platform and did not really face any issues. As the Masonite

was going down on the SR platform, the SL team was even able to put up several of the UGC platform stud walls. Just before we took our lunch break, all hands came together to hoist the large bridge unit up and onto its supports. This was the highlight of the day for me, as I was very proud and relieved to see this element successfully fit into place, tying the two other halves of the set together. With all the math I had done for the bridge, it was very satisfying to see that this part was going well. Figure 47 shows the bridge in place.

Figure 47: TD Student Vega Hernandez working on the bridge during load-in

At the end of the first half of the day, we were mostly on track for our goals. The hideout drop made it into the air, most of the truck loads had made it over, the SR platform was built, and the public amenity steps were installed. While the sewer wall was a bit behind schedule, we were ahead in other ways. The bridge and some of the UGC tower platform stud walls going up before lunch were both very exciting. The UGC tower's columns were also screwed together, saving us that step later.

We got right back to work after lunch. Finishing the bridge was the first task; it still needed plywood and Masonite. The UGC tower was the other big task of the day. There was a bit of confusion with the placement of the doorway stud wall behind the UGC tower. I had not put this wall directly up against any of the others, making it tricky to place and raised some questions of stability. It became reinforced naturally when the UGC platform went up much later, but we did end up having to add some lumber as temporary stability in the meantime. The lower UGC tower went up well, though it was at this point that I also realized that I should have planned a better way of connecting the tower to the stud wall behind it. We were able to come up with a solution using angle brackets and some extra lumber, but it certainly would have been better to have designed a better integration of these elements. The upper UGC tower went up through the use of a block and fall pulley system temporarily added to a lineset, and then the column units were able to easily screw into the tower from the inside, further unifying everything.

Figure 48: UGC Tower progress during load-in

Other units that went up before the end of the day included the main platform stairs, UGC platform, the extra triangular stud wall-jack-doorway, the SL escape stairs, and the flat at the front of the bridge. Both the bridge flat and the main platform stairs ran into some minor problems of pieces not fitting quite right at first, though the issues were able to be solved in-house.

Figure 49: Load-in Progress photo taken from the mid-rail. Photo by Hailey Sanchez

In many ways, load-in day was successful, though at the same time, there were a lot of moments I would have liked to have gone differently. We successfully completed most of our goals for the day, and everyone remained in good spirits throughout the call, which always feels like it impacts the overall success of a load-in. However, many elements did not install in quite the way I had planned. I think that since this show was so much bigger than anything I had overseen before, I made several oversights that more thought, planning or involvement could have avoided. As the day came to an end, I was happy with

our progress, but certainly weary of the amount left to be done, specifically with the railings, the door, the fabric of the hideout drop, and most of all, the pit.

Load-in Week: Pit Installation and Final Details

After a full day of load-in on February 4th, we dove right into more load-in the next day. This time, the most important focus was the pit. I had hoped that we would be able to get the pit installed by the end of the Tuesday of load-in week, though in reality, we were still working on it until the Thursday. Just about every step of the process faced some setbacks and took longer than anticipated. Plus, since it was now during the week, there was less consistent student labor available to assist the carpenters.

The first step was to load all of the stud walls and escape stairs on to the orchestra pit so it could be lowered down. We also preset all of the ladders and hardware we anticipated needing to limit what would have to be passed up and down the 11-foot drop. We then lowered the pit just a few feet, so that we would be at a comfortable working height to install the joist hangers to the downstage edge of the pit. When these were in place, we could lower the pit all the way and start working on building the center row of stud walls. We had tied two or three down to the deck before we realized we had put them in the wrong spot and had to start over. When we were working from the correct line, we then realized that all of the stud walls were at least an inch, if not more, short. This was upsetting, as Nick and I had taken field measurements of the depth of the pit, so I was not sure where the height of these went wrong. My best guess is that since we took the depth measurements around the perimeter of the pit, maybe the center sagged lower. Regardless of the reason, every stud wall had to be significantly shimmed up and leveled

individually, which became a very tedious and time-consuming process. By the end of the day Monday, most of the stud walls had been successfully installed and leveled, though this was not nearly the progress I had hoped for.

Figure 50: Pit Installation Progress - end of day Monday Feb. 5

The next day, I was in class all morning and could not directly assist with the installation. By the time I was able to join, a lot of progress had been made, specifically with the upstage half of the pit. The lally columns and I-joist supports underneath that side had, as John predicted, practically gone up ‘like magic’ while I was away in class. I joined in with the process of leveling the row of stock platforms and installing the beams to the downstage section. Figure 51 on the next page shows Ashley and Carpenter Cassidy working on measuring and installing the beams into the joist hangers, with much of the upstage

platforms installed. Most of the beams were up by end of day Tuesday, and on Wednesday, we finally successfully finished installing the custom platforms, the escape stair route, and the painted Masonite deck on top. All that was left was the chain link and expanded steel to cover the openness of the beams. We were able to piece together chain link by cutting sections with bolt cutters, then using fender washers with screws and bailing wire to tie it into the beams and platforms. The pit was, in every way, a larger task than I had planned for.

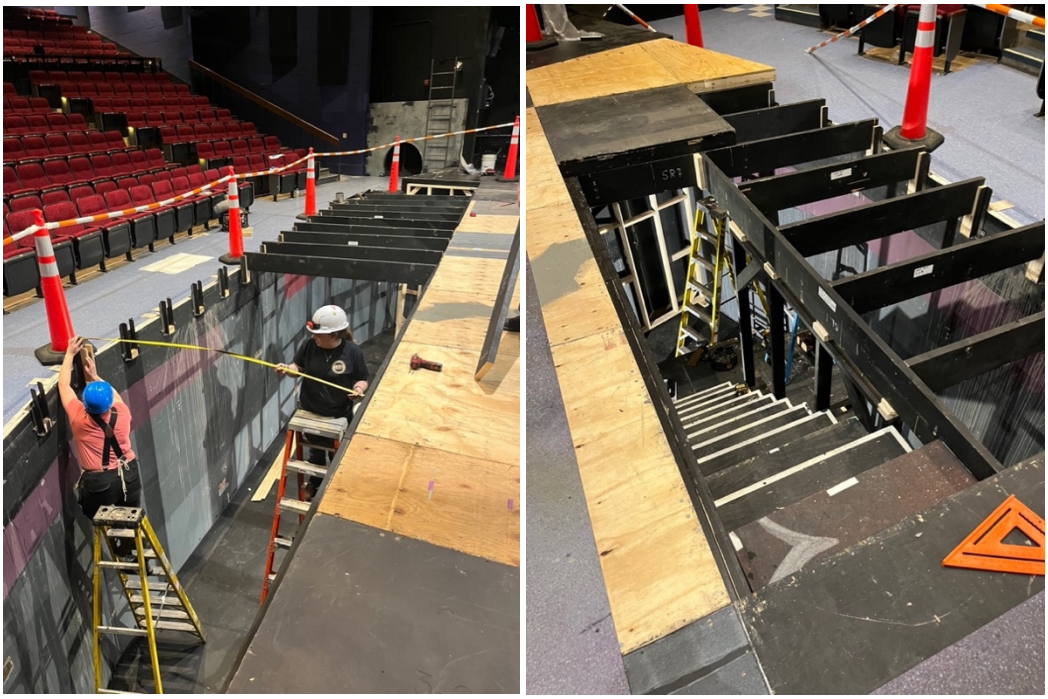


Figure 51: Pit load-in progress, Feb. 6th (L) and Feb 7th (R).

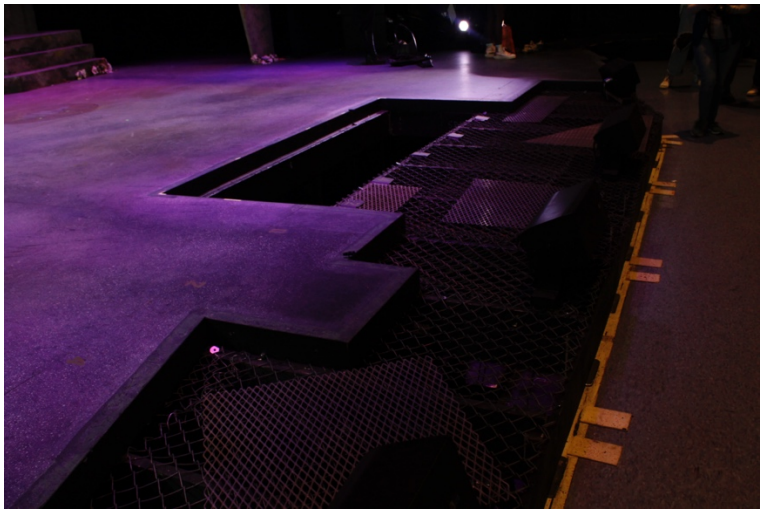


Figure 52: Pit with chain-link under show lights

It wasn't until the pit was nearly finished being installed that we could address the other unfinished parts of the set. Hanging the fabric that went inside the hideout drop and troubleshooting that mechanism was so time consuming that it pushed into the week of tech. The office door on the upstage edge of the SR platform and the escape steps that went behind it took some time to load in, as the doorway it turns out had not been drafted with a strike plate or support structure, so these had to be sort of added and improvised at the theatre. The railings were another one that took some time – the steel base structures for all of them went up quite quickly, but there were then additional aesthetic parts that had to be added individually around the railing sections, made up of cardboard tubes and angularly cut 2x4 lumber.

Figure 53: Back of bridge platform and railings close up

Another of these late-adds was the saloon style doors in the doorway of the UGC tower. These double barrel hinges had to be manually tensioned, and we ended up having to stabilize the inside of the tower reveal flats so for the weight and force of the swinging doors.

Figure 54: saloon style doors added to the UGC tower during tech week

Load-in week had been quite stressful and hectic as we pushed to get everything ready for actors to start working in the space during tech. I spent just about every extra minute I had that week outside of class working in the theatre to help it all come together. Thanks to the hard work of everyone, especially the carpenters, we were able to get all of the essential scenery completely loaded in by the end of the week, with primarily smaller detail work remaining as tech week notes.

Chapter 5

Tech Rehearsals

Technical Rehearsals, also referred to as ‘tech’, is always an exciting part of a show’s process, as it is the first time that the cast gets out of the rehearsal room and gets to work on the actual set, with all the real costumes, props, lights, and sound. It is also when all the tech areas get to really focus on adding their contributions to the production and making sure everything interacts cohesively and works well with the blocking and action created in the rehearsal room. Tech is most active for stage management, lighting, and sound departments, as cuing lights and mixing sound is dependent on being able to work in the actual space with the set the performers. However, every division of the tech and design teams are active throughout the process, as anything really can come up. For me as the technical director, even though the scenery must be nearly entirely complete at this stage (though we did have a few little things to work on), it is important to still be present throughout tech to address notes that may come up. Team TD mostly gets notes from the scenic designer, director, or choreographer. It is most important to be at tech to generally to ensure that everyone is navigating the space of the set safely. Additionally, team TD is also responsible for setting up the quick-change booths backstage. I met with the head of wardrobe on one of the first nights to discuss the needs for where and how big these would need to be.

11	12 **Spacing** **6:30p -10:30p**	13 **First Day of Tech** **6:30p -10:30p**	14 **Tech** **6:30p -10:30p**	15 **Tech** **6:30p -10:30p**	16 **Tech** **6:30p -10:30p**	17 **Tech** **12:00p -10:00p**
18	19 **Final Dress** **6:30p -10:30p**	20 **Preview #1** **7:30p**	21 **Work Day** **6:30p -10:30p**	22 **Preview #2** **7:30p**	23 **Opening** **7:30p**	24 **Performance #2** **7:30p**
25	26 **Performance #3** **7:30p** **Photo Call**	27 **Performance #4** **7:30p**	28 **Performance #5** **7:30p**	29 **Performance #6** **7:30p**	(*March*) 1 **Closing** **7:30p**	

Figure 55: Tech and Performance Calendar

Our tech schedule is illustrated above in Figure 55, an excerpt of the production calendar created by Production Stage Manager Abby VandenBrul. Most of these rehearsals are 4 hours, with the first 30 or more minutes usually spent by the cast getting into costumes and mics. We usually take a few breaks during the rehearsals, and on the '8 of 10' on Saturday the 17th, there were two hours off for dinner. Following each tech rehearsal, usually from around 10:30-11, the production team stays behind in the house for a production meeting to address any group affecting notes that came up that night, and to schedule out time in the space the next day. Additionally, the stage managers and crew usually arrive a full hour before the cast does, so a 4 hour rehearsal for the cast easily often becomes 6 hours for them, and at least 4 and a half for myself and other design and technology heads.

Spacing

The spacing rehearsal, which always falls right before the start of tech, is the very first day that the performers get to work on the real set. Prior to this, they rehearsed in a rehearsal studio space in the Theatre Building, where the stage management team had taped out the ground plan of the set to scale on the floor of the rehearsal room. The Playhouse stage is very large, so

for rehearsal rooms, the taped set often has to get scaled or squashed down a bit to fit. In order to see where blocking and choreography really falls, there is a whole rehearsal focused just on spacing out where each actor needs to be in each scene. This is especially important for a show like this, with multiple platforms with drastically different levels, which cannot be expressed in the flat, taped out set in the rehearsal room. Spacing also gives a chance to make sure timing works out for people getting up and down stairs, between levels, or from one part of the stage to the other. We also had a few other unique considerations for this show. The cast had to get used to navigating things that did not exist in the rehearsal space, like going through where the band was sitting, or crawling and climbing through the sewer wall. They had to get accustomed to watching above when the hideout drop and scrim were coming in or out. Especially during large dance numbers, it was also extremely important for them to be careful not to get too close to the pit escape stairs, which were basically a large hole in the apron of the stage.

At the start of spacing, before the actors really start interacting with the space, I, as the TD, gave a safety walkthrough for the entire cast, crew, and production team. This set was complex, and while many things I talked about may seem self-explanatory, I think it is important to be redundant and to talk about as many potential hazards as possible. This helps mitigate risks and to make sure even the little things can be in the back of people's minds. With the cast and crew sitting in the audience of the theatre, I started the walkthrough by introducing myself as well as Nick, Chris, and Ashley, and then talking through each part of the set while I walked through it. The cast could then ask questions, and then they could finally walk around and explore the set themselves. A few key areas of the set were the 13 foot high UGC tower

platform, the pit escape stairs, and the sewer wall. I also had the specific actors whose characters went to these places take some extra time to practice navigating these areas.

Prior to the safety walkthrough, I took some handwritten notes about the things I wanted to talk about, and I talked through my plan with Chris beforehand. Below is a typed-up version of this list that I notated after the actual safety walkthrough, so it covers most accurately what I actually covered during the walkthrough.

Scenic Element	**Safety Walkthrough Points**
Sewer Wall	- Use caution going up the ladders, especially when stepping over the top of the front one and when going down the offstage one into the dark - 6' up to platform – careful when on top - Duvetyn curtain can be pulled away to crawl through opening, it is dark inside but there will be a light. Don't want to hit your head while crawling through the opening - There are two small steps up into the vom exit to offstage, may be dark
Pit	- Chain-link and expanded steel will help prevent a fall but should not be stepped on – it is an 11'3" drop to the bottom of the pit below that. These also may be slightly sharp or greasy in places, so try to avoid touching it or brushing costumes against it - Since the entire pit is platformed up, even though only the front 8' have some openings, the stage is slightly uneven along the seam of where the platforming starts and the true stage (might effect rolling furniture) - Please only walk onto the stage on places where the platforms extend all the way to the house, don't jump over the chain-link - When you are going down the pit escape stairs, there is a larger staircase, the stairs then make a turn towards the center of the pit (bottom step has different rise than the rest) and then there is a doorway in the stud walls and you can exit through room 3.

	- You can hold on to the stud walls on either side of the stairs, and then the railing around the little escape platforms or the wall of the pit while descending the stairs. - There are some speakers as well as some small floor mics on the chain-link and around the edge of the pit platforming – these are all expensive equipment, so don't step on them/kick them by accident - Cones should be put up around the perimeter of the pit by crew at the end of each night
Portals	- Please do not lean on either portal – The proscenium portal is covered in fabric, so you can't lean on it and you don't want to poke through it. US portal is Hollywood flats, but still not a structural wall. - Bottom 3' of proscenium portal has concrete texture treatment on it for the 'peeing' effect in the beginning of the show
Hideout Drop/Scrim	- Be aware when the hideout drop and scrim are flying in and out, so you can stay out of the way and not be hit in the head by the bottom pipe of the scrim or the steel framing/chain pocket in the drop. - Operation of the hideout drop will happen when we get to it during tech
Main Platform	- No railings along the front edge of most of the platform - The platform railings – They do have a steel structure under them, but there are aesthetic additions that are less structural. - While the back of the SR platform is open, please do not hang out or go under through the stud wall structure back there - As many people can be on the SR (6') section of the platform, though try to limit it to no more than 8 people up at the second level (8'), as it is unsupported over the band, and due to limited space with no railings at the front. (this section does have a load rating comparable to a normal residential building floor however). - Three steps between the levels of the main platform

	- There are more escape stairs down the offstage L side, watch your head when going through the doorway jack at the bottom of those
Door/escape stairs	- The door can just be pulled to open, the knob doesn't really twist - There are some jacks supporting the doorway, so just don't trip when going around them to the escape stairs - Note that when entering or exiting on these stairs, you can be seen by the audience when passing behind the band. You can pass the other way behind this area, though it is a bit more tight.
UGC Tower platform	- Ships ladder up to the 13' platform is pretty steep, so use the railings and you can go down forward or backwards depending on your comfort level - Only 3 people up there at a time – very narrow space - Platform is well supported but due to how narrow it is and its height you may feel it move slightly – this is normal - Same railings all around up there - Kickplate and mid railing bar along the back of the UGC tower, but probably don't lean against the tower - Be careful when ducking down up there, as the railings do not have a mid-rail.
Public Amenity Steps	- There are two acrylic panels at the base of the UGC columns for lights, please don't step on them - Three steps down to exit offstage L - Saloon style doors swing both ways, may need to hold them open for each other

Table 16: Safety Walkthrough Details

The safety walkthrough was thorough, and not many questions came up. The TD team and I did not stay for all of the rest of spacing, allowing the cast and director/choreographer proceed with spacing on their own. Nick, at least one of our mentors, and I were present at all of

the following tech rehearsals in the coming days, and were available to address any additional safety concerns that came up.

Tech

The tech rehearsals themselves consist of running through the show, scene by scene, with all tech elements together. At any point, the director, choreographer, designers, or technicians, may ask Abby, the Production Stage Manager, to call for a 'hold'. This stops the action on stage and allows whoever called the hold to work through notes or issues as needed. Things like quick changes or scene transitions with moving props or scenic elements are also run several times and may require extra time and attention. Therefore, tech often moves quite slowly. Though some production areas find tech as their busiest time just by the nature of it, tech is really the part for team TD to finally take a bit of a deep breath; most of our work is done. Despite how hectic load-in week had been, the only things still on our list were to finish figuring out the hideout drop opening movement, install the foam trim around the band portal once paints was done with it, install facing on the fronts of the pit platforms, trim or tape down the rough edges of muslin on the back of the proscenium portal, and finish installing the saloon doors to the UGC tower. Other than the hideout drop, most of these were relatively small, aesthetic based notes that would not largely impact the cast when we completed them.

During tech itself, I was mostly there to be on standby if any scenic concerns did come up. Fortunately, there ended up not being too much to do. There were still some changes and discoveries that came up though. For instance, the duvetyn curtains that were originally installed at the hole of the sewer wall ended up getting cut so that the light fixture inside could glow

through the opening. This was a super quick fix, as it was just some staples that needed to be removed, so Ashley and I did this note during one of the breaks.

Figure 56: Sewer wall before removing duvetyn curtains (L) and inside of sewer wall without curtains (R).

Another quick fix note that came up during tech actually came from an actor. At one point in the show, Dante, who played Bobby Strong, has to go down the pit stairs headfirst on his stomach. He expressed a concern about the lauan facing by the top step of the escape stairs being a bit rough. He was worried about accidentally pulling it off of the platform when he was crossing over it, as well as the roughness possibly tearing his costume. At the next break, I added a few more screws into this piece of facing to secure it more, and I quickly sanded the top of it just in case.

The largest change that came up during tech was one that actually ended up working out for the best. Trying to figure out the action involving the hideout drop had been quite stressful for myself and the carpenters during the prior days. From my understanding, the hideout drop was supposed to fly in while in the ‘open’ position, then close while on stage, and eventually fly out closed. I also was under the impression that both the drop being flown in and out and it being opened and closed would both be actions that would happen several times during the show. The problem with this from a technical standpoint was specifically the drop flying in or out while the muslin was pulled to the open position. When closed, this entire unit is only about two inches thick but because of the way the fabric, stiffened by paint, bunched up when being paged through the rings/pulley system, it created a rather wide side profile, probably of at least two or three feet. However, the lineset that it was hung on was very close to some of the others, including an electrics lineset. If the hideout drop were to fly in or out while open, the fabric would undoubtedly interfere with the lights or the other linesets, and either get caught or jostle things around.

Figure 57: John Geisz working on sewing rings to the back of the hideout drop

Luckily, the hideout drop is only used in Act 2, so we had some more time during the days to troubleshoot this perceived problem. Lead Carpenter, John Geisz, took charge on this, as he had built a scale model of the drop earlier in the build process to test the opening and closing mechanism. Originally, the plan was to create a more nicely paged effect by sewing rings to the back of the drop for a rope to track through and lead to pulleys operated by an actor at the side. Since this was the method that was created the bulky side profile, a backup plan had the pulley just go through a single ring to make less folds and therefore less bulk. This did help that problem, but it did not create as nice of a drape. This was also challenging to find time to work on, as once it is tech, the lighting designer usually spends most of the day in the space working on light cues, so having the large hideout drop flown in and blocking most of the set would make it impossible to work on most of the scenes.

Figure 58: Hideout Drop Open - Show Photo by William Wellman

Regardless, when it finally did come up to scenes with the hideout drop in tech, we were prepared with both options – however, we found out here that in reality, the drop would only ever be flown in or out while closed, and it only even needed to be opened once. While this misunderstanding did completely solve our problem, it was a bit disappointing, as there had been a lot of time and effort spent trying to make this work. Nonetheless, this ended up working out for the best, and it was relatively simple to teach the opening mechanism to the performer who operated it.

During the first few days of the tech process, I did request time in the theatre space during the day so that the carpenters and I could address things like the hideout drop, or other notes, and often we were working around lighting and sound in the space. Some of these notes came from just my to-do list, some came from Alivia's requests, and some came up during the production meeting at the end of a night of tech. Notes that came up during these production

meetings were sent out in the nightly rehearsal reports emailed out by Abby. Some of these daytime notes included adding hooks to the inside of the UGC tower for props storage, and putting up some additional masking near the exit of the Amenity.

Other than working on the hideout drop, the biggest thing that we worked on during tech was the 3D foam detail that added dimension around the band portal of the upper main platform. This was something where I really just misinterpreted the time that it would take, and so it was not ready sooner. Luckily, once it was ready, the install of this was mostly quick. One corner did end up needing to be cut back as it had overlapped with the tower, but once that was done it all just needed to be screwed in from the back of the band portal flats.

Figure 59: Band portal without foam and then with foam

All in all, tech (on the TD side of things at least) for this show went quite smoothly, and everything on the scenic side of things was fully complete a few days before previews or opening. Since this was the case, no one from the TD team were present at the Wednesday workday rehearsal (this is usually more for acting notes than tech notes), and we just went to the production meetings after the preview performances instead of being present the whole night.

Chapter 6

The Run of the Show

Figure 60: Production Team & Cast of Urinetown – photo by William Kenyon

Finally, after months of work by myself and so many others, *Urinetown* opened to a near sold-out show on February 23rd. Each night, the Production Stage Manager (PSM), sent a performance report to the production team to update us all on how the performance went and if anything happened that would affect all of us. Team TD/Scenic managed to make it through the run of the show with no notes every day! There were 7 performances of *Urinetown,* and it closed on March 1st. Between 215-360 people attended each night. Those are awesome numbers, especially for a show that mostly had weekday performances. From the energy in the room when I saw it Opening Night, as well as from talking with my

friends, peers, and family who saw the show, it seemed pretty well received as a funny and well-done production, despite its unexpected and absurd concept and subject matter.

With no notes, I was pretty much hands off at this point. The only other thing there was for me to do was to attend photocall, which is an opportunity for designers and technicians to take pictures of a few requested scenes. This happened after the Monday, February 26th show. I was able to borrow one of my friend's cameras and get some pictures, though I do not have much experience with photography. To wrap up this section as well as this thesis before the final 'Retrospective' section, are some of the pictures that I took that night, as well as some taken by other photographers there that night. Photos captioned without photo credit listed were taken by me.

Figure 61: 'Snuff that Girl'

Figure 62: Act 1 Finale

Figure 63: Bobby Strong's Arrest - Photo by Finnegan Gavelli

Figure 64: Bobby Strong's Death - Photo by Finnegan Gavelli

Figure 65: Hope takes over the company - photo by Quinn McDonald

Figure 66: Caldwell's Office - Photo by Quinn McDonald

Figure 67: 'Privilege to Pee' - Photo by William Wellman

Chapter 7

Retrospective

The process of compiling, revisiting, and documenting the work that I did on *Urinetown* for this thesis has been nearly as challenging of a process as the work itself was. When I think about all the time and all the work that I contributed to this show, my biggest reflection is how much I learned. I learned a great deal from my successes, but also from my oversights.

Prior to working on *Urinetown,* my experience in technical direction had been pretty much entirely through two show assignments last year. I was one of the assistant technical directors of *Into the Woods,* and immediately after I worked as the technical director for *Emilia,* both Penn State Centre Stage productions. I was very grateful to have had as much experience as I did going into this show. While *Into the Woods* was similar in scale to *Urinetown,* as one of two ATD's, I was not very involved with a lot of the process. As TD, I was much more involved in *Emilia.* Working on that show was an amazing experience, but it was a significantly smaller show than *Urinetown*. I would estimate that I did at least three times more drafting for *Urinetown* than I did for *Emilia,* just by the nature and scale of each of their sets.

One thing that I think I could have done better for this show is my time management. At the creation of the build calendar, I felt confident in my ability to keep up with the shop. For *Urinetown* especially, I was initially determined to get as much drafting out of the way early on as possible. Unfortunately, I did not keep up with the calendar I had built for myself. I think that falling behind in drafting became one of the largest contributing factors to the stress and setbacks during load-in.

However, despite falling behind at times, I think overall my drafting is the biggest area that I saw growth in my skills during this process. Looking at the plates I created for *Emilia* or *Into the Woods* compared to *Urinetown* feels like night and day; while my plates for the other shows were not terrible, I think the ones I made for this production are significantly better in almost every aspect. My notes and

dimensions much clearer, my layouts and use of space much cleaner, and generally these plates were more effective and efficient at communicating my intentions of the build of a unit than those I created for prior shows.

Technical design was another area of success to me. Particularly, I am very happy with the structural design of the bridge platform, the framing and rigging designs of the proscenium portal, and the complicated construction of the UGC tower. All of these scenic units featured elements that I had never worked with before, so I am very glad to be broadening my experience and exposure to different construction techniques.

Load-in is easily the part of the process that I can point at as being the most difficult. A portion of the setbacks and challenges that came up can be attributed I think to the fact that I had never been behind the reigns of a build and installation process to this scale. Some problems we experienced were really things that I don't think I would have caught no matter what, and so I have to just celebrate the fact that we were able to be flexible and creative in the moment to address them. On the other hand, there were many elements that I should have taken more time to plan. For instance, connecting the UGC tower to the tower platform stud walls was a problem that likely did cross my mind while drafting, but I did not take the time in the moment to think it all the way through. Rather, I assumed we would have time to figure something out later, or during load in. Enough of these little 'I'll think about this later' situations stacked up, making everything seem more unmanageable when it came time to address it all, especially during load-in.

The pit installation is what I know I overlooked the most. I wish that either me or my mentors had recognized or focused more on the massive undertaking that this was going to be from the start. Maybe then we could have raised more of a concern with load-in time for the pit during the budgeting phase. However, all of this is naturally clear in hindsight. For much of budgeting and even into the drafting and build stage before I started really working on the pit, it felt like a daunting, but overall quite attainable

task. It wasn't until I started discussing the details of the pit prep process with John that I started to get a handle on what it would take to execute it all, and at that point it was too late to change much. In the future, I now know to investigate unknown processes like this more thoroughly much earlier on.

An extra challenge of this whole process was navigating the hierarchies of an educational shop, particularly as a young student TD in an environment with experienced carpenters. For one thing, since I am a full-time student with classes, a job, and other responsibilities outside of this show, I am not able to commit as much time to the shop as my TD mentors are. An inherent result of this is some decisions or changes having to be made in the shop when I am not present. I think that I should have taken it upon myself to check in more consistently with the daily progress of the shop to stay on top of these changes. Furthermore, there were some moments especially during the drafting phase where I fell behind in my class work while trying to keep up with show deadlines. Though I am primarily here at Penn State for my classes and education, I sometimes felt pressure to prioritize this production over my schoolwork. For instance, one day during load-in week, I had to leave a few hours before end-of-day to catch up on my homework. As a response, I was told by a carpenter "isn't that what midnight to 8AM is for?". While this likely was a joke, the underlying sentiment carried the message that this show should be more important than my classwork and my wellbeing. I felt extremely guilty for leaving that day, and it felt like I did not have the authority to speak back to this carpenter since they had more experience than me. There is a lot about technical direction that I really enjoy, but experiences like this make me very excited to continue my work as a TD beyond the educational setting post-graduation. Unfortunately, even beyond the university setting, it does seem like there is an underlying culture within the technical direction field that we should be willing to work excessive hours and put a show before ourselves. This feels like a harmful and unproductive culture that I hope to stand up to as I get more experience in my field.

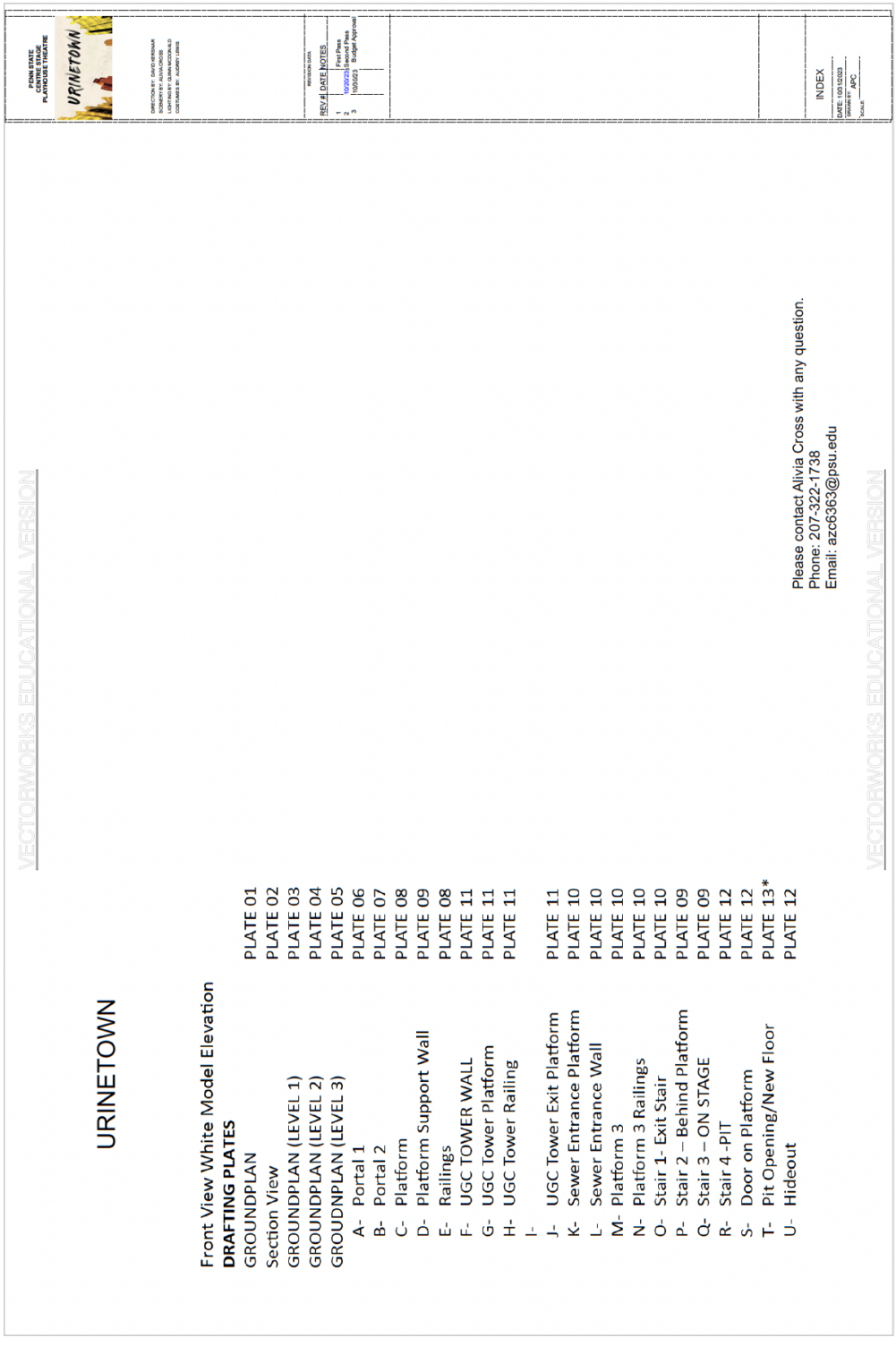
Figure 68: Light cast through the UGC Tower letters during tech

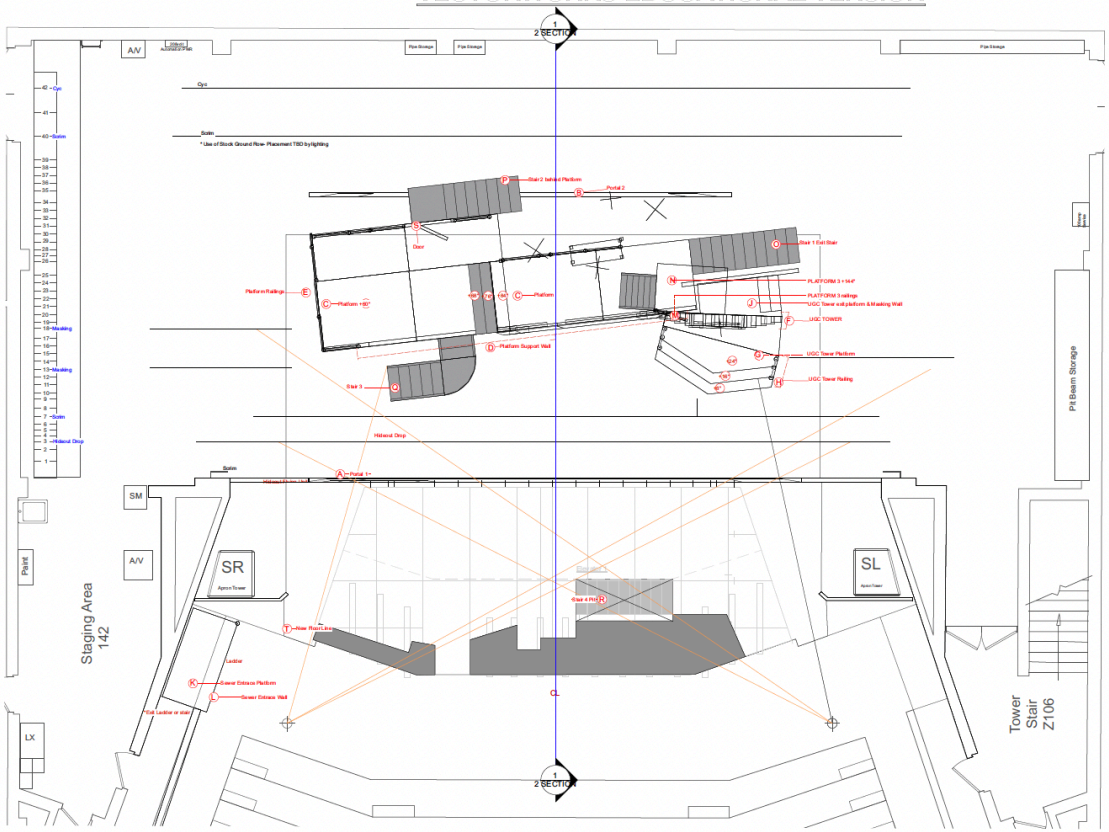
Despite all the ups and downs of this production, I am very proud of all I accomplished in my work for this show. At the end of the day, I enjoy technical direction because of its challenges, because of the creative problem solving, because every show is different, and because there is always more to learn. I learned so much from this process in terms of not only my technical skills but also about how I can continue to grow as a collaborator and a theatre artist. More than just what I enjoy about technical direction, what I love most about working in the production of theatre as a whole is the moment when you can see months of hard work come to life on stage, and *Urinetown* was no different. The moment where it all felt the most rewarding for this show was a moment during tech, when we realized how beautifully the lights were able to shine through the letters of the UGC tower and cast their silhouette onto the floor. It was an exciting moment of inter-department success that finally allowed me to see past the stresses of the process and simply be proud of what we had all created together.

Appendix A

Scenic Designer's Final Drafting Package and Color Elevations

Everything in this appendix is the work of 2nd Year Scenic Design MFA Candidate Alivia Cross.





NOTES

Extension of Pit/Floor Based on exsisting Structure

Band Located Under the platform will need additional monitoring solutions

Tap Dance numbers happen on both the deck and the platforms

Stairs (except ships ladder or stock) 8" rise 11" run

PENN STATE
CENTRE STAGE
PLAYHOUSE THEATRE

DIRECTION BY: DAVID KERSNAR
SCENERY BY: ALIVIA CROSS
LIGHTING BY: QUINN MCDONALD
COSTUMES BY: AUDREY LEWIS

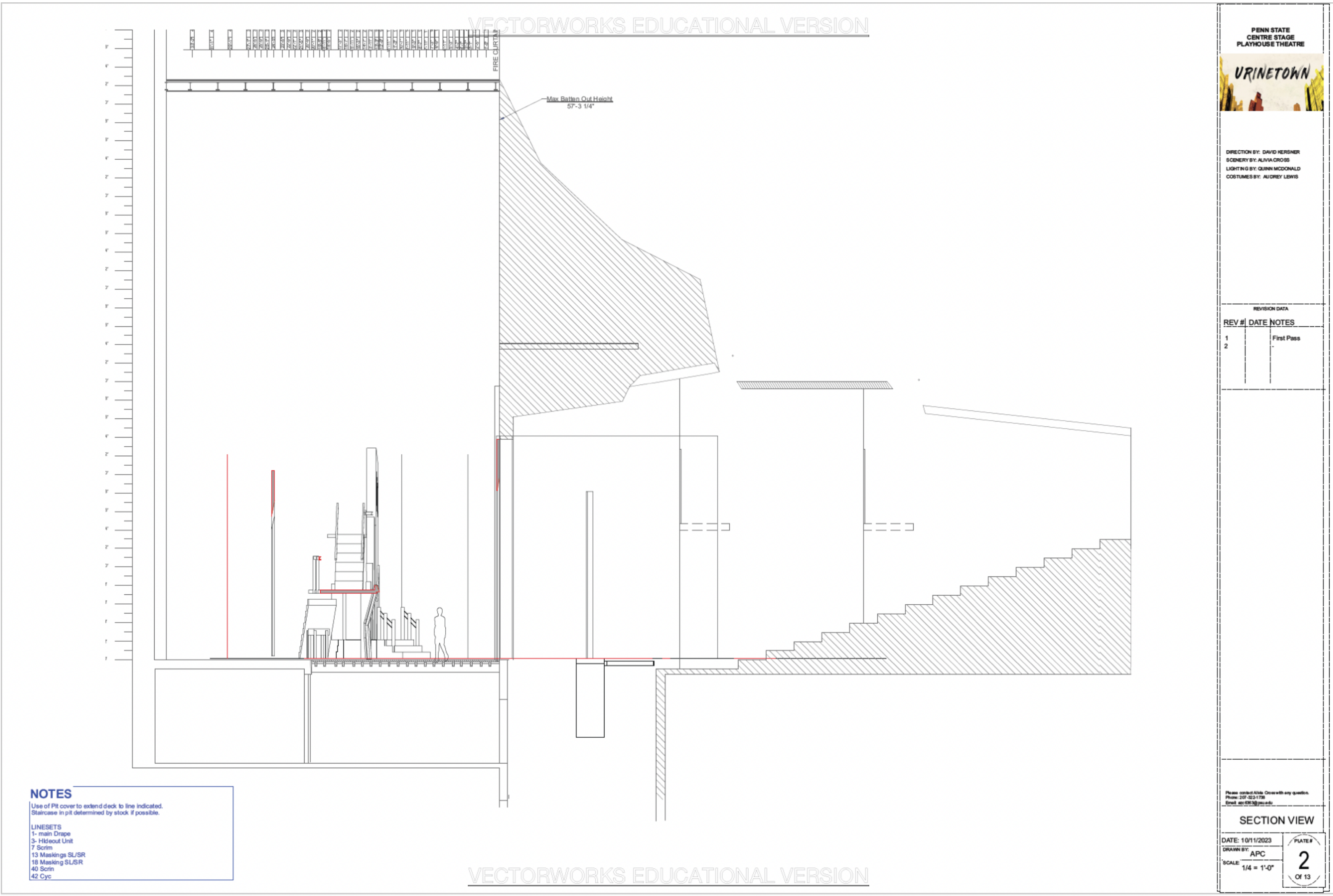
REVISION DATA

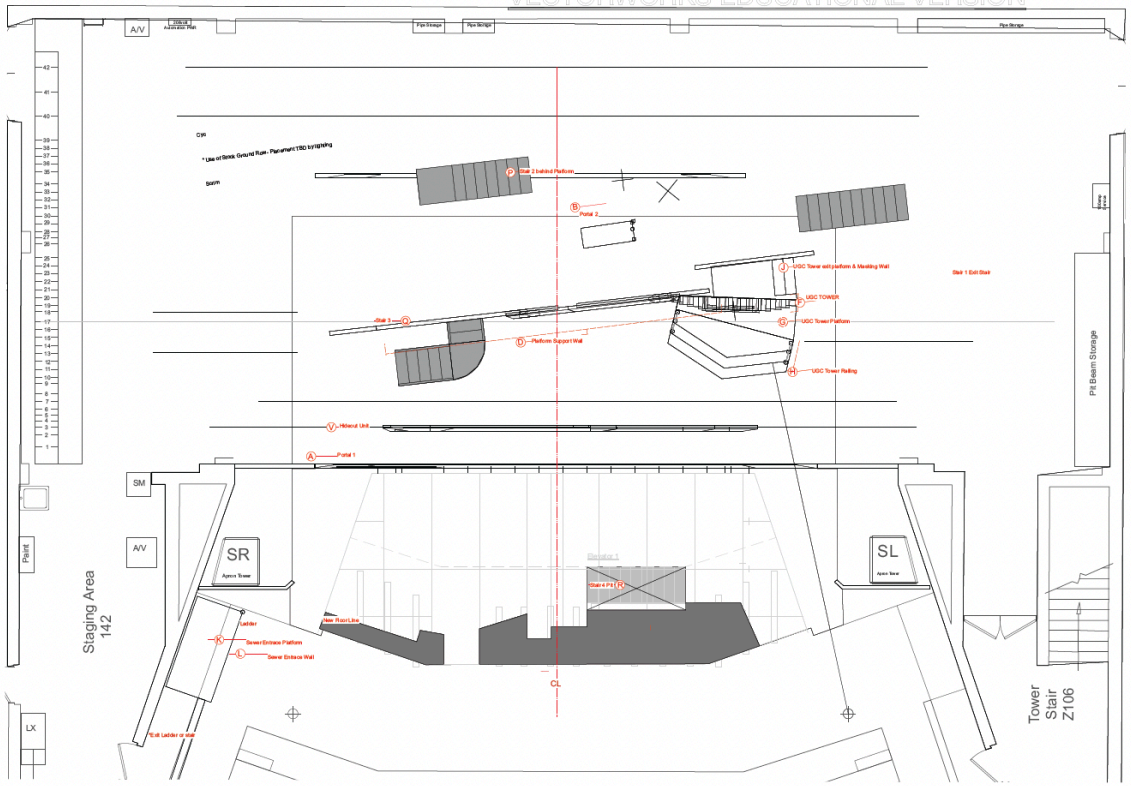
REV #	DATE	NOTES
1		First Pass
2	10/20/23	Second Pass
3	10/30/23	Budget Approval

Please contact Alivia Cross with any question.
Phone: 215-senior
Email: asc6963@psu.edu

GROUND PLAN

DATE: 10/31/2023
DRAWN BY: APC
SCALE: 1/2 = 1'-0"
PLATE #
1
OF 13


VECTORWORKS EDUCATIONAL VERSION
FIRE CURTAIN
Max Batten Out Height
57'-3 1/4"
NOTES
Use of Pit cover to extend deck to line indicated.
Staircase in pit determined by stock if possible.
LINESETS
1- main Drape
3- Hideout Unit
7 Scrim
13 Maskings SL/SR
18 Masking SL/SR
40 Scrim
42 Cyc
VECTORWORKS EDUCATIONAL VERSION
PENN STATE
CENTRE STAGE
PLAYHOUSE THEATRE
URINETOWN
DIRECTION BY: DAVID KERSNER
SCENERY BY: ALIVIA CROSS
LIGHTING BY: QUINN MCDONALD
COSTUMES BY: AUDREY LEWIS
REVISION DATA
REV # DATE NOTES
1 First Pass
2 -
SECTION VIEW
DATE: 10/11/2023
DRAWN BY: APC
SCALE: 1/4 = 1'-0"
PLATE #
2
Of 13



NOTES

Use of Pit cover to extend deck to line indicated.
Staircase in pit determined by stock if possible.

Use of Linesets 2,7, 11, 22, 32, 40, and 44.

As much use of stock platforms and staircases possible is prefered. Discussed between designer/TD.

PENN STATE
CENTRE STAGE
PLAYHOUSE THEATRE

DIRECTION BY: DAVID KERSNER
SCENERY BY: ALIVIA CROSS
LIGHTING BY: QUINN MCDONALD
COSTUMES BY: AUDREY LEWIS

REVISION DATA

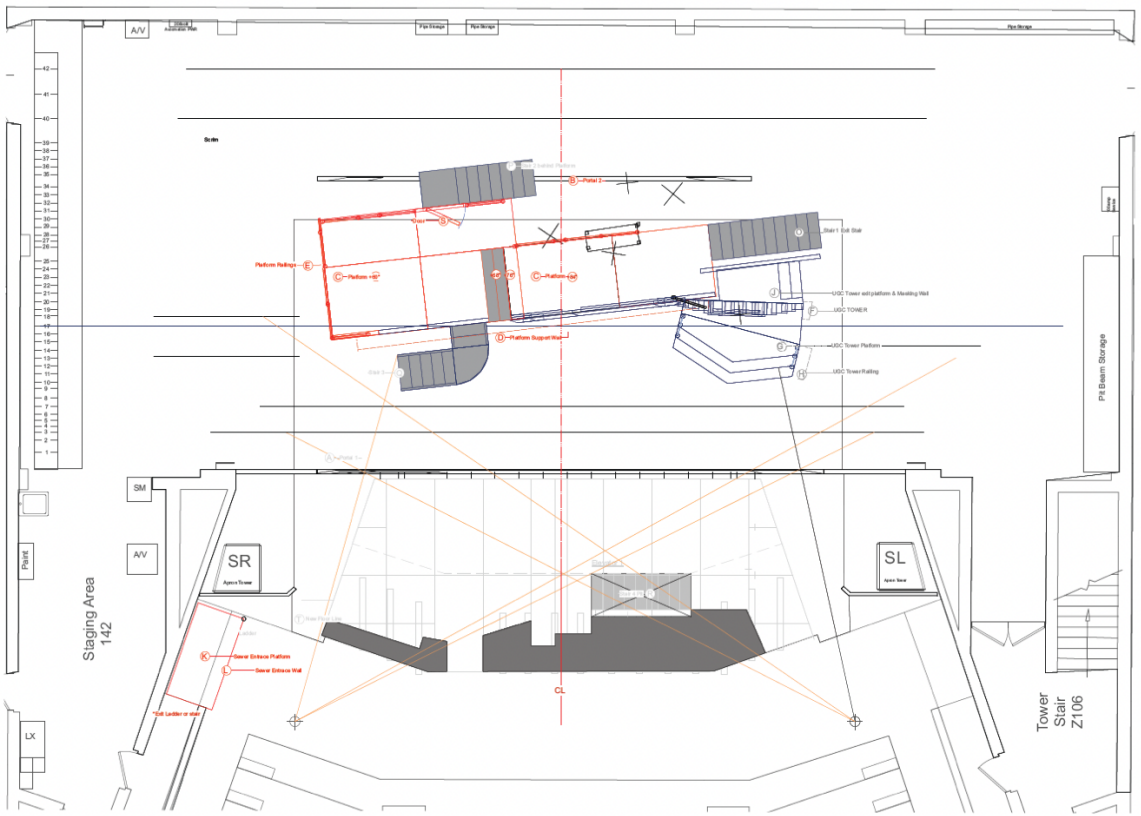
REV #	DATE	NOTES
1		First Pass
2		-

Please contact Alivia Cross with any questions.
Phone: 207-322-1709
Email: apc5363@psu.edu

GROUND PLAN
LEVEL 1

DATE: 10/11/2023
DRAWN BY: APC
SCALE: 1/4 = 1'-0"

PLATE #
3
Of 13



NOTES

PENN STATE
CENTRE STAGE
PLAYHOUSE THEATRE

URINETOWN

DIRECTION BY: DAVID KERSNAR
SCENERY BY: ALIVIA CROSS
LIGHTING BY: QUINN MCDONALD
COSTUMES BY: AUDREY LEWIS

REVISION DATA

REV #	DATE	NOTES
1		First Pass
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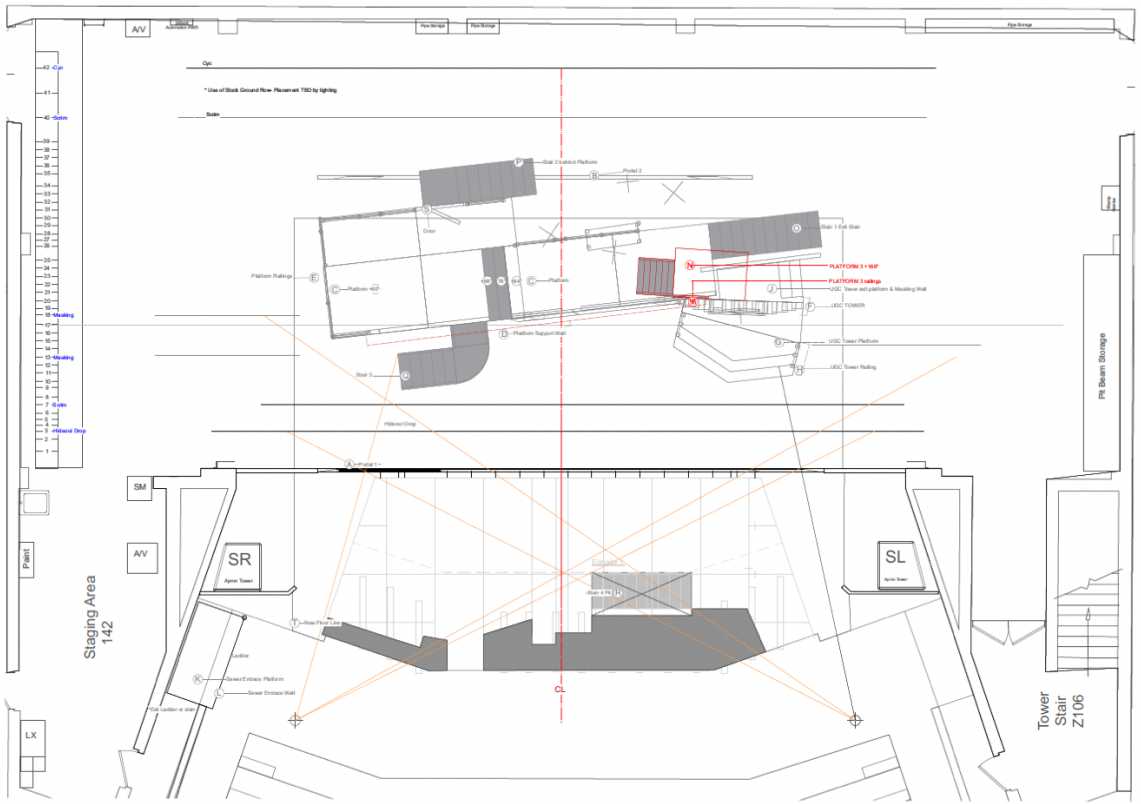
Please contact Alivia Cross with any questions.
Phone: 207-332-1736
Email: ajc6230@psu.edu

GROUND PLAN
Level 2

DATE: 10/20/2023
DRAWN BY: APC
SCALE: 1/2 = 1'-0"

PLATE #
4
Of 13



NOTES

PENN STATE
CENTRE STAGE
PLAYHOUSE THEATRE

URINETOWN

DIRECTION BY: DAVID KIERSNAR
SCENERY BY: ALIVIA CROSS
LIGHTING BY: QUINN MCDONALD
COSTUMES BY: AUDREY LEWIS

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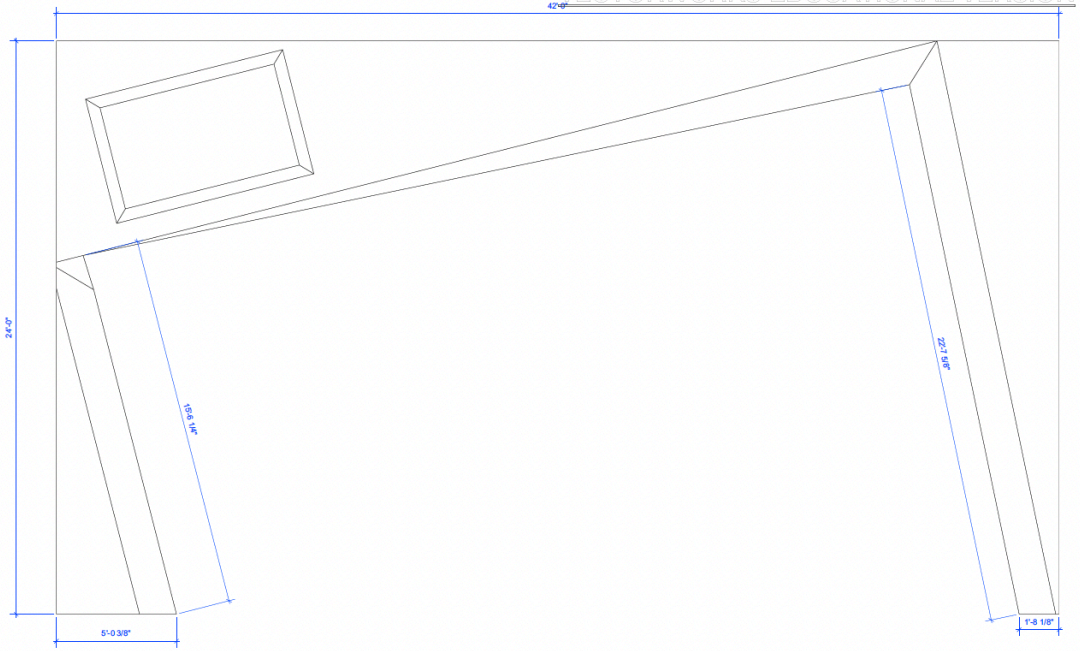
Email: ac4934@psu.edu

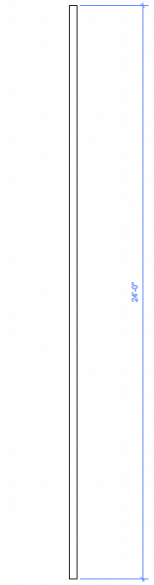
GROUP PLAN
Level 3

DATE: 10/20/2023
DRAWN BY: APC
SCALE: 1/2 = 1'-0"

PLATE #
5
OF 13



A Portal 1 Front View



A Portal 1 Right View

A Portal 1 Top View

NOTES

Portal 1 is situated inside the existing Procenium

Steel Framing with painted muslin facing. No physical demension, Painted texture and "slope".

The "Urinetown" sign is painted into the facing of Portal #1

Rigging to set just behind proscenium. Will need masking if there is a visuable gap between proscenium and portal.

Bottom 36" of portal to be coating in concrete texture to allow for "pee" moment with character Old Man Strong.

Depth dependant on steel frame

REFERENCE IMAGES
*Not in Scale


Lining / Painted Style


Industrial Reference #1


Industrial Reference #2


Industrial Reference #3

PENN STATE
CENTRE STAGE
PLAYHOUSE THEATRE

DIRECTION BY: DAVID KERSNAR
SCENERY BY: ALIVIA CROSS
LIGHTING BY: QUINN MCDONALD
COSTUMES BY: AUDREY LEWIS

REVISION DATA

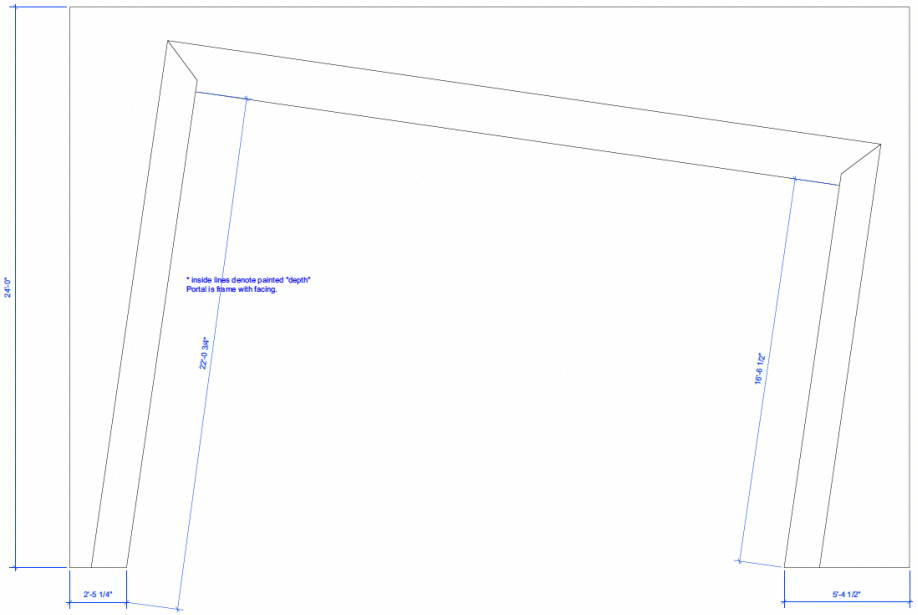
REV #	DATE	NOTES
1		First Pass
2	10/20/23	Second Budget Pass
3	10/30/23	Budget Approval

Please contact Alivia Cross with any question.
Phone: 207-522-1178
Email: asc5363@psu.edu

Portal 1

DATE: 10/20/2023
DRAWN BY: APC
SCALE: 1/2 = 1'-0"

PLATE # 06 Of 13



B Portal 2 Front View

B Portal 2 Right View

B Portal 2 Top View

NOTES

Portal 2
Wooden Framing faced with painted facing.

Will be attached to the deck.

True depth dependant on construction. The depth notated above will become a painted element onteh muslin fabric.

REFERENCE IMAGES
*Not in Scale


Lining / Painted Style


Google Purple Geometric


Google Purple Reference #2

PENN STATE
CENTRE STAGE
PLAYHOUSE THEATRE

DIRECTION BY: DAVID KERSNAR
SCENERY BY: ALIVIA CROSS
LIGHTING BY: QUINN MCDONALD
COSTUMES BY: AUDREY LEWIS

REVISION DATA

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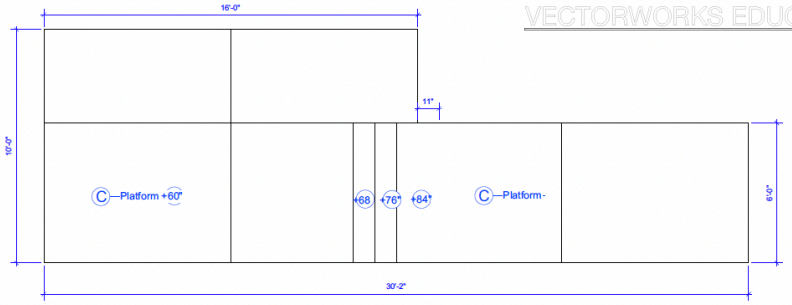
3	10/30/23	Budget Approval

Please contact Alivia Cross with any question.
Phone: 207-353-1798
Email: aec6367@psu.edu

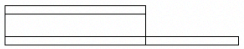
Portal 2

DATE: 10/20/2023
DRAWN BY: APC
SCALE: 1/2 = 1'-0"

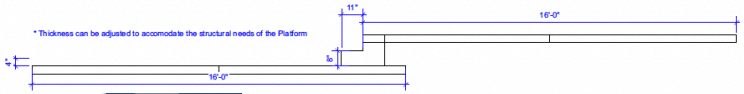
PLATE # 07 Of 13



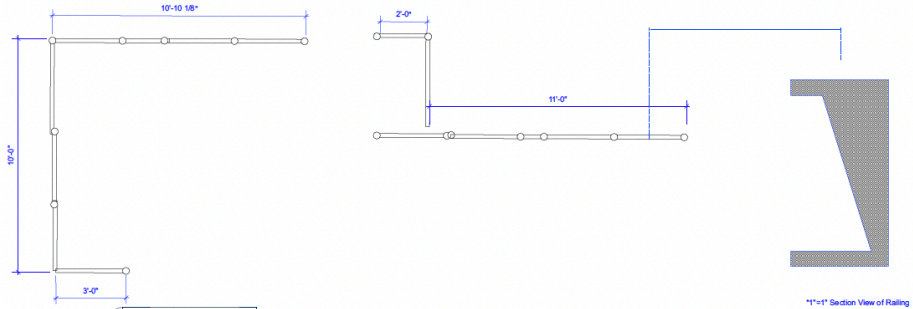
C Platform Top View



C Platform Right View

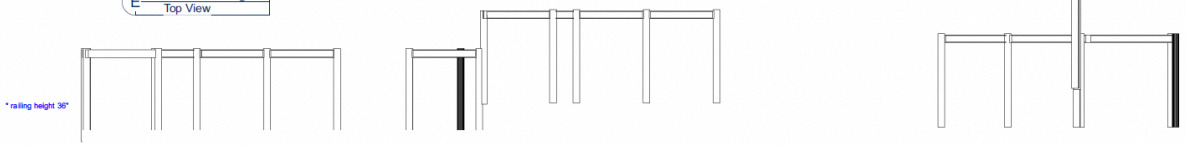


C Platform Front View



E Platform Railings Top View

*1"=1" Section View of Railing



E Platform Railings Front View

E Railings Right View

NOTES

Platform can be constructed in any way

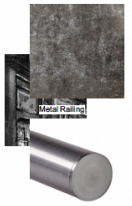
Platforms will have tap dancing - Refer to Sound

Additional Railing can be added to increase safety as needed
If visable to audience please discuss with designer.

Railing Height 36"

DS edge of platform should have painted facing if not hidden by Platform Support wall.

REFERENCE IMAGES
*Not in Scale



Metal Railing Post

Platform "Office" Tile

Platform "Office" Tile Option #2

PENN STATE
CENTRE STAGE
PLAYHOUSE THEATRE

DIRECTION BY: DAVID KERSNAR
SCENERY BY: ALIVIA CROSS
LIGHTING BY: QUINN MCDONALD
COSTUMES BY: AUDREY LEWIS

REVISION DATA

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3	10/30/23	Budget Approval

Please contact Alivia Cross with any question.
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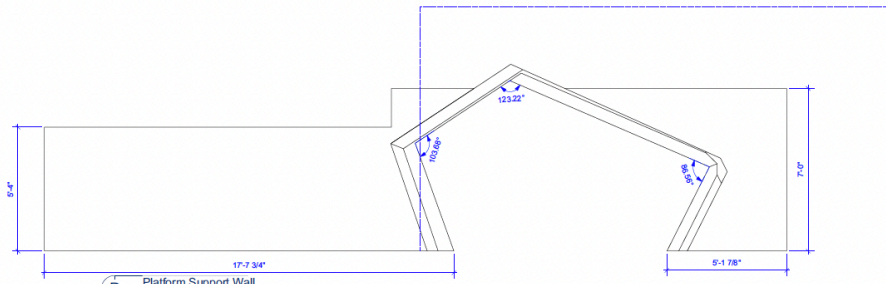
Email: aec4363@psu.edu

C-Platform, E-Railings

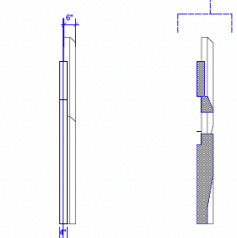
DATE: 10/20/2023
DRAWN BY: APC
SCALE: 1/2 = 1'-0"

PLATE # 08 Of 13



D Platform Support Wall
Front View

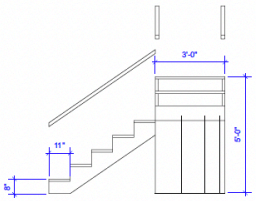
* Angles can be adjusted to round numbers if needed for construction.
Keeping the overal shape and lines of the depth.



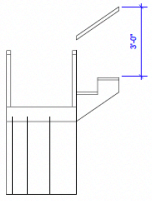
D Platform Support Wall
Right View

D Platform Support Wall
Section View

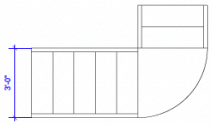
D Platform Support Wall
Top View



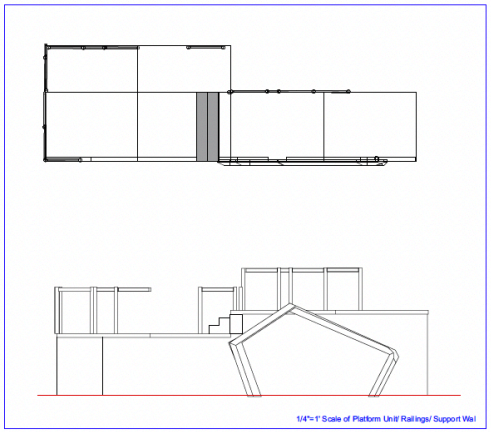
Q Stair 3 [On Stage]
Front View



Q Stair 3 [On Stage]
Right View



Q Stair 3 [On Stage]
Top View



1/4"=1' Scale of Platform Unit/ Railings/ Support Wal

NOTES

Platform can be constructed in any way

Platforms will have tap dancing- Refer to Sound

Additional Railing can be added to increase safety as needed
If visable to audience please discuss with designer.

Railing Height 36"

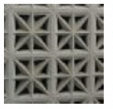
The "Cable" in the railing with be metal tubing

The Stairs will have open risers on the top two treads only.

REFERENCE IMAGES
*Not in Scale

Cable Railing Style- 2 Cables per railing

Lining / Painted Style



Support Wall
Decorative Concrete Breeze
Wall Shape Reference.
Painted - Not Textual

PENN STATE
CENTRE STAGE
PLAYHOUSE THEATRE

DIRECTION BY: DAVID KERSNAR
SCENERY BY: ALIVIA CROSS
LIGHTING BY: QUINN MCDONALD
COSTUMES BY: AUDREY LEWIS

REVISION DATA

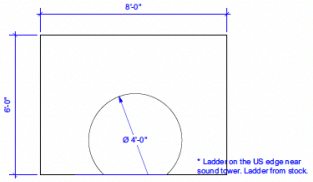
REV #	DATE	NOTES
1		First Pass
2	10/20/23	Second Budget Pass
3	10/30/23	Budget Approval

Please contact Alivia Cross with any question.
Phone: 207-323-1738
Email: asc5363@psu.edu

D-Platform Support Wall

DATE: 10/20/2023
DRAWN BY: APC
SCALE: 1/2 = 1'-0"

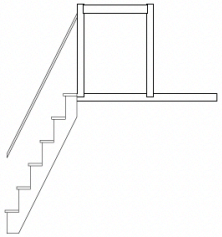
PLATE # 09 Of 13



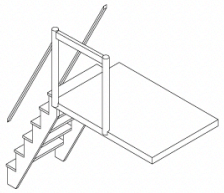
* Ladder on the US edge near sound tower. Ladder from stock.

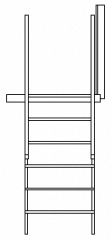
L Sewer Entrance Wall Front View

L Sewer Entrance Wall Front View



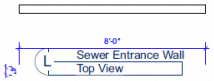
M,N Platform 3 Unit Front View



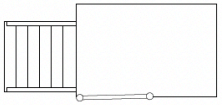


M,N Platform 3 Unit Right View

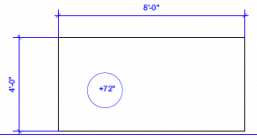
* Drafted at 4" depth, can be adjusted for structural purposes



L Sewer Entrance Wall Top View



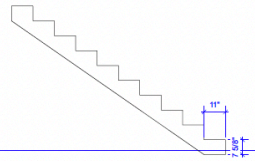
M, N Platform 3 Unit Top View



*Platform sits in the hallway entrance from stage
Is currently designed as 4'x8" based on the availiable VWX measurements of the space. May need to be adjusted based on the structural measurements of the Playhouse. Platform will extend to meet the sound tower as discussed with TD. Ladder will sit on the true floor of the playhouse to allow actors entrances. Ladder is upstage of the sewer opening.

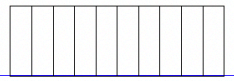
Depth can be increased if needed.

K Sewer Entrance Platform Top View



O Stair 1 Exit Stair Front View

* Stair Unit 1- Exit Stair is a non-visable to audience unit.
It serves as an entrance to the platform. Can be any stock stairunit.



O Stair 1 Exit Stair Top View

NOTES

Height of Sewer Entrance Platform is 6'

Exit Stair/Ladder can be any chosen ladder that is safe and available.

The Opening of the sewer wall should have black fabric masking split at center.

Platform 3 - Please discuss with designer. I am happy to adjust for safety

The Sewer opening sit on top of the stage decking. The Platform will extend to meet the sound tower as discussed with TD team.

Platform 3 ladder is the Ship's ladder in PSU stock as discussed with TD team on 10/30/2023.

REFERENCE IMAGES
Scale

Not a reference image
- This sewer wall units should be painted to blend into the exisiting architecture and then more of a sewer look. Designer will provide referencdes at a later date.

Lining / Painted Style

PENN STATE
CENTRE STAGE
PLAYHOUSE THEATRE

URINETOWN

DIRECTION BY: DAVID KERSNAR
SCENERY BY: ALIVIA CROSS
LIGHTING BY: QUINN MCDONALD
COSTUMES BY: AUDREY LEWIS

REVISION DATA

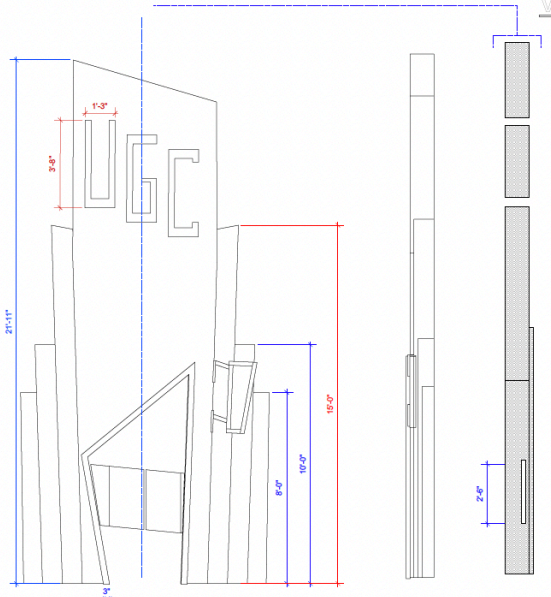
REV #	DATE	NOTES
1		First Pass
2	10/20/23	Second Budget Pass
3	10/30/23	Budget Approval

Please contact Alivia Cross with any questions
Phone: 207-322-1756
Email: aec5963@psu.edu

Sewer Entrance K, L
Platform 3
Stair 1 [Exit Stair]

DATE: 10/20/2023
DRAWN BY: APC
SCALE: 1/2 = 1'-0"

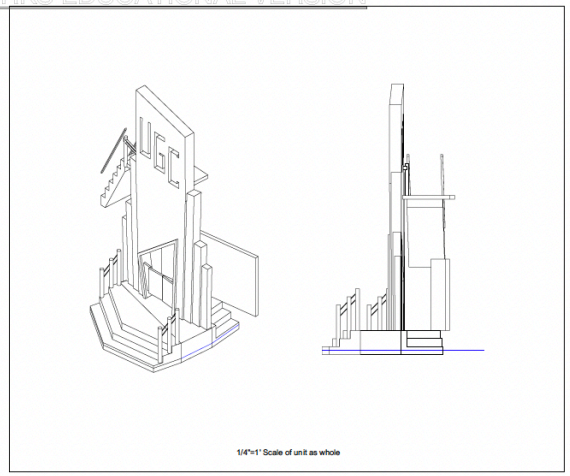
PLATE # 10 Of 13



F UGC TOWER FRONT VIEW

F UGC TOWER LEFT VIEW

F UGC TOWER TOP VIEW



1/4"=1' Scale of unit as whole

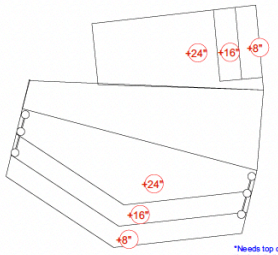
* The UGC should extend through the whole width of tower.

REFERENCE IMAGES
*Not in Scale

Stair Reference

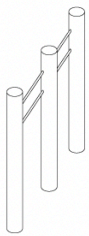
Stair Landing Reference

Stair railing reference



G PUBLIC AMENITY STAIR UNIT TOP VIEW

*Needs top opening to allow the installation of color/blast lighting fixtures to illuminate upward. Demension of minimum opening needed from lighting dept.



H UGC Tower Platform Railing ISO VIEW 1"=1'

NOTES

Smallest Column that constructs the UGC wass is 6" in depth and they increase in incriments of 2". 6",8",10", and the center wall is 12"

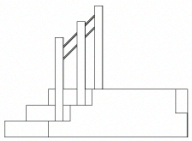
The Saloon Doors should split on center of doorway and be 30" tall and 24" off the platform.

The saloon door framing has a 3" width and a 1" depth.

(ublic amenity sign (props) attaches to UGC tower.

Tower Shoudl be able to be lit from behind

UGC stair platform should be built to allow color blast to be install to illuminate upwards onto tower.



G PUBLIC AMENITY STAIR UNIT LEFT VIEW

G PUBLIC AMENITY STAIR UNIT FRONT VIEW

PENN STATE
CENTRE STAGE
PLAYHOUSE THEATRE

DIRECTION BY: DAVID KERSNER
SCENERY BY: ALIVIA CROSS
LIGHTING BY: QUINN MCDONALD
COSTUMES BY: AUDREY LEWIS

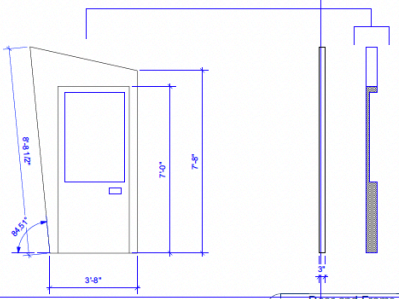
REVISION DATA

REV #	DATE	NOTES
1		First Pass
2	10/20/23	Second Buget Pass
3	10/30/23	Budget Approval

Please contact Alivia Cross with any question.
Phone: 207-323-1758
Email: acm5592@psu.edu

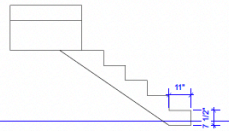
UGC TOWER WALL

DATE: 10/20/2023
DRAWN BY: APC
SCALE: 1/2 = 1'-0"
PLATE #: 11
OF 13



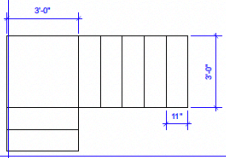
S Door and Fram
Front View

S Door and Frame
Side and Section

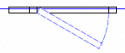


P Stair 2 Behind Platform
Front View

* The sizing of Staircase 2 can be adjusted in conversation with designer
Needs to be behind teh platform and allow audience to partially see actors as they navigate up to the platform and the door.
Painting only needed on facing towards audience.



P Stair 2 Behind Platform
Top View

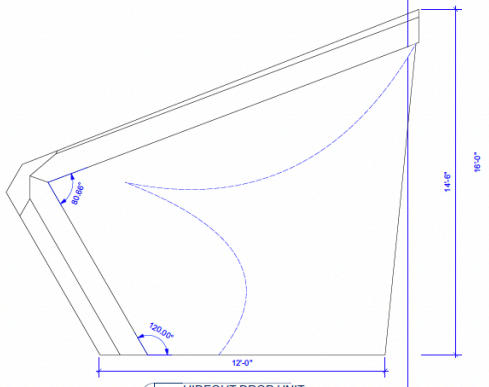


S Door and Frame
Top View

* Door is stock door with plexi glass center. As discussed with TD Team on 10/30/2023

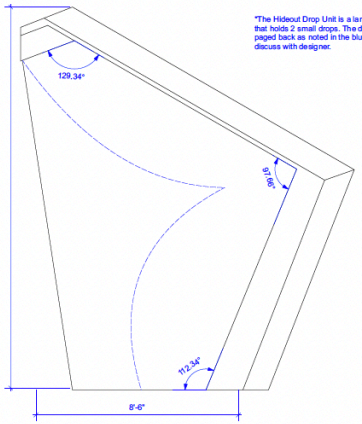
Depth of the frame can vary

Door Opens on stage direction



V HIDEOUT DROP UNIT
Front View

*The Hideout Drop Unit is a large fram that holds 2 small drops. The drops should be able to be paged back as noted in the blue dashed line. Please discuss with designer.



V HIDEOUTDROP UNIT
Side VIEW

*Unit is 2 units but attached at top center. Can be constructed as 1 unit if needed. If possible no bottom. Discuss with designer options.

V HIDEOUT DROP UNIT
Top View

NOTES

Please Discuss Hideout Unit with designer for clarification

See seperate reference for painted treatment of drops.

The "curtains" on the hideout drop need to be able to be paged open during several moments.

The "Hideout sign" is painted into the drops.

Door From stock as discussed on 10/30/2023. Will need to have plexi replaced and frosted with the UGC logo.
*See painters elevation for logo

REFERENCE IMAGES
Not in Scale

Lining / Painted Style

Pit Staircase should match otehr distressed staircase reference and slowly decrease in saturation until the lower steps are black.

PENN STATE
CENTRE STAGE
PLAYHOUSE THEATRE

URINETOWN

DIRECTION BY: DAVID KERSNAR
SCENERY BY: ALIVIA CROSS
LIGHTING BY: QUINN MCDONALD
COSTUMES BY: AUDREY LEWIS

REVISION DATA

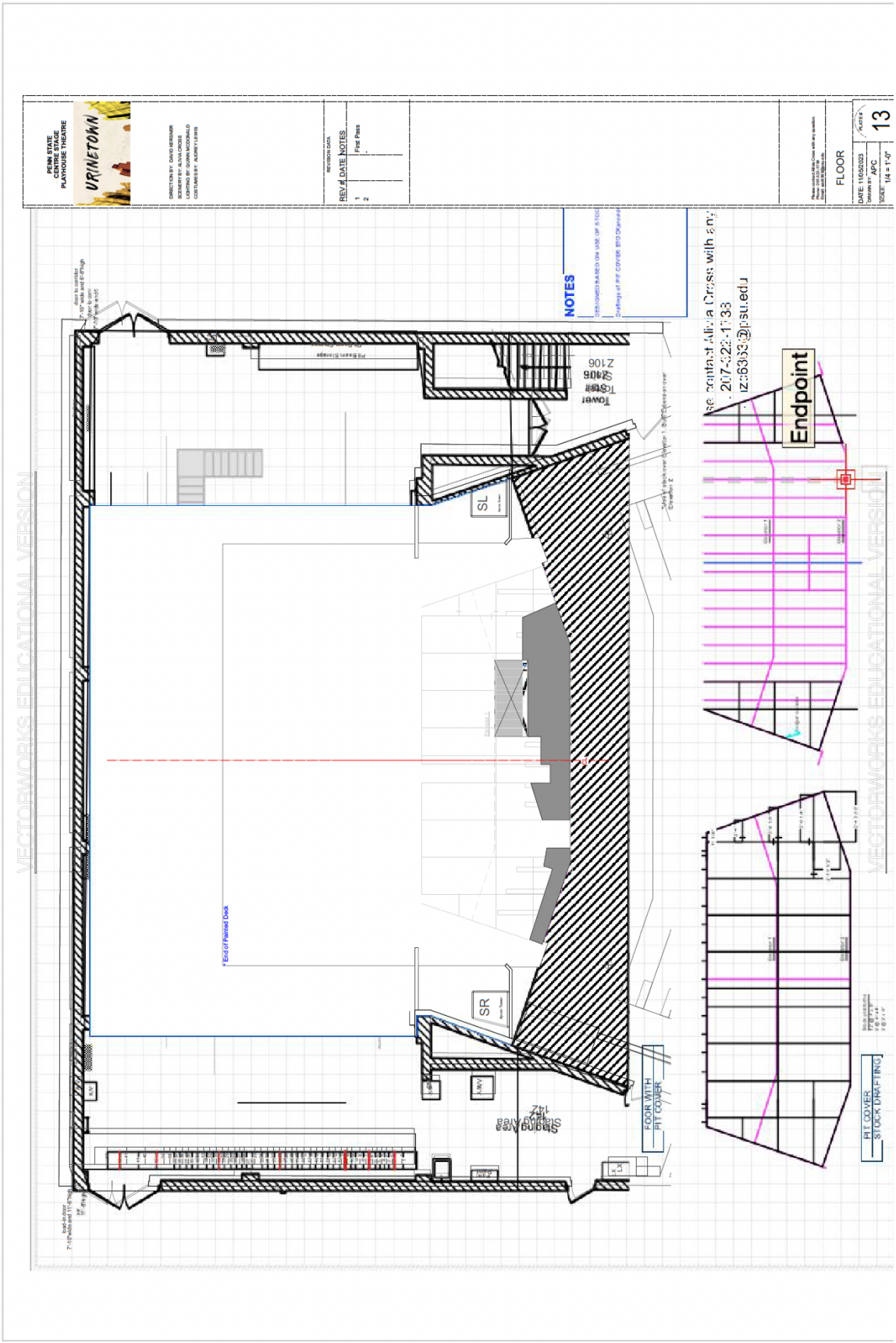
REV #	DATE	NOTES
1		First Pass
2	10/20/23	Second Budget Pass

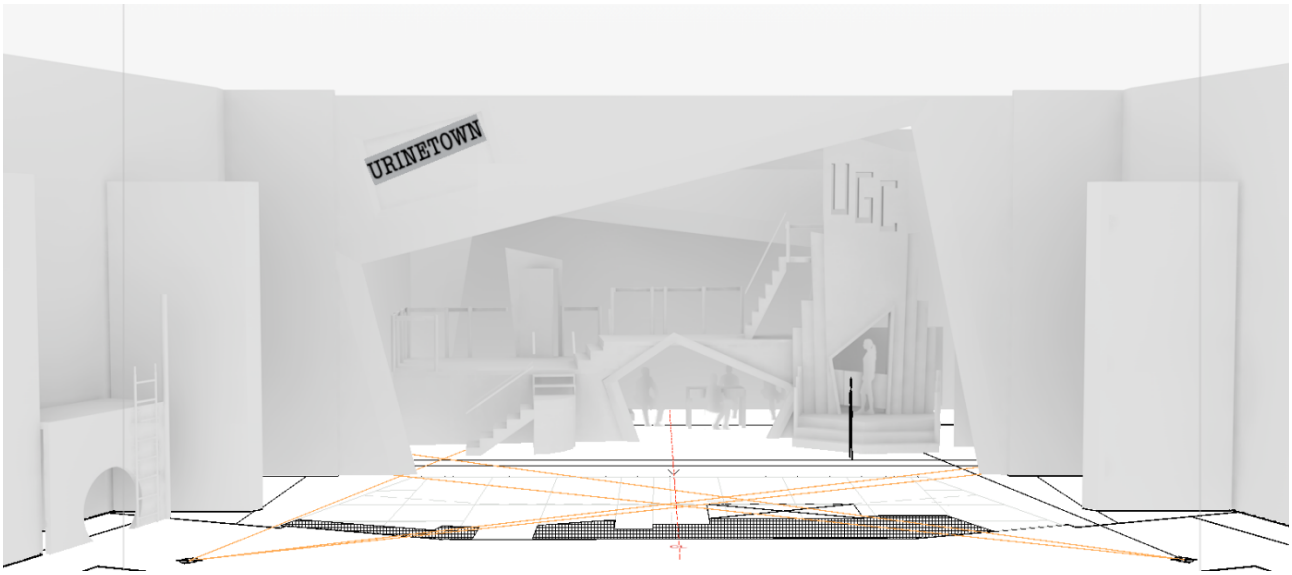
Please contact Alivia Cross with any questions
Phone: 207-323-1786
Email: ajc6363@psu.edu

S- Door
R- Stair Pit
Hideout

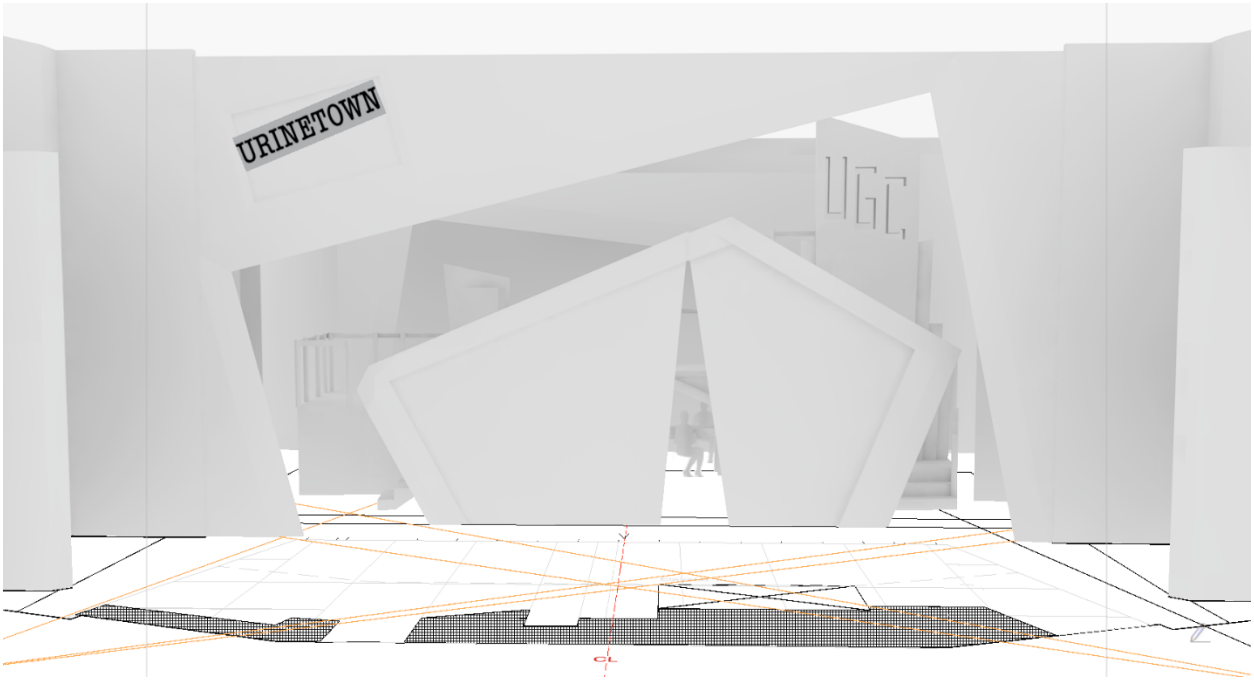
DATE: 10/20/2023
DRAWN BY: APC
SCALE: 1/2 = 1'-0"

PLATE # 12
Of 13


PENN STATE
CENTRE STAGE
PLAYHOUSE THEATRE
URINETOWN
DIRECTION BY: DAVID KRUGER
SCENERY BY: ALVIN CROSS
LIGHTING BY: SUSAN MCDONALD
COSTUMES BY: AUDREY LEWIS
REVISION DATA
REV # DATE NOTES
1 Free Pass
2
FLOOR
DATE: 11/03/2023
Drawn By: APC
SCALE: 1/4 = 1'-0"
13
NOTES
Endpoint
Tower
Z106
SL
SR
Shipping Area
142
End of Painted Deck
FLOOR WITH PIT COVER
PIT COVER
STOCK DRAFTING
VECTORWORKS EDUCATIONAL VERSION



Full Front View White Model

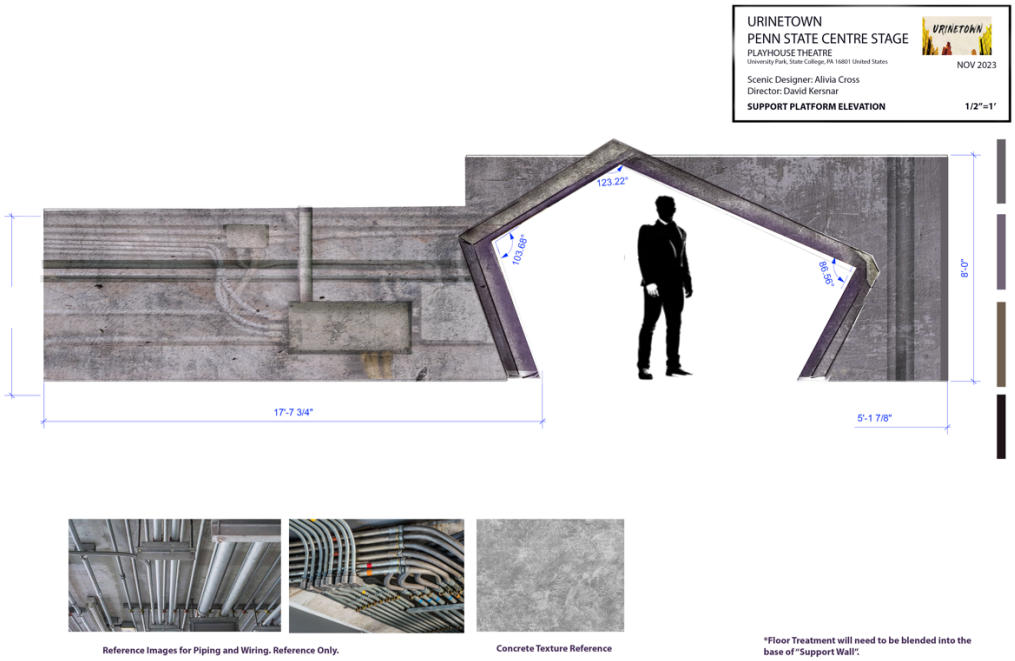


Hideout Drop Front View White Model

Proscenium Portal Elevation

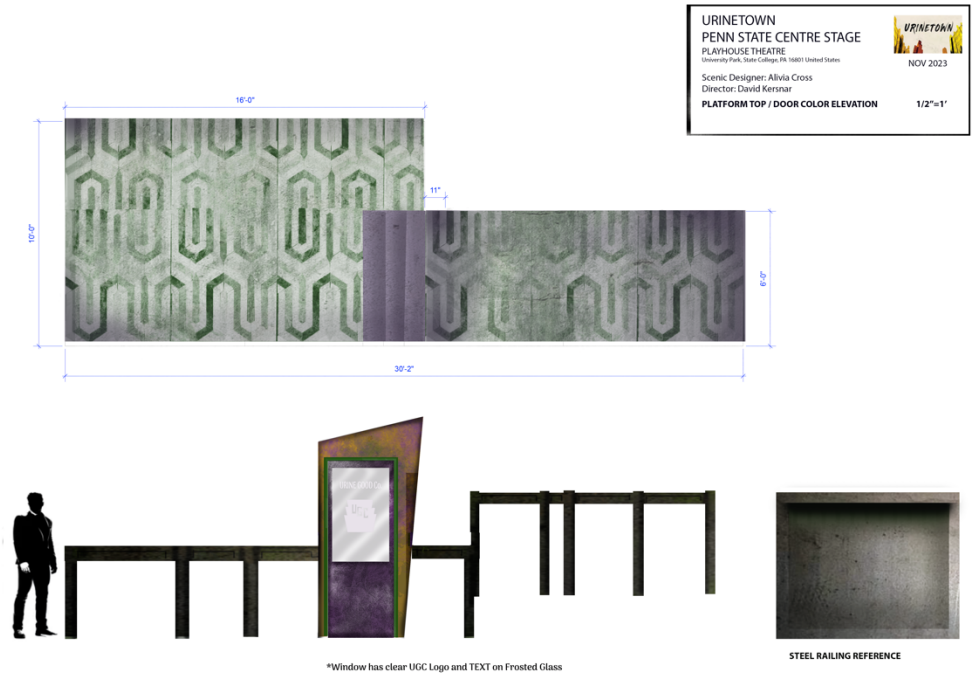
US Portal Color Elevation

Hideout Drop Color Elevation



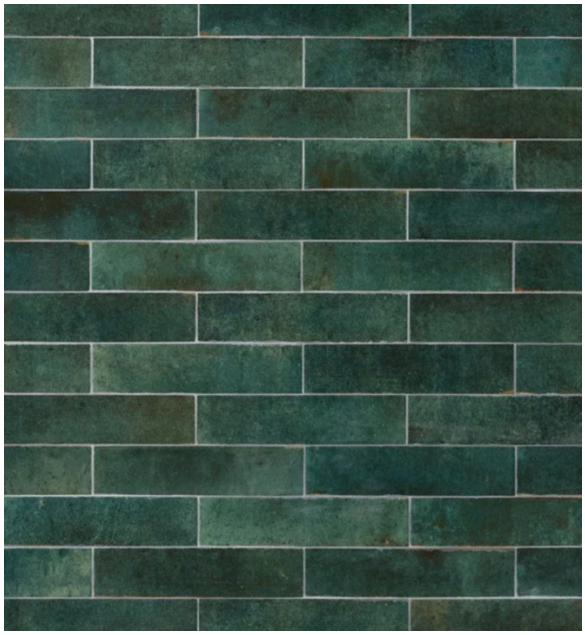
UGC Support Wall Color Elevation

Floor Color Elevation



UGC Platform Color Elevation

UGC Tower Color Elevation



Amenity Escape Wall Color Elevation

Appendix B

Final Budget Pass – Full

Note: these sheets reflect the work of myself as well as ATD Nick Baror.

SCENERY BUDGET ESTIMATE: THIRD PASS

URINETOWN

Written by Mark Hollmann and Greg Kotis

Director: David Kersner

Scenic Designer: Alivia Cross

Technical Director: Emily Simpson

Assistant Technical Director: Nick Baror

	Current Total	Alloted	Difference
Materials	$ 7,568.06	$ 7,500.00	$ (68.06)
Build Hours	294.8	742	447.2
Load-in Hours	164.45	224	59.55
Strike Hours	64.9	64	-0.9

Cover Sheet

URINETOWN

Written by Mark Hollmann and Greg Kotis

Directed by David Kersner

Scenic Designer: Alivia Cross
Technical Director: Emily Simpson. ATD: Nick Baror

Updated 10/18
Budget Pass 1

Available Hours

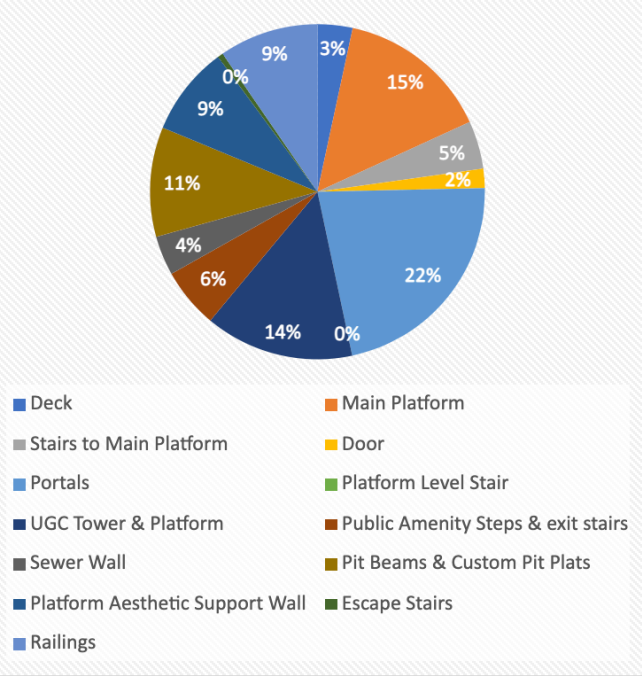
Staff	Build week 1 nov27-d1	week 2 dec4-8	week 3 dec11-15	week 4 dec18-21	week 5 jan8-12	week 6 jan16-19	week 7 jan22-26	week 8 jan29-f2	Load In	Tech/Notes	Strike	Totals
John Geisz	38	18	30	30	38	20	20	20	48		8	
Chris Shuey	38	18	30	30	38	20	20	20	48		8	
Cassidy Lilly	38	18	0	0	38	20	20	20	48		8	
489 Students	10	10	0	0	10	10	5	5	52		32	
Ray Reehill	20	10	15	15	20	10	10	10	28		8	
		CC load	CC tech									
Subtotals	144	74	75	75	144	80	75	75				

	Build	Load-In	Tech/Notes	Strike	Totals
Total Hours available	742	224		64	
Total Hours Needed	294.8	164.45		64.9	
Difference	447.2	59.55		-0.9	

Labor Overview

URINETOWN				
Scenery Budget Summary				
Director: David Kersner	Scenic Designer: Alivia Cross			
TD: Emily Simpson	Scenic Budget Estimate: 1st Pass			
ATD: Nick Baror	Last Update: 10/30			
Scenic Element	**Materials**	**Build**	**Load-In**	**Strike**
Deck	$ 209.16	4	10	0
Main Platform	$ 914.61	24	32	10
Stairs to Main Platform	$ 285.90	14	4	2
Door	$ 115.55	4	2	1
Portals	$ 1,362.17	54	24	12
Platform Level Stair	$ -	11	2	1
UGC Tower & Platform	$ 889.52	34	34	11
Public Amenity Steps & exit stairs	$ 359.40	12	4	2
Sewer Wall	$ 235.27	8	8.5	6
Pit Beams & Custom Pit Plats	$ 655.01	18	15	6
Platform Aesthetic Support Wall	$ 534.86	22	4	2
Escape Stairs	$ 32.29	15	4	2
Railings	$ 593.08	48	6	4
Hideout drop	$ 693.22	0	0	0
SUBTOTALS	6880.05	268	149.5	59
10% Contingency	688.01	26.8	14.95	5.9
Hours Total		294.8	164.45	64.9
Materials Total	7568.06			

Summary



Materials Summary Pie Chart

URINETOWN

Director: David Kersner	Scenic Designer: Alivia Cross
TD: Emily Simpson	Scenery Budget Estimate: 1st Pass
ATD: Nick Baror	10/23/2023
Scenic Element:	**Deck**
Description:	Still need to see how much re-usable maso we have to use.

	Materials Budget	Unit	Quantity	Unit Price	Total Cost
1	New 1/8" Masonite 4x8	sheet	15	13.28	$ 199.20
2	Re-used Maso	sheet	30	0	$ -
3					$ -
4					$ -
5					$ -
6					$ -
7					$ -
8					$ -
		Hardware Contingency		5%	$ 9.96
				TOTAL	$ 209.16

	Construction Procedure	# Crew	# Hours	Total Hours
1	CNC custom pieces	1	4	4
2				0
3				0
4				0
5				0
6				0
7				0
8				0
			TOTAL	4

	Load-In Procedure	# Crew	# Hours	Total Hours
1	lay deck	4	2	8
2	cut pit deck maso to fit	2	1	2
3				0
4				0
			TOTAL	10

	Strike Procedure	# Crew	# Hours	Total Hours
1	pull up maso	4	1	4
2				0
3				0
4				0
			TOTAL	0

URINETOWN

Director: David Kersner	Scenic Designer: Alivia Cross
TD: Emily Simpson	Scenery Budget Estimate: 1st Pass
ATD: Nick Baror	10/23/2023

Scenic Element: **Main Platform**

Description: SR side of main platform is 6' tall and is made up of 4 stock 4x8 and 2 stock 2x8 platforms. There are 4 parallel studwalls supporting this lengthwise as well as capping either side. The front of this studwall connects through a custom step unit to the upper level, SL. The SL platform, at 8' tall, has 4 9-1/2" tall joists running lengthwise, with 4 sheets of plywood making the deck. there are shorter studwalls on the far SL side to support this, and there's another studwall 4' in from the SL side running up and down to support the stairs and high platform tower

	Materials Budget	Unit	Quantity	Unit Price	Total Cost
1	Stock 4x8 Platforms	per	4	$ -	$ -
2	stock 2x8 platforms	per	2	$ -	$ -
3	9.5x2.5x16' joists	stick	4	$ 49.78	$ 199.12
4	2x4x16	stick	10	$ 7.88	$ 78.80
5	3/4" 4x8" CDX plywood	sheet	6	$ 39.29	$ 235.74
6	1/8" Masonite 4x8	sheet	8	$ 13.28	$ 106.24
7	2x4x12	stick	42	5.98	$ 251.16
8					$ -
9					$ -
10					$ -
11					
		Hardware Contingency		5%	$ 43.55
				TOTAL	$ 914.613

	Construction Procedure	# Crew	# Hours	Total Hours
1	studwalls - cut lumber	1	4	4
2	studwalls - assemble	1	8	8
3	build step unit (CNC & Assemble)	1	4	4
4				0
5				0
6				0
7				8
8				0
			TOTAL	24

	Load-In Procedure	# Crew	# Hours	Total Hours
1	unload everything from truck	4	1	4
2	mark points	2	1	2
3	put up studwalls	2	2	4
4	put up platforms	2	2	4
4	put up joists	4	2	8
5	put up plywood lids	4	2	8
6	maso	2	1	2
			TOTAL	32

	Strike Procedure	# Crew	# Hours	Total Hours
1	remove maso/facing	2	1	2
2	pull platforms	2	1	2
3	take down joists and ply	4	1	4
4	take down studwalls	2	1	2
			TOTAL	10

URINETOWN	
Director: David Kersner	Scenic Designer: Alivia Cross
TD: Emily Simpson	Scenery Budget Estimate: 1st Pass
ATD: Nick Baror	10/23/2023
Scenic Element:	**Stairs to Main Platform**
Description:	

	Materials Budget	Unit	Quantity	Unit Price	Total Cost
1	3' Stair Treads	Unit	3	15	$ 45.00
2	3/4" 4x8 CDX Plywood	Sheet	2	39.29	$ 78.58
3	2x4x12	Stick	11	5.98	$ 65.78
4					$ -
5	1/4" Lauan	Sheet	3	18.79	$ 56.37
6	1/8" Masonite	Sheet	2	13.28	$ 26.56
7					$ -
8					$ -
		Hardware Contingency		5%	$ 13.61
				TOTAL	$285.90

	Construction Procedure	# Crew	# Hours	Total Hours
1	CNC Time	1	2	2
2	Platform bendy ply	1	1	1
3	Maso	1	2	2
4	Pipe	1	1	1
5	Assemble	1	8	8
6				0
7				0
8				0
			TOTAL	14

	Load-In Procedure	# Crew	# Hours	Total Hours
1	align stairs, attach legs	2	1	2
2	tie in to deck/plat	2	1	2
3				0
4				0
			TOTAL	4

	Strike Procedure	# Crew	# Hours	Total Hours
1	remove stairs	2	1	2
2				0
3				0
4				0
			TOTAL	2

URINETOWN

Director: David Kersner	Scenic Designer: Alivia Cross
TD: Emily Simpson	Scenery Budget Estimate: 1st Pass
ATD: Nick Baror	10/23/2023
Scenic Element:	**Door**
Description:	

	Materials Budget	Unit	Quantity	Unit Price	Total Cost
1	1x1x16GA x24'	Stick	1	42.5	$ 42.50
2	1x12x12	Stick	1	29.97	$ 29.97
3	1/4" Lauan	Sheet	2	18.79	$ 37.58
4	Stock Door	Unit	1		$ -
5					$ -
6					$ -
7					$ -
8					$ -
		Hardware Contingency		5%	$ 5.50
				TOTAL	$115.55

	Construction Procedure	# Crew	# Hours	Total Hours
1	CNC Time	1	1	1
2	Cut steel	1	1	1
3	Assemble	1	2	2
4				0
5				0
6				0
7				0
8				0
			TOTAL	4

	Load-In Procedure	# Crew	# Hours	Total Hours
1	Attatch door + frame	2	1	2
2				0
3				0
4				0
			TOTAL	2

	Strike Procedure	# Crew	# Hours	Total Hours
1	Strike door	2	0.5	1
2				0
3				0
4				0
			TOTAL	1

URINETOWN

Director: David Kersner	Scenic Designer: Alivia Cross
TD: Emily Simpson	Scenery Budget Estimate: 1st Pass
ATD: Nick Baror	10/23/2023

Scenic Element: **Portals**

Description: Proscenium portal is steel framed in several pieces, which are assembled in the space and wrapped with muslin to be painted. They will be rigged to 3-4 chain motors attached to the grid and raised up in 3 main pieces. The US portal will also be steel framed, faced with lauaun to achieve depth. it will be deadhung from the grid or a linest.

	Materials Budget	Unit	Quantity	Unit Price	Total Cost
1	1x1 16GA Box Tube 24ft	stick	12	42.5	$ 510.00
2	Medium weight Muslin 110" wide	yard	20	12.73	$ 254.60
3	luaun	sheet	18.79	10	$ 187.90
4	shipping		1	75	$ 75.00
5	1x6x12	stick	20	13.49	$ 269.80
6					$ -
7					$ -
8					$ -
		Hardware Contingency		5%	$ 64.87
				TOTAL	$1,362.17

	Construction Procedure	# Crew	# Hours	Total Hours
1	cut/clean/prep steel	1	12	12
2	create jigs for welding	1	8	8
3	weld each frame	1	16	16
4	ce in space, assemble frames for prosc. port	4	1	4
5	wrap prosc portal with muslin	4	2	8
6	face DS portal with luaun	2	3	6
7				0
8				0
			TOTAL	54

	Load-In Procedure	# Crew	# Hours	Total Hours
1	hang chain motors	4	1	4
2	assemble baton truss and cable down to it	4	1	4
3	raise prosc portal and tie down bottom	4	1	4
4	assemble pieces of US portal	4	1	4
5	rig US portal & tie down	4	2	8
6				0
			TOTAL	24

	Strike Procedure	# Crew	# Hours	Total Hours
1	take down US portal	4	1	4
2	disassemble US portal	2	1	2
3	lower in prosc portal	4	1	4
4	disassembler prosc. portal	2	1	2
			TOTAL	12

URINETOWN

Director: David Kersner	Scenic Designer: Alivia Cross
TD: Emily Simpson	Scenery Budget Estimate: 1st Pass
ATD: Nick Baror	10/23/2023
Scenic Element:	**Platform Level Stair**
Description:	Using the 84" ships ladder, unless there is a sight line issue.

	Materials Budget	Unit	Quantity	Unit Price	Total Cost
1	84" Ship Ladder (Stock)	Unit	1		$ -
2					$ -
3					$ -
4					$ -
5					$ -
6					$ -
7					$ -
8					$ -
		Hardware Contingency		5%	$ -
				TOTAL	$ -

	Construction Procedure	# Crew	# Hours	Total Hours
1	CNC Time	1	2	2
2				0
3	Maso	1	1	1
4				0
5	Assemble	1	8	8
6				0
7				0
8				0
			TOTAL	11

	Load-In Procedure	# Crew	# Hours	Total Hours
1	Assemble	2	1	2
2				0
3				0
4				0
			TOTAL	2

	Strike Procedure	# Crew	# Hours	Total Hours
1	Strke stairs	2	0.5	1
2				0
3				0
4				0
			TOTAL	1

URINETOWN

Director: David Kersner	Scenic Designer: Alivia Cross
TD: Emily Simpson	Scenery Budget Estimate: 1st Pass
ATD: Nick Baror	10/23/2023
Scenic Element:	**UGC Tower & Platform**
Description:	Bottom walls are studwalls to support the platform, top part of wall is built from Hollywood flats. Top platform is from stock with steel railing. Side stud walls are faced with lauan.

	Materials Budget	Unit	Quantity	Unit Price	Total Cost
1	1/4" Lauan	Sheet	8	18.79	$150.32
2	2x4x12	Stick	38	5.98	$227.24
3	1x12x12 Pine	Stick	6	22.74	$136.44
4	4x8 stock platform	Stock	1		$ -
5	1-1/2" Sch 40 Pipe	Stick	1	74	$ 74.00
6	1/4" Lauan	Sheet	4	18.79	$ 75.16
7	1/2" 4x8 Sande Ply	sheet	4	46	$184.00
8	1/4" 4x8 Frosted Plexiglass	Sheet	1		$ -
			Hardware Contingency	5%	$ 42.36
				TOTAL	$889.52

	Construction Procedure	# Crew	# Hours	Total Hours
1	Cutting materials	1	4	4
2	CNC Time	1	8	8
3	Assembling studwalls	1	8	8
4	Assembling flats	1	4	4
5	Assembling and testing door	1	4	4
6	Building side structure	1	4	4
7	Rigging	1	2	2
8				0
			TOTAL	34

	Load-In Procedure	# Crew	# Hours	Total Hours
1	Set grid points	4	2	8
2	Assembling frame	4	4	16
3	Installing platform	4	2	8
4	Installing door	2	1	2
			TOTAL	34

	Strike Procedure	# Crew	# Hours	Total Hours
1	Strike platform	3	1	3
2	Strike and disassemble structure	3	2	6
3	Remove points	2	1	2
4				0
			TOTAL	11

URINETOWN

Director: David Kersner	Scenic Designer: Alivia Cross
TD: Emily Simpson	Scenery Budget Estimate: 1st Pass
ATD: Nick Baror	10/23/2023

Scenic Element: **Public Amenity Steps & exit stairs**

Description: Includes both the visible public amenity steps at the base of the UGC Tower, as well as the plat/steps escape that continue behind the UGC tower door. One stock 4x6 platform used as top of escape, plus stock unit for escape stairs behind there too.

	Materials Budget	Unit	Quantity	Unit Price	Total Cost
1	3/4" 4x8 cdx ply	sheet	5	39.29	$196.45
2	1/8" 4x8 masonite	sheet	5	13.28	$ 66.40
3	2x4x12	stick	7	5.98	$ 41.86
4	1/4" 4x8 lauan	sheet	2	18.79	$ 37.58
5	1 stock 4x6 platform	platform	1	0	$ -
6	stock 2 steps escape	unit	1	0	$ -
7					$ -
8					$ -
			Hardware Contingency	5%	$ 17.11
				TOTAL	$359.40

	Construction Procedure	# Crew	# Hours	Total Hours
1	cut lumber	1	2	2
2	cnc custom plat lids & stair stringers	1	1	1
3	cnc maso	1	1	1
4	assemble custom plats	1	4	4
5	attach steps to plat, leg up plat	1	2	2
6	pull stock plat and stock escape steps	2	1	2
7				0
8				0
			TOTAL	12

	Load-In Procedure	# Crew	# Hours	Total Hours
1	plot points	2	1	2
2	attach steps to plat	1	1	1
3	tie down	1	1	1
4				0
			TOTAL	4

	Strike Procedure	# Crew	# Hours	Total Hours
1	remove platform	2	1	2
2				0
3				0
4				0
			TOTAL	2

URINETOWN

Director: David Kersner	Scenic Designer: Alivia Cross
TD: Emily Simpson	Scenery Budget Estimate: 1st Pass
ATD: Nick Baror	10/23/2023
Scenic Element:	**Sewer Wall**
Description:	

	Materials Budget	Unit	Quantity	Unit Price	Total Cost
1	1/4" 4x8 Lauan	Sheet	3	18.79	$ 56.37
2	2x4x12	Stick	18	5.98	$107.64
3	4x8 Stock Platform	Unit	1		$ -
4	96" Stock Ladder	Unit	2		$ -
5	54" Duvetyn 8 oz Black FR	Yard	2	8.78	$ 17.56
6	1x1x16GA x24'	Stick	1	42.5	$ 42.50
7					$ -
8					$ -
		Hardware Contingency		5%	$ 11.20
				TOTAL	$235.27

	Construction Procedure	# Crew	# Hours	Total Hours
1	Cutting materials	1	2	2
2	CNC Time	1	2	2
3	Assembling studwalls	1	4	4
4				0
5				0
6				0
7				0
8				0
			TOTAL	8

	Load-In Procedure	# Crew	# Hours	Total Hours
1	Marking points	1	0.5	0.5
2	Installing studwalls	2	1	2
3	Installing platform	4	1	4
4	Installing ladders	2	1	2
			TOTAL	8.5

	Strike Procedure	# Crew	# Hours	Total Hours
1	Strike ladders	2	1	2
2	Strike platform	2	1	2
3	Strike studwalls	2	1	2
4				0
			TOTAL	6

URINETOWN

Director: David Kersner	Scenic Designer: Alivia Cross
TD: Emily Simpson	Scenery Budget Estimate: 1st Pass
ATD: Nick Baror	10/23/2023
Scenic Element:	**Pit Beams & Custom Pit Plats**
Description:	

	Materials Budget	Unit	Quantity	Unit Price	Total Cost
1	2x10x8	stick	4	9.2	$ 36.80
2	2x4x8	stick	107	$ 4.09	$ 437.63
3	3/4" 4x8" CDX plywood	sheet	3	$ 39.29	$ 117.87
4	stock 4x8 platform	platform	1	0	$ -
5					$ -
6	2x4x16	stick	4	7.88	$ 31.52
7	hit the wall 2x10		14	0	$ -
8					$ -
			Hardware Contingency	5%	$ 31.19
				TOTAL	$ 655.01

	Construction Procedure	# Crew	# Hours	Total Hours
1	cut lumber for custom plats	1	2	2
2	cnc ply for custom plats	1	4	4
3	cut chain link	2	4	8
4	cut joists to size	1	4	4
5				0
6				0
7				0
8				0
			TOTAL	18

	Load-In Procedure	# Crew	# Hours	Total Hours
1	lower pit	1	1	1
2	assemble posts/beams/studwalls	2	3	6
3	place custom platforms	4	1	4
4	apply chain link fencing	2	2	4
			TOTAL	15

	Strike Procedure	# Crew	# Hours	Total Hours
1	remove chain link	2	1	2
2	pull custom plats	2	1	2
3	take out studwalls/beams etc	2	1	2
4				0
			TOTAL	6

URINETOWN

Director: David Kersner	Scenic Designer: Alivia Cross
TD: Emily Simpson	Scenery Budget Estimate: 1st Pass
ATD: Nick Baror	10/23/2023

Scenic Element:	**Platform Aesthetic Support Wall**
Description:	This accounts for the facing in the front of the support wall for the front of the platform, and the green foam sculpted detail forming the portal to the band. this also includes foam for the SR aesthetic support under the platform.

	Materials Budget	Unit	Quantity	Unit Price	Total Cost
1	1/4" 4x8 Lauan	sheet	7	$ 18.79	$131.53
2					
3	2" green foam 4x8 sheet		7	$ 53.98	$377.86
4					$ -
5					$ -
6					$ -
7					$ -
8					$ -
		Hardware Contingency		5%	$ 25.47
				TOTAL	$534.86

	Construction Procedure	# Crew	# Hours	Total Hours
1	rip Lauan	1	2	2
2	cut and glue foam to rough size	1	4	4
3	sculpt foam	2	8	16
4				0
5				0
6				0
7				0
8				0
			TOTAL	22

	Load-In Procedure	# Crew	# Hours	Total Hours
1	put facing on platform	2	1	2
2	put band portal up	2	1	2
3				0
4				0
			TOTAL	4

	Strike Procedure	# Crew	# Hours	Total Hours
1	remove facing and portal	2	1	2
2				0
3				0
4				0
			TOTAL	2

URINETOWN

Director: David Kersner	Scenic Designer: Alivia Cross
TD: Emily Simpson	Scenery Budget Estimate: 1st Pass
ATD: Nick Baror	10/23/2023

Scenic Element: **Escape Stairs**

Description: Escape stairs from main platform, and the ones that go down into the pit

	Materials Budget	Unit	Quantity	Unit Price	Total Cost
1	Rent Stairs	unit	1	0	$ -
2	additional stock stairs being used in comet	unit	0	0	$ -
3		Unit			$ -
4	Stock 4x4 Platform	Unit	1		$ -
5	2x4x12	Stick	2	5.98	$ 11.96
6	1/8" Masonite	Sheet	1	18.79	$ 18.79
7	3/4" CDX Plywood	Sheet			$ -
8					$ -
		Hardware Contingency		5%	$ 1.54
				TOTAL	$ 32.29

	Construction Procedure	# Crew	# Hours	Total Hours
1	pull escape stairs	2	1	2
2	CNC Time	1	4	4
3	Cut maso	1	1	1
4	Assemble	1	8	8
5				0
6				0
7				0
8				0
			TOTAL	15

	Load-In Procedure	# Crew	# Hours	Total Hours
1	Install stairs	2	2	4
2				0
3				0
4				0
			TOTAL	4

	Strike Procedure	# Crew	# Hours	Total Hours
1	Strike stairs	2	1	2
2				0
3				0
4				0
			TOTAL	2

URINETOWN	
Director: David Kersner	Scenic Designer: Alivia Cross
TD: Emily Simpson	Scenery Budget Estimate: 1st Pass
ATD: Nick Baror	10/23/2023
Scenic Element:	**Railings**
Description:	

	Materials Budget	Unit	Quantity	Unit Price	Total Cost
1					$ -
2	2x4x16	stick	8	5.98	$ 47.84
3					$ -
4	metal rod - stock	stick		0	$ -
5	1x1x24	stick	8	42.5	$ 340.00
6	carpet tubes	stick	20	7.35	$ 147.00
7	shipping		1	30	$ 30.00
8					$ -
		Hardware Contingency		5%	$ 28.24
				TOTAL	$ 593.08

	Construction Procedure	# Crew	# Hours	Total Hours
2	cut 2x4s to length	1	2	2
	carve out detail into 2x4s	1	16	16
3	clean and cut 1x1 to lengths	1	8	8
4	assemble platform railngs	1	6	6
5	add carpet tube fake depth	1	4	4
6	weld stairs railings	1	8	8
7	cut and weld rod for the cabled railings	1	4	4
8				0
			TOTAL	48

	Load-In Procedure	# Crew	# Hours	Total Hours
1	attach safety railings to main platform	2	1	2
2	attach designed railings where needed	2	1	2
3	cabled railings on stairs	2	1	2
4				0
			TOTAL	6

	Strike Procedure	# Crew	# Hours	Total Hours
1	remove all railings	4	1	4
2				0
3				0
4				0
			TOTAL	4

URINETOWN	
Director: David Kersner	Scenic Designer: Alivia Cross
TD: Emily Simpson	Scenery Budget Estimate: 1st Pass
ATD: Nick Baror	10/23/2023
Scenic Element:	**Hideout drop**
Description:	

	Materials Budget	Unit	Quantity	Unit Price	Total Cost
1	Muslin, 108" Heavy Natural, NFR	Yard	22	12.4	$272.80
2	1x12x12	Stick	3	29.97	$ 89.91
3	1x1x16GA x24'	Stick	7	42.5	$297.50
4					$ -
5					$ -
6					$ -
7					$ -
8					$ -
		Hardware Contingency		5%	$ 33.01
				TOTAL	$693.22

	Construction Procedure	# Crew	# Hours	Total Hours
1				0
2				0
3				0
4				0
5				0
6				0
7				0
8				0
			TOTAL	0

	Load-In Procedure	# Crew	# Hours	Total Hours
1				0
2				0
3				0
4				0
			TOTAL	0

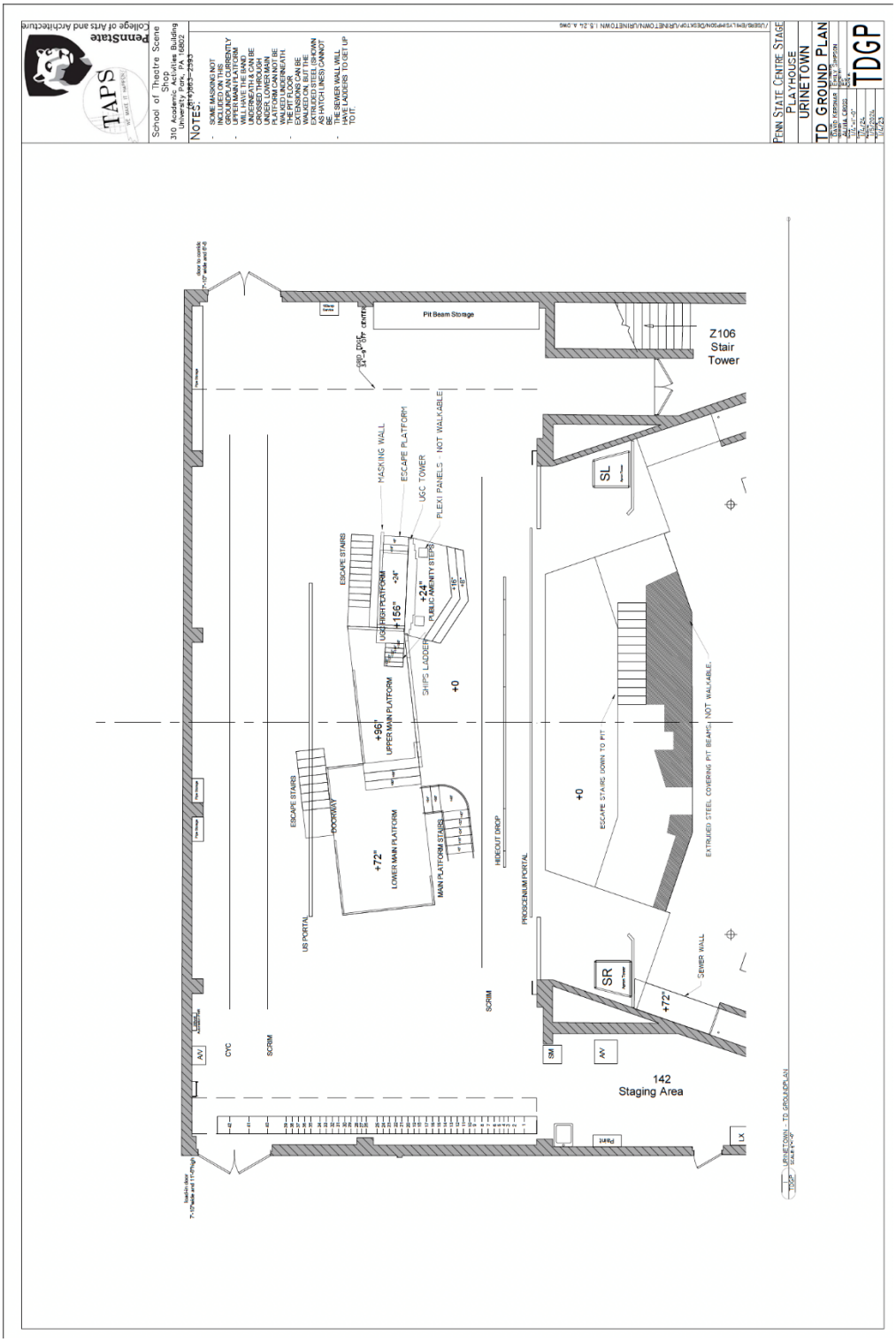
	Strike Procedure	# Crew	# Hours	Total Hours
1				0
2				0
3				0
4				0
			TOTAL	0

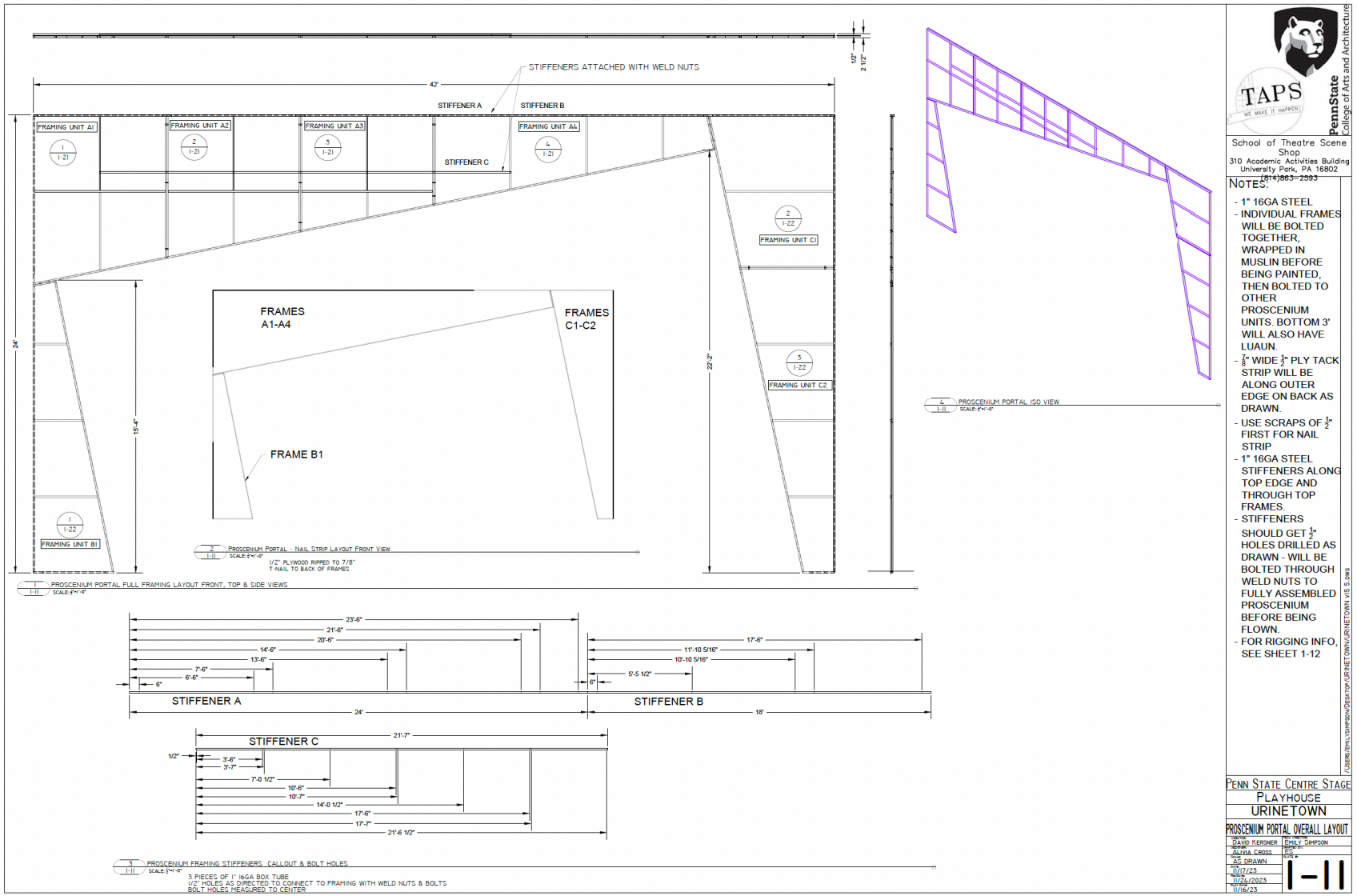
								Quantity per Element													
Material	Unit	Total Quanity (All Elements)	Budgeted Unit Price	Budgeted Total Cost	Actual Unit Price	Actual Total Cost	Ordered?	Deck	Main Platform	Stairs to Main Platform	Door	Portals	Platform Level Stair	UGC Tower & Platform	Public Amenity Steps & exit stairs	Sewer Wall	Pit Beams & Custom Pit Plats	Platform Aesthetic Support Wall	Escape Stairs	Railings	Hideout drop
1/8" Masonite 4x8	sheet	31	$13.28	$ 411.68	$ 13.28	$ 411.68	AH 11-1	15	8	2					5				1		
9.5x2.5"x16' joists	stick	4	$49.78	$ 199.12	$ 47.29	$ 189.16	AH 11-1		4												
2x4x16	stick	14	$5.98	$ 83.72	$ 5.98	$ 83.72	AH 11-6		10								4				
3/4" 4x8 CDX plywood	sheet	16	$39.29	$ 628.64	$ 39.29	$ 628.64	AH 11-6		6	2					5		3				
3' stair treads	unit	3	$15.00	$ 45.00	$ 14.23	$ 42.69	AH 11-1			3											
1/4" Lauan	sheet	40	$18.79	$ 751.60	$ 18.79	$ 751.60	AH 11-6			3	2	10		12	2	3		7			
1x1x24' 16GA steel	stick	29	$42.50	$ 1,232.50	$ 25.40	$ 736.60	AH 11-3				1	12				1				8	7
1x12x12	stick	10	$29.97	$ 299.70	$ 29.97	$ 299.70	AH 11-6				1			6							3
Medium weight muslin 110" wide	yard	42	$12.73	$ 534.66	$ 12.30	$ 516.60	AH 11-1					20									22
1x6x12	stick	20	$13.49	$ 269.80	$ 13.49	$ 269.80	AH 11-6					20									
1-1/2" Sch 40 Pipe	stick	1	$74.00	$ 74.00	$ 64.60	$ 64.60	AH 11-3							1							
1/2" 4x8 Sande Ply	sheet	4	$46.00	$ 184.00	$ 45.55	$ 182.20	AH 11-3							4							
54" Duvetyn 8oz Black FR	yard	2	$8.78	$ 17.56	$ 8.78	$ 17.56	AH 11-1									2					
2" Green foam 4x8	sheet	7	$53.90	$ 377.30	$ 57.46	$ 402.22	AH 11-1											7			
4"dia. carpet tubes	stick	20	$7.35	$ 147.00		$ -	CR 11-6													20	
2x10x8	stick	4	$9.20	$ 36.80	$ 9.20	$ 36.80	AH 11-6										4				
2x4x8	stick	108	$4.09	$ 441.72	$ 4.09	$ 441.72	AH 11-6										107				
2x4x12	stick	126	$5.98	$ 753.48	$ 5.98	$ 753.48	AH 11-6		42	11				38	7	18			2	8	
TOTAL				$ 6,488.28		$5,828.77															
TOTAL SHIPPING						$ 210.00															
						$6,038.77															

- this total does not include budgeted shipping, 5% hardware contingency or overall 10% contingency

	Lowes		Ordered and arrived
	YBC		Inprogress (may need to order more due to stock or other issues)
	Home Depot		
	Uline		
	Rose Brand		
	Altoona		

Appendix C Final Technical Drafting Package





TAPS
WE MAKE IT HAPPEN!

PennState
College of Arts and Architecture

School of Theatre Scene Shop
310 Academic Activities Building
University Park, PA 16802
(814)863-2593

NOTES:

- 1" 16GA STEEL
- INDIVIDUAL FRAMES WILL BE BOLTED TOGETHER, WRAPPED IN MUSLIN BEFORE BEING PAINTED, THEN BOLTED TO OTHER PROSCENIUM UNITS. BOTTOM 3' WILL ALSO HAVE LUAUN.
- 7/8" WIDE 1/2" PLY TACK STRIP WILL BE ALONG OUTER EDGE ON BACK AS DRAWN.
- USE SCRAPS OF 1/2" FIRST FOR NAIL STRIP
- 1" 16GA STEEL STIFFENERS ALONG TOP EDGE AND THROUGH TOP FRAMES.
- STIFFENERS SHOULD GET 1/2" HOLES DRILLED AS DRAWN - WILL BE BOLTED THROUGH WELD NUTS TO FULLY ASSEMBLED PROSCENIUM BEFORE BEING FLOWN.
- FOR RIGGING INFO, SEE SHEET 1-12

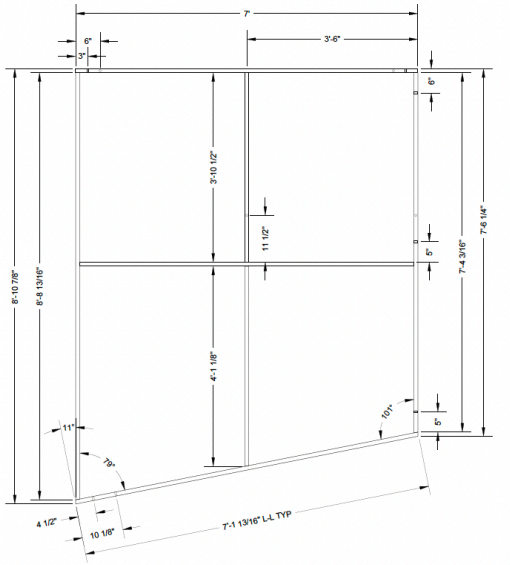
I:\USERS\EMILYSIMPSON\DESKTOP\URINETOWN\URINETOWN V15 S.DWG

PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN

PROSCENIUM PORTAL OVERALL LAYOUT

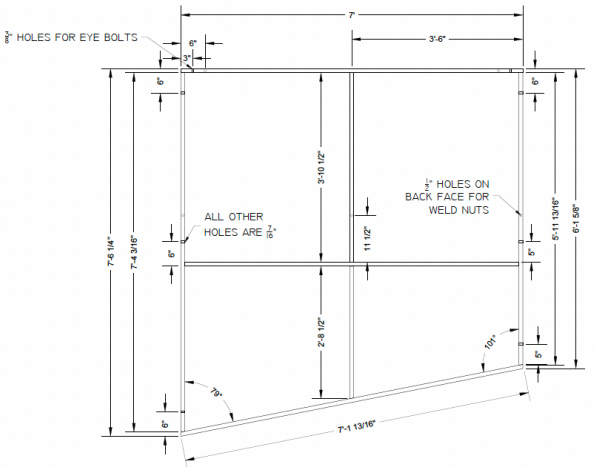
DRAWN BY:	DAVID KERGNER
CHECKED BY:	EMILY SIMPSON
APPROVED BY:	ALIVIA CROSS
SCALE:	AS DRAWN
DATE:	10/17/23
REVISED:	11/24/2023
EDITED:	11/16/23

SHEET NO.: I-11



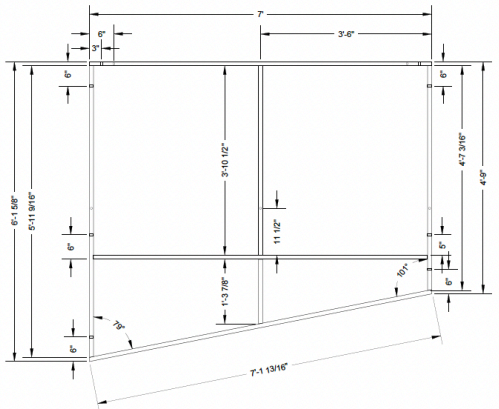
1/1-21 PROSCENIUM FRAMING UNIT A1 FRONT VIEW
SCALE: 1"=1'-0"

TOP HOLES ARE 3/8 TRUE - INSTALL 3/8" EYE BOLTS
SEE ADDITIONAL NOTES IN TITLE BLOCK



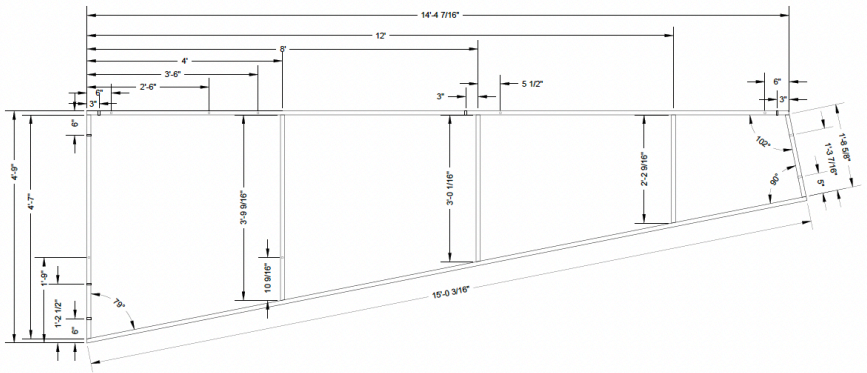
2/1-21 PROSCENIUM FRAMING UNIT A2 FRONT VIEW
SCALE: 1"=1'-0"

TOP HOLES ARE 3/8 TRUE - INSTALL 3/8" EYE BOLTS
SEE ADDITIONAL NOTES IN TITLE BLOCK



3/1-21 PROSCENIUM FRAMING UNIT A3 FRONT VIEW
SCALE: 1"=1'-0"

TOP HOLES ARE 3/8 TRUE - INSTALL 3/8" EYE BOLTS
SEE ADDITIONAL NOTES IN TITLE BLOCK



4/1-21 PROSCENIUM FRAMING UNIT A4 FRONT VIEW
SCALE: 1"=1'-0"

TOP HOLES ARE 3/8 TRUE - INSTALL 3/8" EYE BOLTS
SEE ADDITIONAL NOTES IN TITLE BLOCK

TAPS
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PennState
College of Arts and Architecture

School of Theatre Scene Shop
310 Academic Activities Building
University Park, PA 16802
~~(814)863-2593~~

NOTES:

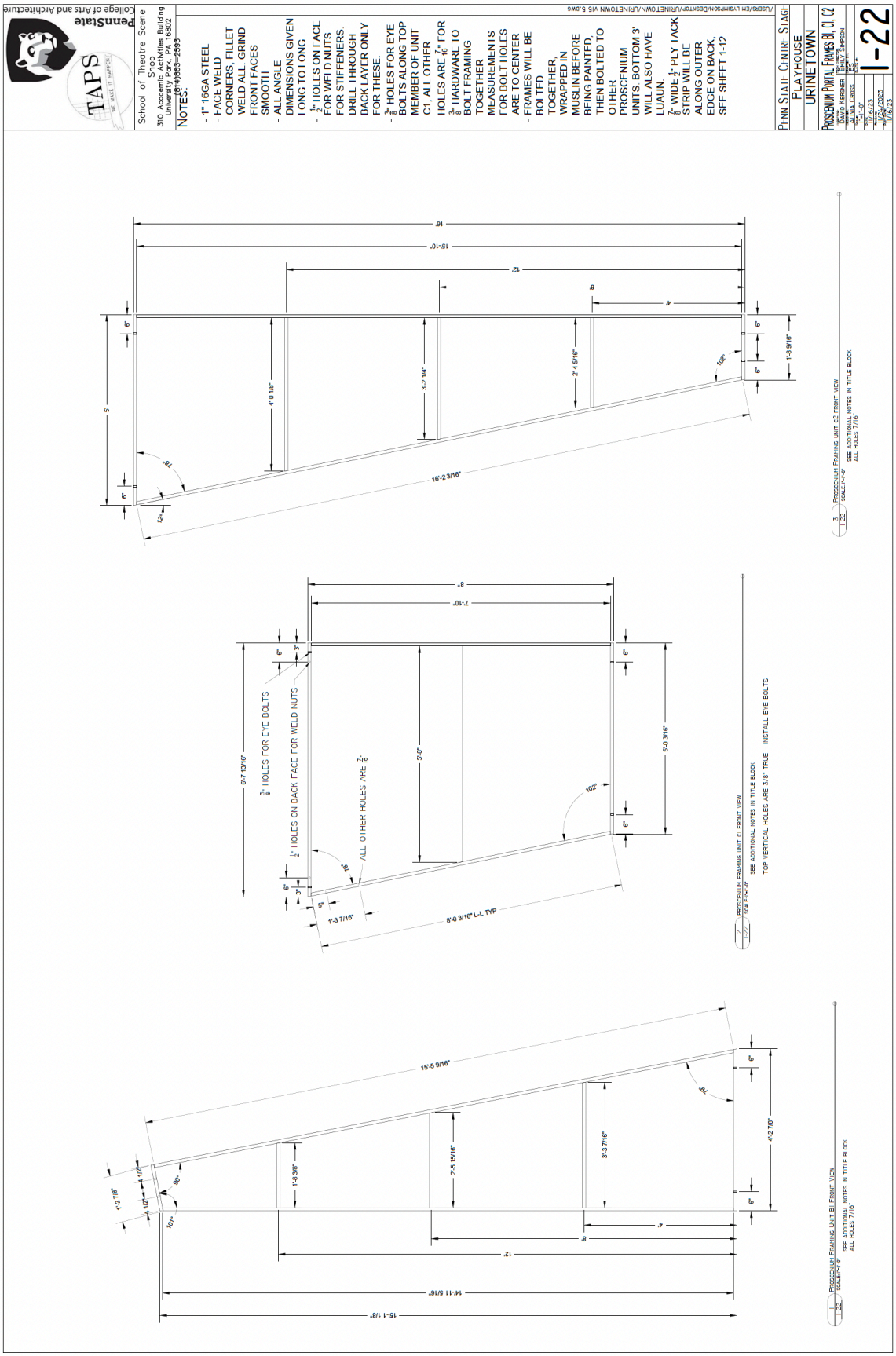
- 1" 16GA STEEL
- FACE WELD CORNERS, FILLET WELD ALL. GRIND FRONT FACES SMOOTH
- ALL ANGLE DIMENSIONS GIVEN LONG TO LONG
- 1/2" HOLES ON FACE FOR WELD NUTS FOR STIFFENERS. DRILL THROUGH BACK LAYER ONLY FOR THESE.
- 9/16" HOLES FOR EYE BOLTS ALONG TOP MEMBER OF UNIT C1, ALL OTHER HOLES ARE 7/16" FOR 3/8" HARDWARE TO BOLT FRAMING TOGETHER
- MEASUREMENTS FOR BOLT HOLES ARE TO CENTER
- FRAMES WILL BE BOLTED TOGETHER, WRAPPED IN MUSLIN BEFORE BEING PAINTED, THEN BOLTED TO OTHER PROSCENIUM UNITS. BOTTOM 3' WILL ALSO HAVE LUAUN.
- 3/4" WIDE 1/2" PLY TACK STRIP WILL BE ALONG OUTER EDGE ON BACK, SEE SHEET 1-12.

/USERS/EMILYSIMPSON/DESKTOP/URINETOWN/URINETOWN v15 5.DWG

PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN

PROSCENIUM PORTAL FRAMES A1-A4

DRAWN DAVID KERSNER	CHECKED EMILY SIMPSON
APPROVED ALIVIA CROSS	SHEET NO. 1-21
SCALE 1"=1'-0"	
DATE 11/16/23	
REVISED 11/26/2023	
REVISED 11/16/23	


PennState
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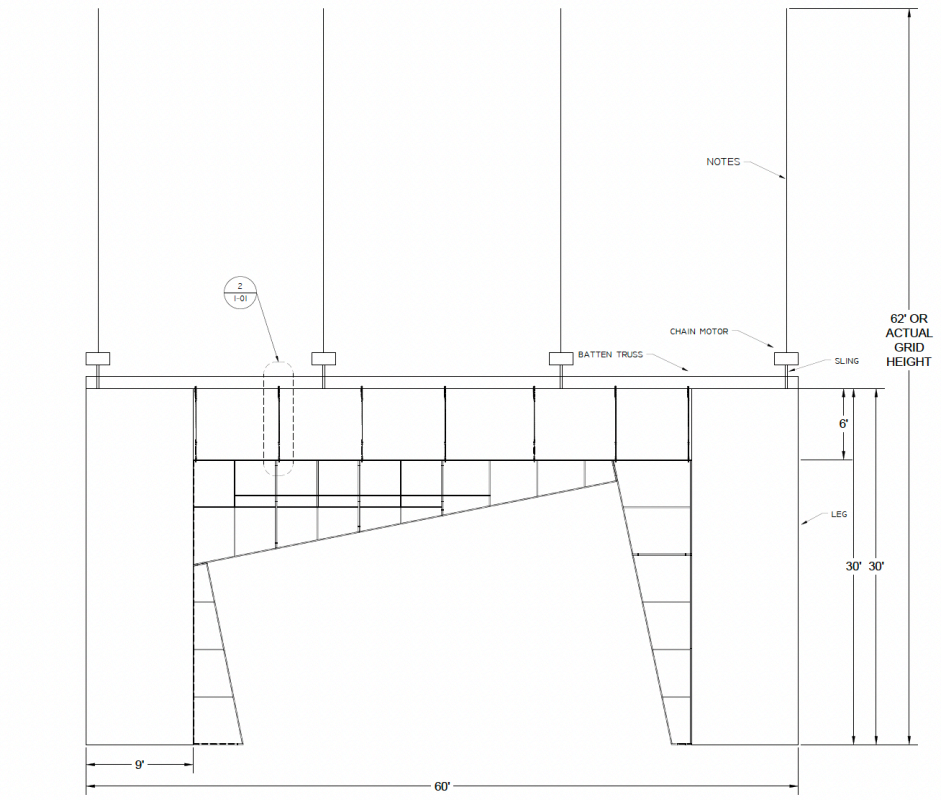
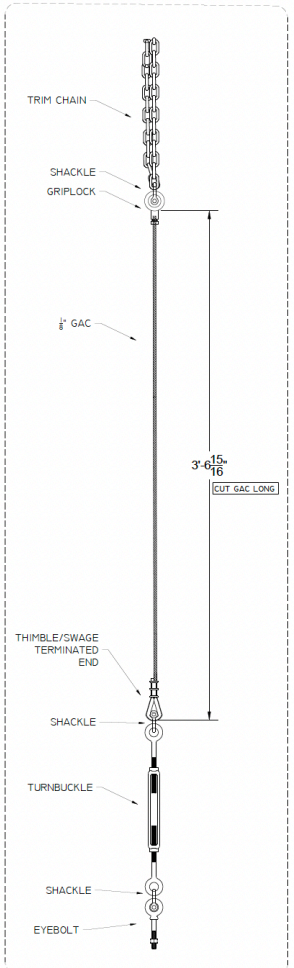
NOTES:
- 1" 16GA STEEL
- FACE WELD
CORNERS, FILLET
WELD ALL. GRIND
FRONT FACES
SMOOTH
- ALL ANGLE
DIMENSIONS GIVEN
LONG TO LONG
- 3/8" HOLES ON FACE
FOR WELD NUTS
FOR STIFFENERS.
DRILL THROUGH
BACK LAYER ONLY
FOR THESE.
- 3/8" HOLES FOR EYE
BOLTS ALONG TOP
MEMBER OF UNIT
C1. ALL OTHER
HOLES ARE 7/16" FOR
3/8" HARDWARE TO
BOLT FRAMING
TOGETHER
- MEASUREMENTS
FOR BOLT HOLES
ARE TO CENTER
- FRAMES WILL BE
BOLTED
TOGETHER,
WRAPPED IN
MUSLIN BEFORE
BEING PAINTED,
THEN BOLTED TO
OTHER
PROSCENIUM
UNITS. BOTTOM 3"
WILL ALSO HAVE
LUAUN
- 1/4" WIDE 1/2" PLY TACK
STRIP WILL BE
ALONG OUTER
EDGE ON BACK,
SEE SHEET 1-12.
/USERS/EMILYSIMPSON/DESKTOP/URINETOWN V15 5.DWG
PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN
PROSCENIUM PORTAL FRAMES BL C1, C2
DESIGNER
Emily Simpson
DRAWN
EGS
SCALE
1-22
3 PROSCENIUM FRAMING UNIT C2 FRONT VIEW
1-22 SCALE: 1"=1'-0"
SEE ADDITIONAL NOTES IN TITLE BLOCK
ALL HOLES 7/16"
2 PROSCENIUM FRAMING UNIT C1 FRONT VIEW
1-22 SCALE: 1"=1'-0"
SEE ADDITIONAL NOTES IN TITLE BLOCK
TOP VERTICAL HOLES ARE 3/8" TRUE - INSTALL EYE BOLTS
1 PROSCENIUM FRAMING UNIT B1 FRONT VIEW
1-22 SCALE: 1"=1'-0"
SEE ADDITIONAL NOTES IN TITLE BLOCK
ALL HOLES 7/16"



1 / I-01 PROSCENIUM PORTAL OVERALL RIGGING LAYOUT
SCALE: 1/4"=1'-0"

TO BE DEADHUNG AS CLOSE TO FIRE CURTAIN AS POSSIBLE
2 LEGS, 60' TRUSS BATTEN, 4 CHAIN MOTORS + SLINGS, 7 CABLES



2 / I-01 CABLE DOWN HARDWARE BREAKDOWN
SCALE: 3"=1'-0"

MAKE 7
GRIPLOCK END/TRIM CHAIN TO BATTEN TRUSS
TURNBUCKLE/EYEBOLT TO PROSC. FFRAME

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NOTES:

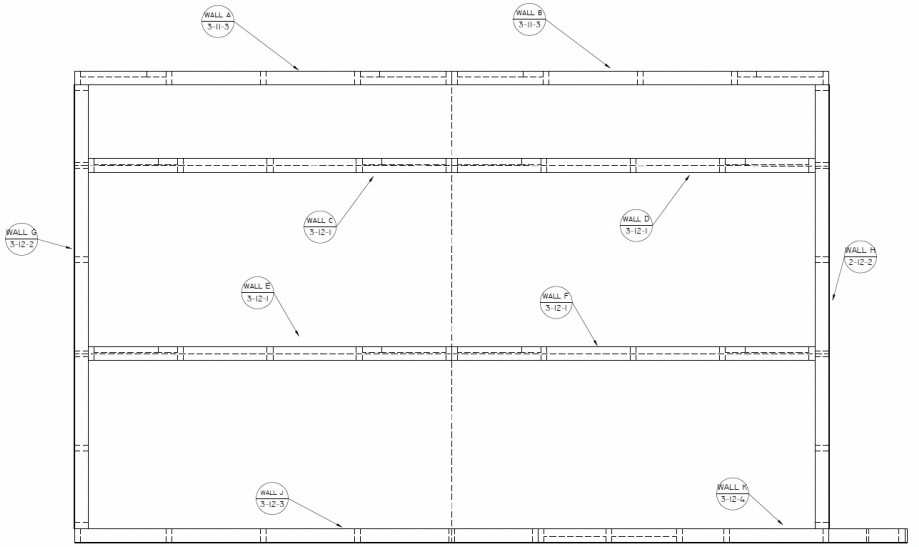
- PROSCENIUM PORTAL WILL BE DEADHUNG FROM THE GRID WITH FOUR CHAIN MOTORS
- AS CLOSE TO FIRE CURTAIN AS POSSIBLE - US OR DS OF LS1 TO BE DISCUSSED
- OPEN GRAND DRAPE & FLY OUT AS MUCH AS POSSIBLE
- CHAIN MOTORS HUNG MOTOR DOWN, SLINGS TO 60' BATTEN TRUSS
- LEGS ON EITHER SIDE OF BATTEN TRUSS FOLDED BACK TO BE 9' WIDE EACH SIDE
- CABLE DOWN TO TOP OF PROSCENIUM PORTAL FRAMES A & C - RAISE THESE, THEN JLG UP TO BOLT PIECE A (⅜" BOLTS)
- SEE CABLE BREAKDOWN FOR HARDWARE SPECIFICS
- SCREWS W/ WASHERS THROUGH BOTTOM OF PORTAL TO FLOOR
- CLIP LEGS TO PORTAL ON BACK
- BRING IN FIRE CURTAIN AS BORDER

/USERS/EMILYSIMPSON/DESKTOP/URINETOWN/URINETOWN PROSCENIUM RIGGING PLAN.DWG

PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN

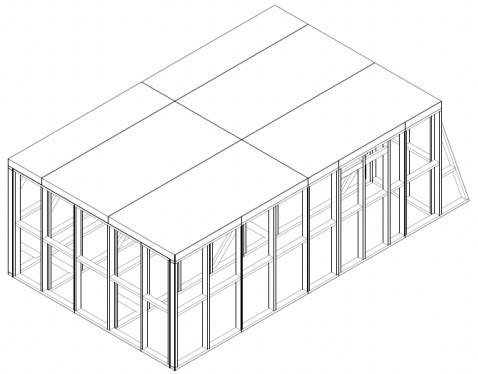
PROSC. PORTAL RIGGING LAYOUT

DESIGNER	EMILY SIMPSON
DRAWN BY	ALIVIA CROSS
SCALE	AS DRAWN
DATE	1.24.24
REVISED	1/24/2024
	8/16/2022
SHEET #	I-01

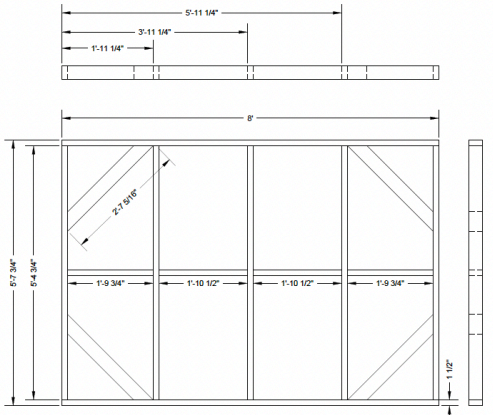


1 / 3-11 SR PLATFORM STUDWALL & PLATFORM LAYOUT
SCALE: 1"=1'-0"

2 STOCK 2X8 & 4 STOCK 4X8 PLATFORMS
SEE DRAWINGS 3-3-11 & SHEET 3-12 FOR STUDWALL BUILD INFO



2 / 3-11 SR PLATFORM ISOMETRIC VIEW REFERENCE
SCALE: 1"=1'-0"



3 / 3-11 SR STUDWALLS A & B, FRONT, TOP, & SIDE VIEWS
SCALE: 1"=1'-0"

BUILD 2
2X4 CONSTRUCTION, GLUE & SCREW

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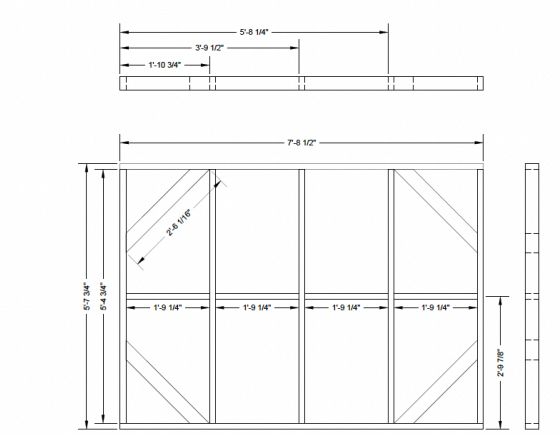
NOTES:
- 2 STOCK 2X8 & 4 STOCK 4X8 PLATFORMS
- 2X4 CONSTRUCTION, GLUE AND SCREW ALL.
- CENTER STRUTS SHOULD GET POCKET SCREWS
- SEE SHEET 3-12 FOR ADDITIONAL STUDWALL BUILD DETAILS.
- THERE IS NO STUDWALL "I"
- STUDWALLS J & K MAKE UP PART OF THE 'AESTHETIC MASKING WALL' THAT INTERACTS WITH BAND PORTAL

/USERS/EMILYSIMPSON/DESKTOP/URINETOWN/URINETOWN_V19.DWG

PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN
SR PLATFORM STUDWALL LAYOUT

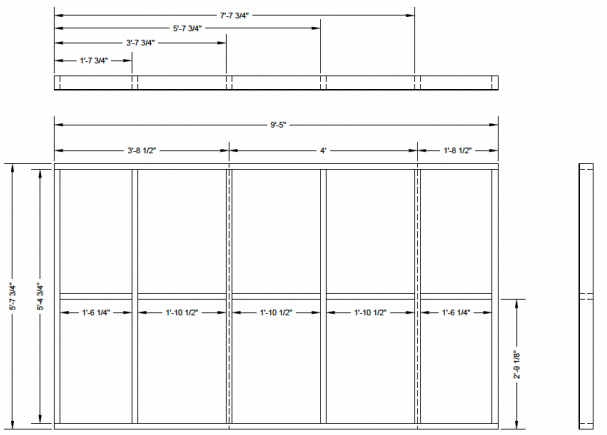
DESIGNER	DRAWN BY
DAVID KERSNER	EMILY SIMPSON
PM	CHK'D
ALIVIA CROSS	EIC
SCALE	REVISIONS
AS NOTED=1'-0"	
12.4.23	
12/5/2023	
11/16/23	

3-11



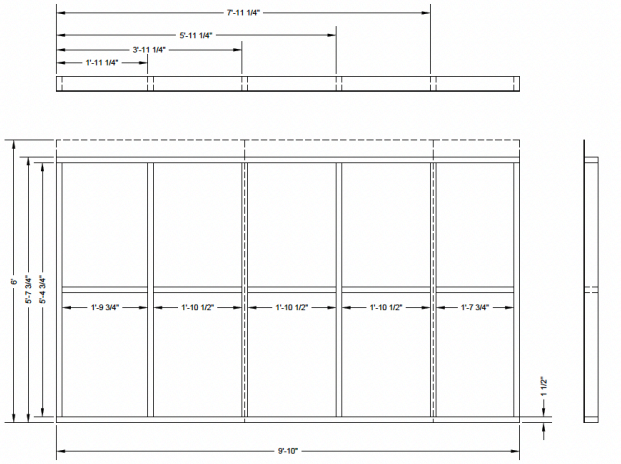
1 / 3-12 SCALE: 1"=1'-0" SR PLATFORM STUDWALLS C,D,E,F - FRONT, TOP, & SIDE VIEWS

BUILD 4
2X4 CONSTRUCTION, GLUE & SCREW



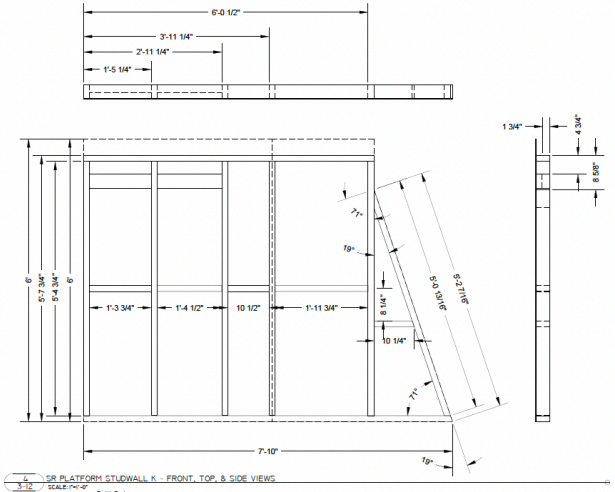
2 / 3-12 SCALE: 1"=1'-0" SR PLATFORM STUDWALLS G & H - FRONT, TOP, & SIDE VIEWS

BUILD 2
2X4 CONSTRUCTION, GLUE & SCREW
FACE WITH LUAN ON ONE SIDE (HIDDEN IN FRONT VIEW)



3 / 3-12 SCALE: 1"=1'-0" SR PLATFORM STUDWALL J - FRONT, TOP, & SIDE VIEW

BUILD 1
2X4 CONSTRUCTION, GLUE & SCREW
FACE WITH LUAN - SHOULD OVERHANG 4.25" ON TOP TO FACE PLATFORMS



4 / 3-12 SCALE: 1"=1'-0" SR PLATFORM STUDWALL K - FRONT, TOP, & SIDE VIEWS

BUILD 1
2X4 CONSTRUCTION, GLUE & SCREW
FACE WITH LUAN - TOP SHOULD OVERHANG 4.25" TO FACE PLATFORM.

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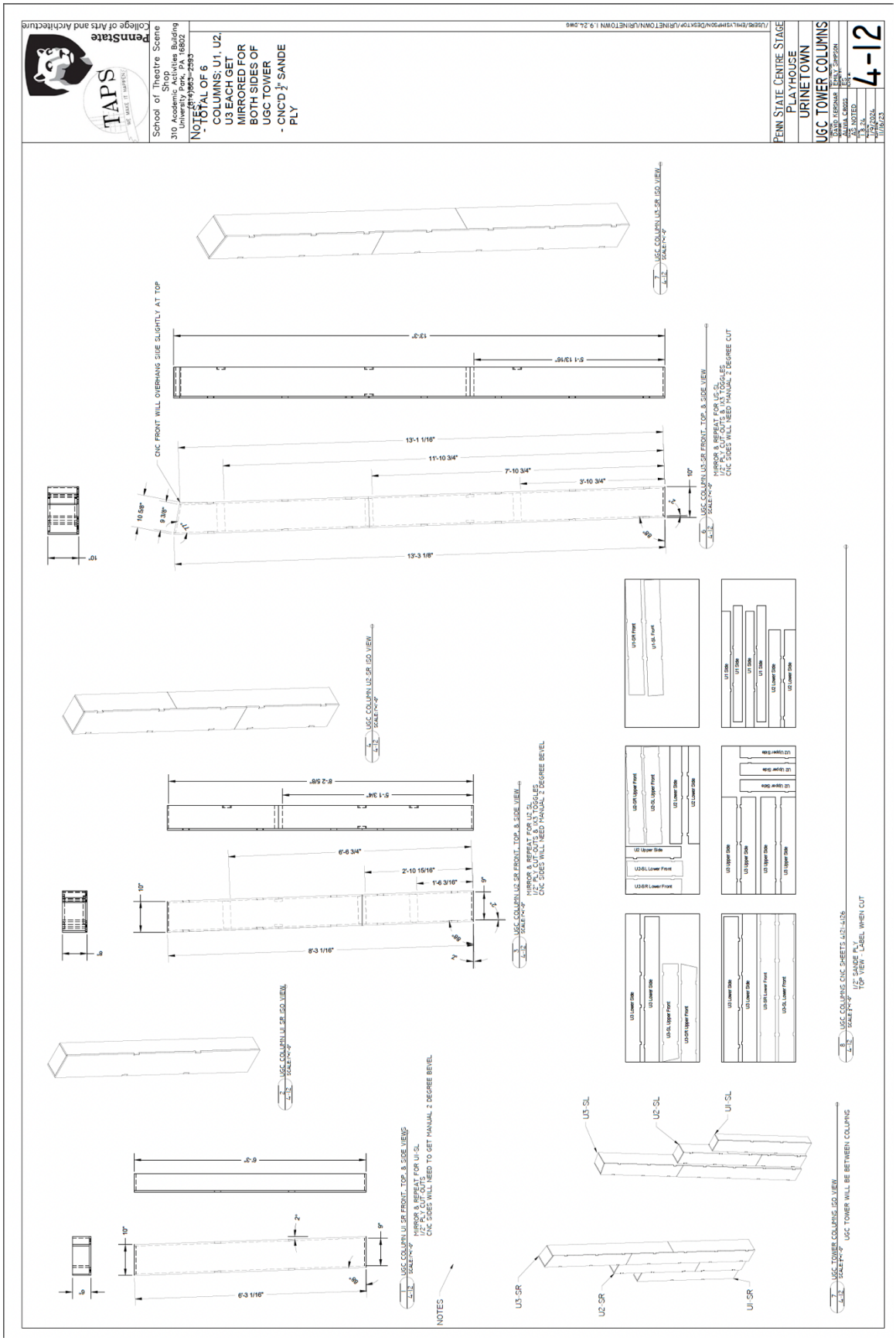
NOTES:

- PLEASE NOTE HOW MANY OF EACH STUDWALL TO BUILD IN DRAWING CAPTIONS
- 2X4 CONSTRUCTION, GLUE AND SCREW ALL.
- CENTER STRUTS SHOULD GET POCKET SCREWS
- SEE SHEET 3-11 FOR STUDWALL LAYOUT.
- CNC SHEET 3121 FOR STUDWALL K SL FACING
- THERE IS NO STUDWALL "I"
- STUDWALLS J & K MAKE UP PART OF THE 'AESTHETIC MASKING WALL' THAT INTERACTS WITH BAND PORTAL

/USERS/EMILYSIMPSON/DESKTOP/URINETOWN/URINETOWN v19.DWG

PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN
SR PLATFORM STUDWALLS

DESIGNER: DAVID KERSNER	DRAWN BY: EMILY SIMPSON
DATE: ALIVIA CROSS	SCALE: AS NOTED
1"=1'-0"	
11.30.23	
REVISED: 12/4/2023 11/16/23	3-12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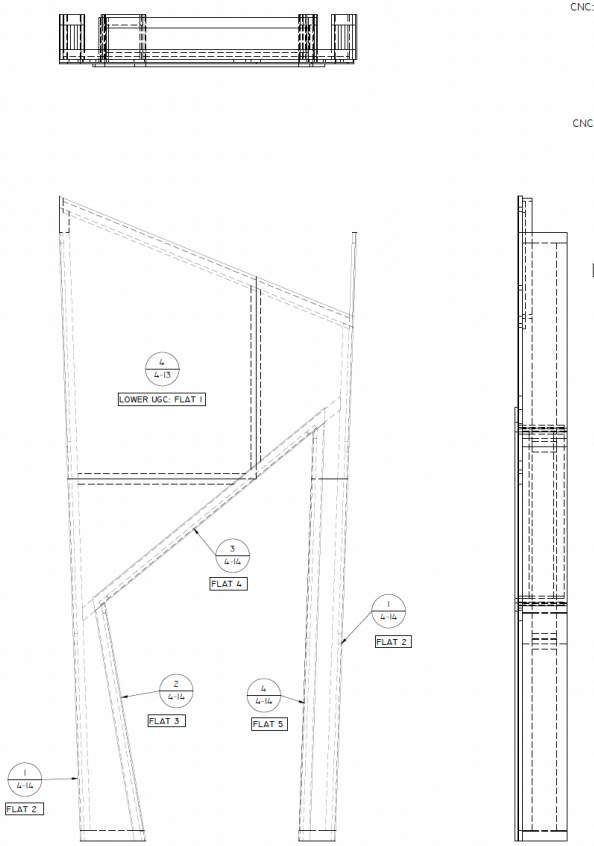
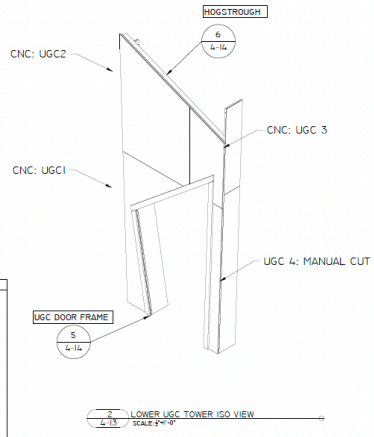
NOTES:
TOTAL OF 6 COLUMNS: U1, U2, U3 EACH GET MIRRORED FOR BOTH SIDES OF UGC TOWER
- CNC'D ½" SANDE PLY
/USERS/EMILYSHP50N/DESKTOP/URINETOWN/URINETOWN 1.9_2.0.vw6
PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN
UGC TOWER COLUMNS
DRAWN BY: EMILY SIMPSON
CHECKED BY: EMILY SIMPSON
SCALE: AS NOTED
DATE: 1.9_24
1/9/2024
11/16/23
4-12
CNC FRONT WILL OVERHANG SIDE SLIGHTLY AT TOP
13'-3 1/8"
11'-10 3/4"
7'-10 3/4"
3'-10 3/4"
13'-1 1/16"
5'-1 13/16"
MIRROR & REPEAT FOR U3 SL
1/2" PLY CUT OUTS & VX3 TOGGLES
CNC SIDES WILL NEED MANUAL 2 DEGREE CUT
UGC COLUMN U3 SR FRONT, TOP, & SIDE VIEW
UGC COLUMN U3 SR ISO VIEW
8'-3 1/16"
6'-6 3/4"
2'-10 15/16"
1'-6 3/16"
5'-1 3/4"
8'-2 5/8"
MIRROR & REPEAT FOR U2 SL
1/2" PLY CUT OUTS & VX3 TOGGLES
CNC SIDES WILL NEED MANUAL 2 DEGREE BEVEL
UGC COLUMN U2 SR FRONT, TOP, & SIDE VIEW
UGC COLUMN U2 SR ISO VIEW
6'-3 1/16"
4'-9"
MIRROR & REPEAT FOR U1 SL
1/2" PLY CUT OUTS
CNC SIDES WILL NEED TO GET MANUAL 2 DEGREE BEVEL
UGC COLUMN U1 SR FRONT, TOP, & SIDE VIEWS
UGC COLUMN U1 SR ISO VIEW
NOTES
U3 SL
U2 SL
U1 SL
U3 SR
U2 SR
U1 SR
UGC TOWER COLUMNS ISO VIEW
UGC TOWER WILL BE BETWEEN COLUMNS
UGC COLUMNS CNC SHEETS 4/21-4/26
1/2" SANDE PLY
TOP VIEW - LABEL WHEN CUT
UGC COLUMN U1 SR ISO VIEW
UGC COLUMN U2 SR ISO VIEW
UGC COLUMN U3 SR ISO VIEW

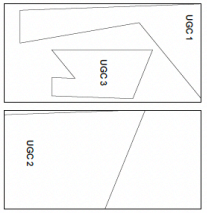


1 / 4-13 LOWER UGC TOWER FRONT, TOP, & SIDE VIEWS
SCALE: 1"=1'-0"

MADE UP OF 6 BROADWAY STYLE FLATS
WILL CONNECT TO UPPER UGC TOWER WITH HOGTROUGHS AT SEAM

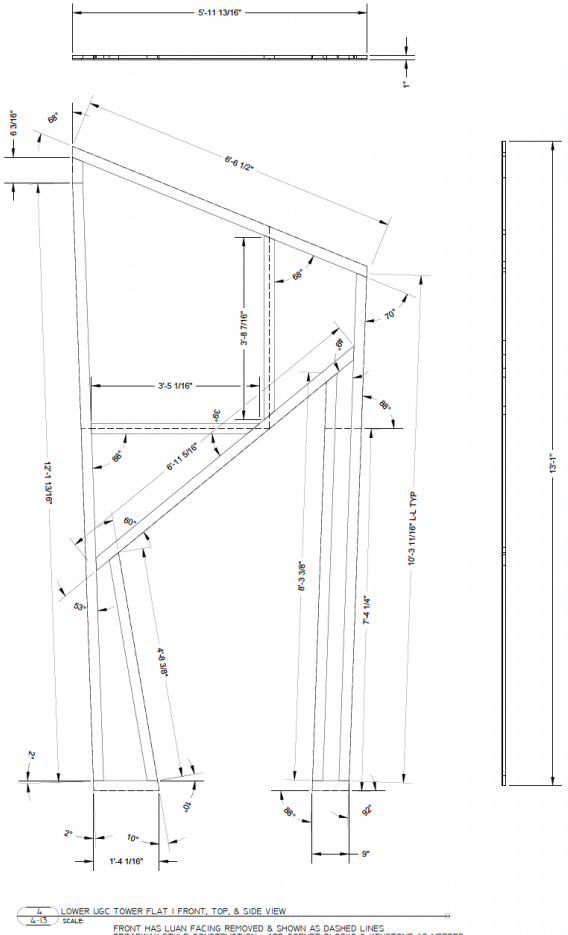


2 / 4-13 LOWER UGC TOWER ISO VIEW
SCALE: 1"=1'-0"



3 / 4-13 LOWER UGC TOWER FRONT CNC CALLOUTS
SCALE: 1"=1'-0"

LUAUN
CNC SHEETS 4131 & 4132
PIECE UGC 4 TO BE CUT MANUALLY, NOT CNCD



4 / 4-13 LOWER UGC TOWER FLAT 1 FRONT, TOP, & SIDE VIEW
SCALE:

FRONT HAS LUAN FACING REMOVED & SHOWN AS DASHED LINES
BROADWAY STYLE CONSTRUCTION - ADD CORNER BLOCKS & KEYSTONE AS NEEDED

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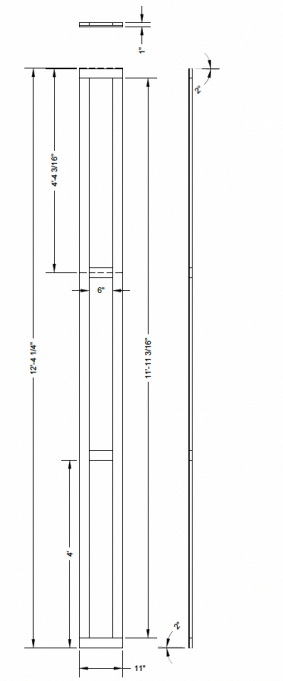
NOTES:
- ALL DIMS GIVEN LONG TO LONG
- SEE SHEET 4-14 FOR ADDITIONAL FLAT BUILD INFO
- LOWER UGC TOWER CONSISTING OF 6 BROADWAY STYLE FLATS, COLUMNS WILL BE ON EITHER SIDE (FULL TOWER LAYOUT ON 4-11)
- HOGSTROUGH FOR SECURING LOWER TOWER TO UPPER TOWER (4-15)

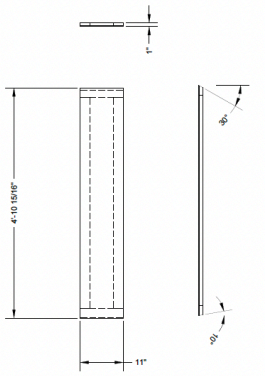
/USERS/EMILYSIMPSON/DESKTOP/URINETOWN/URINETOWN 1.12.24.DWG

PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN
LOWER UGC TOWER

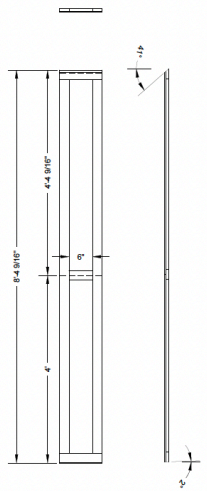
DRAWN: DAVID KERRINAR	DESIGNED: EMILY SIMPSON
ALIVIA CROSS	EDIT:
SCALE: 1"=1'-0"	PLOT:
DATE: 11/12/23	SHEET #: 4-13
1/15/2024	
11/16/23	



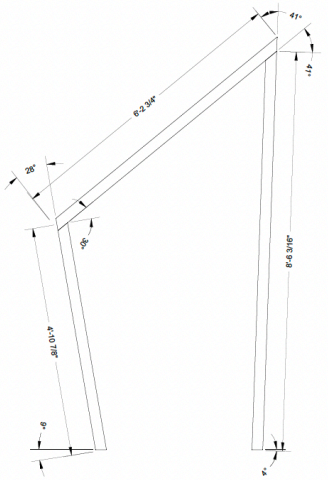
1 4-14 LOWER UGC TOWER FLAT 2 FRONT, TOP, & SIDE VIEWS
SCALE: 1"=1'-0"
BUILD 2 FOR EITHER SIDE OF MAIN FRONT FLAT
BROADWAY STYLE FLAT



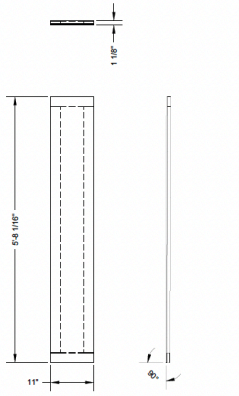
2 4-14 LOWER UGC TOWER FLAT 3 FRONT, TOP, & SIDE VIEWS
SCALE: 1"=1'-0"
SR SIDE OF DOORWAY
BROADWAY STYLE CONSTRUCTION



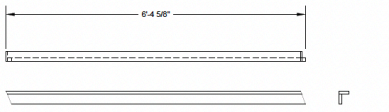
4 4-14 LOWER UGC TOWER FLAT 5 FRONT, TOP, & SIDE VIEW
SCALE: 1"=1'-0"
SL SIDE OF DOORWAY
BROADWAY STYLE CONSTRUCTION



5 4-14 UGC TOWER DOORFRAME
SCALE: 1"=1'-0"
APPLY TO FRONT OF LOWER UGC FRONT FLAT. (FLAT 1)



3 4-14 LOWER UGC TOWER FLAT 4 FRONT, TOP, & SIDE VIEWS
SCALE: 1"=1'-0"
TOP OF DOORWAY
BROADWAY STYLE FLAT



6 4-14 LOWER UGC TOWER HOGSTROUGH
SCALE: 1"=1'-0"
USED TO TIE LOWER TOWER IN TO TOP TOWER

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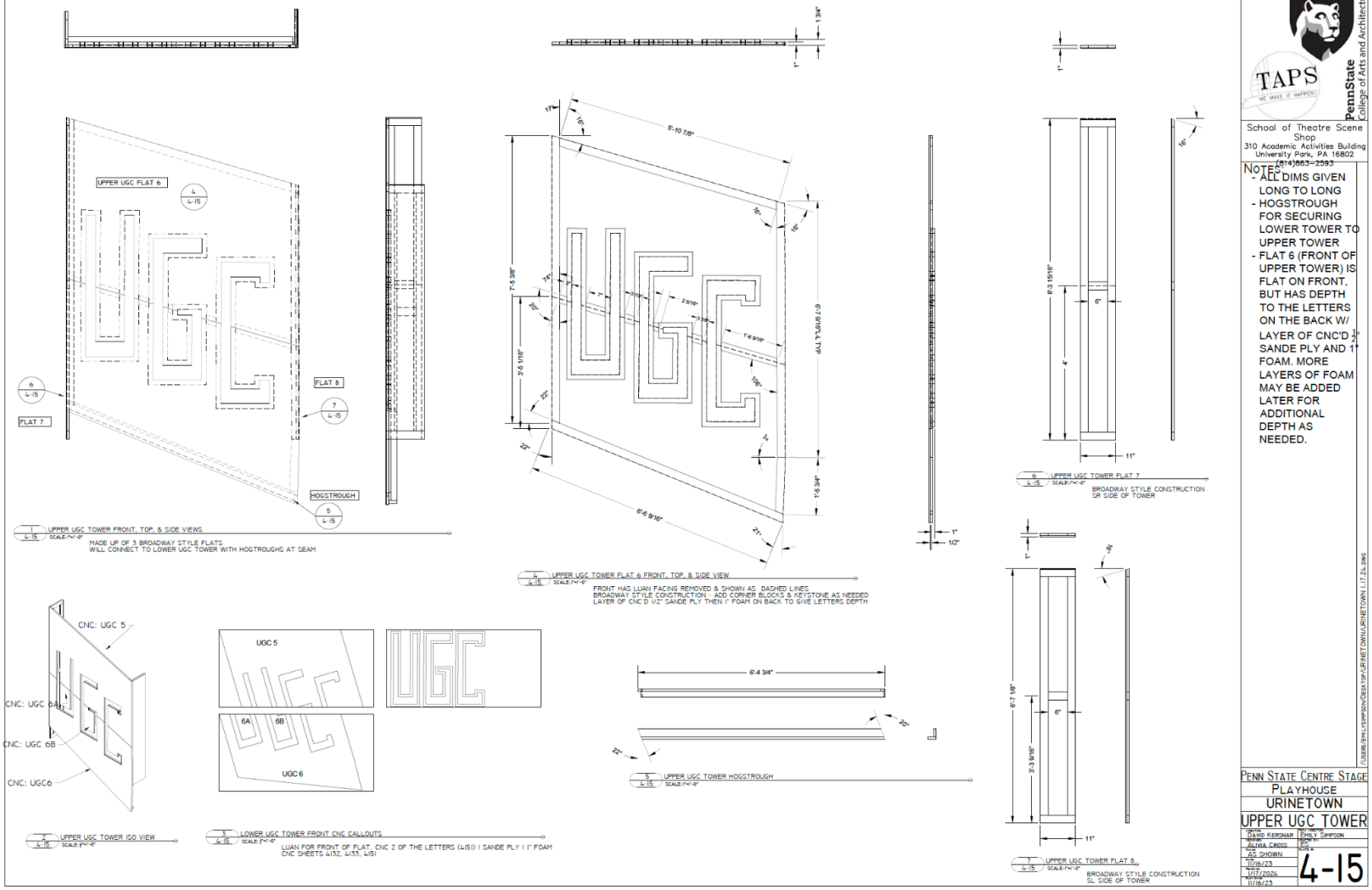
NOTES:
- ALL DIMS GIVEN LONG TO LONG
- SHEET 4-13 SHOWS PLACEMENT OF DIF. FLATS AND ELEMENTS
- ALL FLATS ARE BROADWAY STYLE CONSTRUCTION - ADD CORNERBLOCKS/
- KEYSTONES AS NEEDED
- NOTE SLIGHT ANGLES ON FLATS 2,3, &5

C:\USERS\EMILY.SIMPSON\DESKTOP\URINETOWN\URINETOWN 1.12.24.DWG

PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN
LOWER UGC TOWER FLATS

DRAWN BY:	DAVID KERSNAR
REVISED:	ALIVIA CROSS
SCALE:	1"=1'-0"
DATE:	1/12/23
REVISED:	1/15/2024
REVISED:	11/16/23
DRAWING BY:	EMILY SIMPSON
SHEET #:	4-14



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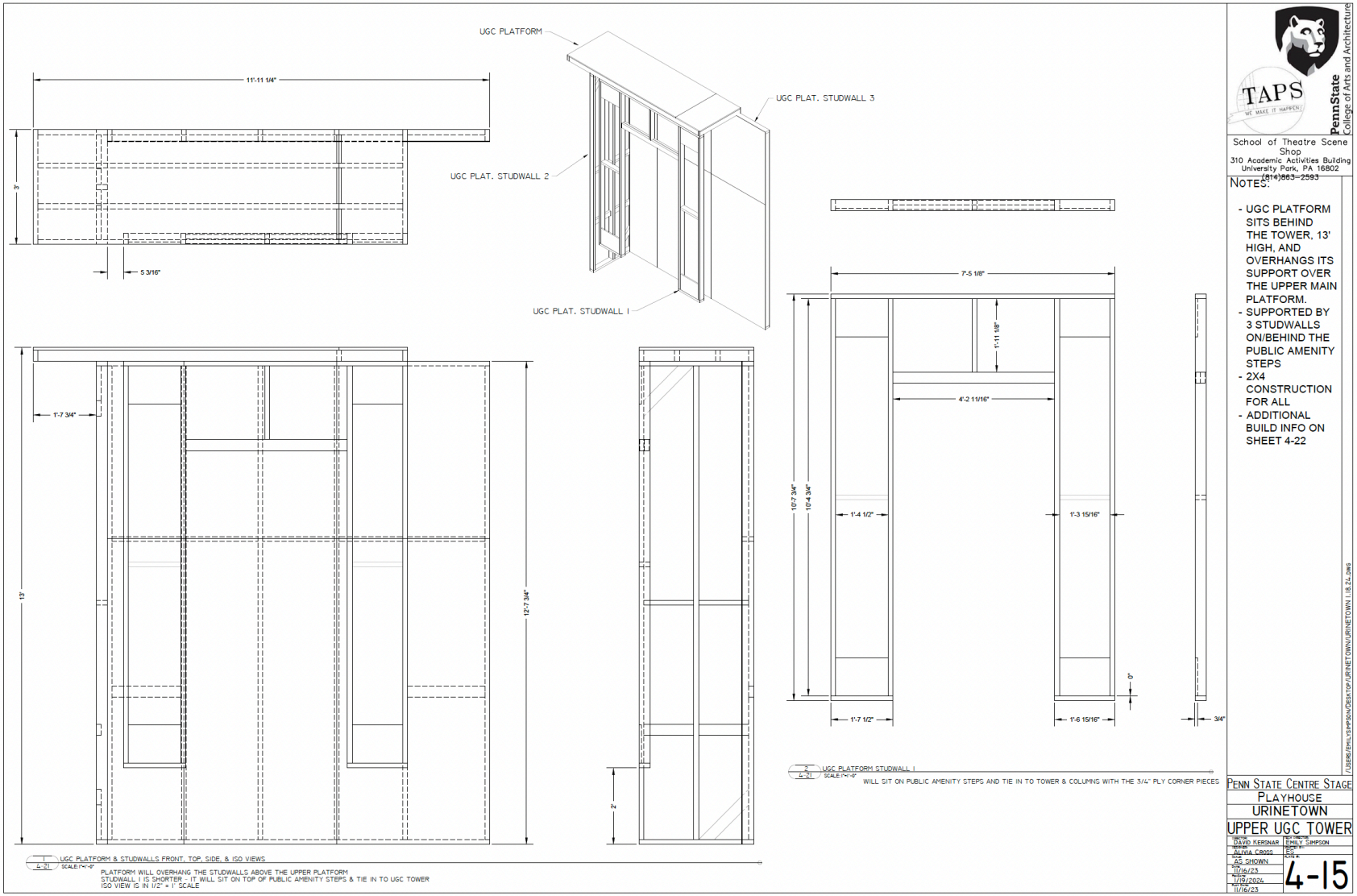
NOTES:
- ALL DIMS GIVEN LONG TO LONG
- HOGSTROUGH FOR SECURING LOWER TOWER TO UPPER TOWER
- FLAT 6 (FRONT OF UPPER TOWER) IS FLAT ON FRONT, BUT HAS DEPTH TO THE LETTERS ON THE BACK W/ LAYER OF CNC'D 1/2" SANDE PLY AND 1" FOAM. MORE LAYERS OF FOAM MAY BE ADDED LATER FOR ADDITIONAL DEPTH AS NEEDED.

/USERS/EMILYSIMPSON/DESKTOP/URINETOWN/URINETOWN 1.17.24.DWG

PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN
UPPER UGC TOWER

DRAFTING: DAVID KERSNAR	DETAILING: EMILY SIMPSON
PAINT: ALIVIA CROSS	SHEET #: 4-15
AS SHOWN	
11/16/23	
REVISED: 1/17/2024	
11/16/23	



1 / 4-21 UGC PLATFORM & STUDWALLS FRONT, TOP, SIDE, & ISO VIEWS
SCALE: 1"=1'-0"

PLATFORM WILL OVERHANG THE STUDWALLS ABOVE THE UPPER PLATFORM
STUDWALL 1 IS SHORTER - IT WILL SIT ON TOP OF PUBLIC AMENITY STEPS & TIE IN TO UGC TOWER
ISO VIEW IS IN 1/2" = 1' SCALE

2 / 4-21 UGC PLATFORM STUDWALL 1
SCALE: 1"=1'-0"

WILL SIT ON PUBLIC AMENITY STEPS AND TIE IN TO TOWER & COLUMNS WITH THE 3/4" PLY CORNER PIECES

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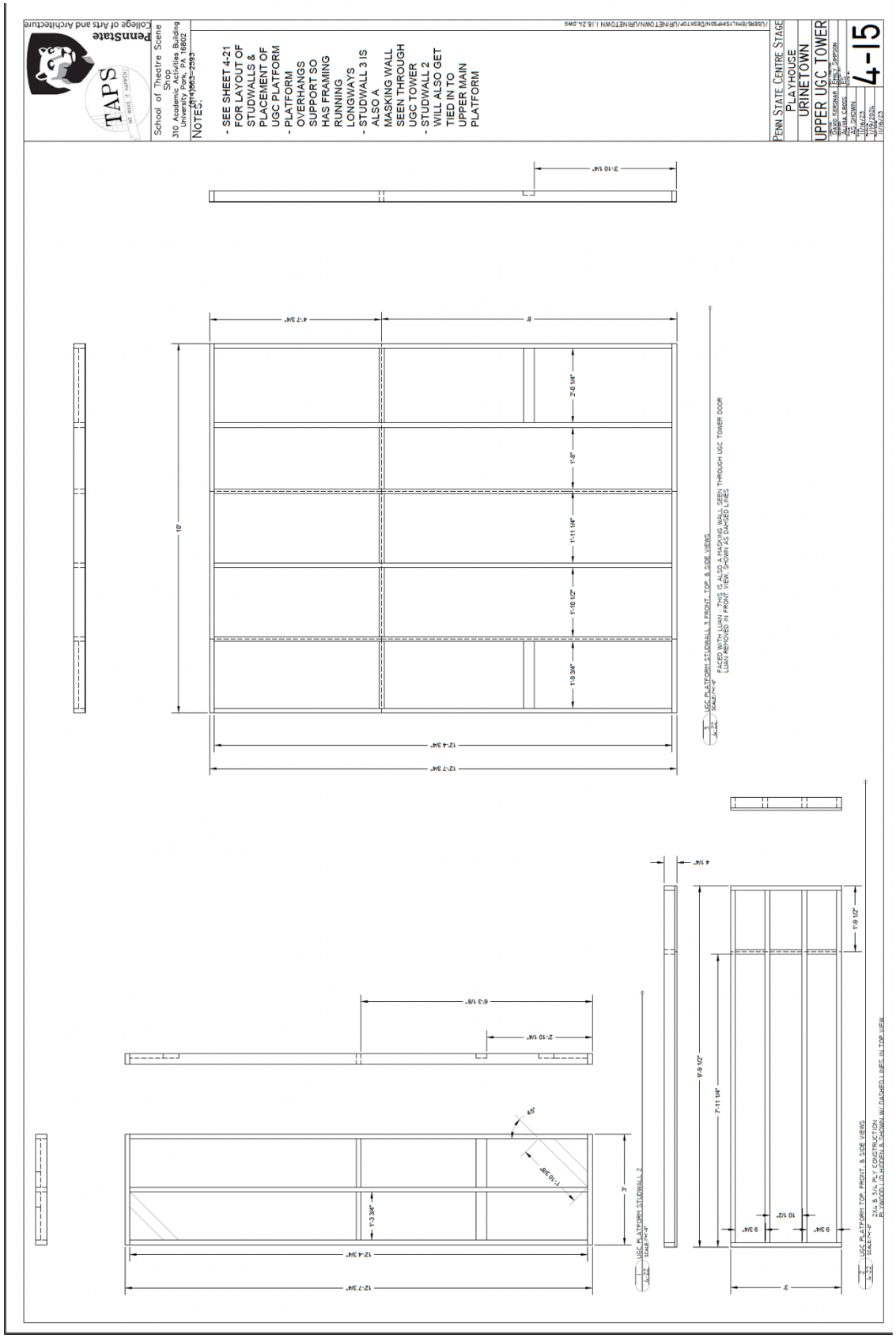
NOTES:

- UGC PLATFORM SITS BEHIND THE TOWER, 13' HIGH, AND OVERHANGS ITS SUPPORT OVER THE UPPER MAIN PLATFORM.
- SUPPORTED BY 3 STUDWALLS ON/BEHIND THE PUBLIC AMENITY STEPS
- 2X4 CONSTRUCTION FOR ALL
- ADDITIONAL BUILD INFO ON SHEET 4-22

/USERS/EMILYSIMPSON/DESKTOP/URINETOWN/URINETOWN 1.8.24.DWG

PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN
UPPER UGC TOWER

DRAWN DAVID KERSNAR	DETAILED EMILY SIMPSON
CHK'D ALIVIA CROSS	SHEET #
SCALE AS SHOWN	DWG # 4-15
DATE 11/16/23	
REVISED 1/19/2024	
11/16/23	


PennState
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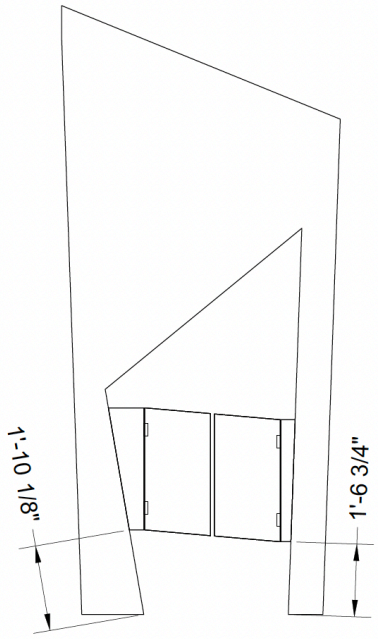
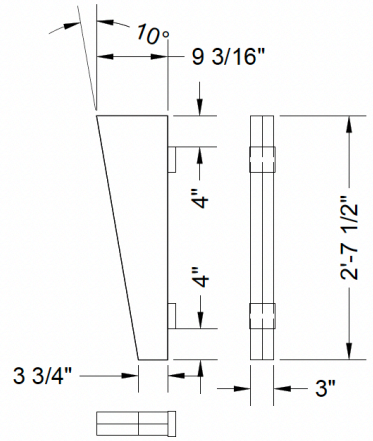
310 Academic Activities Building
University Park, PA 16802
(814)865-2593
NOTES:
- SEE SHEET 4-21 FOR LAYOUT OF STUDWALLS & PLACEMENT OF UGC PLATFORM
- PLATFORM OVERHANGS SUPPORT SO HAS FRAMING RUNNING LONGWAYS
- STUDWALL 3 IS ALSO A MASKING WALL SEEN THROUGH UGC TOWER
- STUDWALL 2 WILL ALSO GET TIED IN TO UPPER MAIN PLATFORM
PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN
UPPER UGC TOWER
4-15
UGC PLATFORM STUDWALL 3 FRONT - TOP & SIDE VIEWS
FACED WITH LUAN - THIS IS ALSO A MASKING WALL SEEN THROUGH UGC TOWER DOOR
LUAN REMOVED IN FRONT VIEW; SHOWN AS DASHED LINES
UGC PLATFORM STUDWALL 2
UGC PLATFORM TOP, FRONT, & SIDE VIEWS
2¼ & 3¼ PLY CONSTRUCTION
PLYWOOD LID HIDDEN & SHOWN W/ DASHED LINES IN TOP VIEW



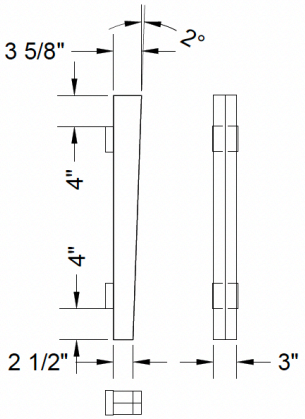
1 / 4-30 SALOON DOOR PLACEMENT
SCALE: 1/2"=1'-0"

CENTER IN REVEAL FLATS
SCREW & BRACE AS NEEDED INSIDE UGC FLATS



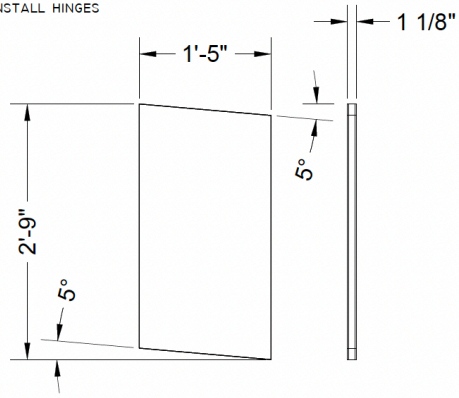
2 / 4-30 SR DOOR SUPPORT
SCALE: 1"=1'-0"

2 LAYERS OF 2x WOOD, CUT FROM 2x10
GLUE & SCREW TOGETHER FROM THE BACK
INSTALL HINGES



3 / 4-30 SL DOOR SUPPORT
SCALE: 1"=1'-0"

2 LAYERS OF 2x WOOD
GLUE & SCREW TOGETHER FROM THE BACK
INSTALL HINGES



4 / 4-30 DOORS - BUILD 2
SCALE: 1"=1'-0"

LUAUN SANDWICHING 3/4 PLY
ATTACH TO HINGES/DOOR SUPOPRTS ON EITHER SIDE

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College of Arts and Architecture

DATE: 2.8.24

SCALE: AS DRAWN

PHASE:

DRAWN BY: ES

DIRECTOR: DAVID KERSNAR

SCENIC DESIGNER: ALIVIA CROSS

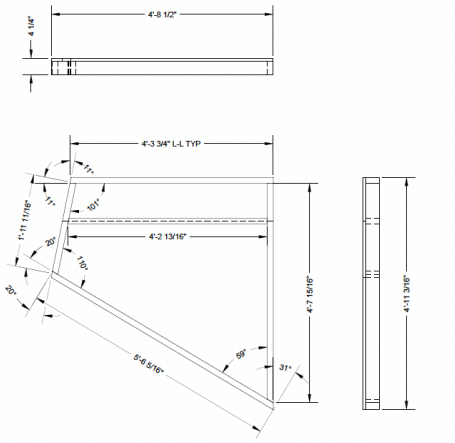
TECHNICAL DIRECTOR EMILY SIMPSON

PROJECT NAME: URINETOWN

DRAWING TITLE: UGC SALOON DOORS

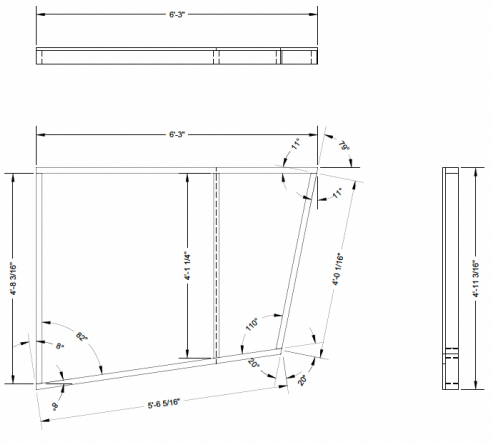
NOTES:
USE HINGES PULLED BY CHRIS

DRAWING NUMBER:
4-30



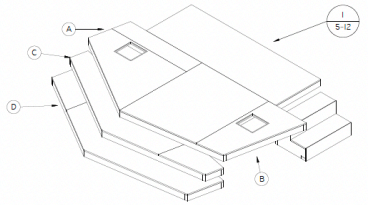
1 5-11 PUBLIC AMENITY STEPS PLATFORM A FRAMING TOP, FRONT, & SIDE VIEW
SCALE: 1"=1'-0"

LIDS REMOVED - DASHED LINE SHOWS SEAM IN PLYWOOD
CNC SHAPES PA1 &PA2
2X4 CONSTRUCTION, GLUE & SCREW

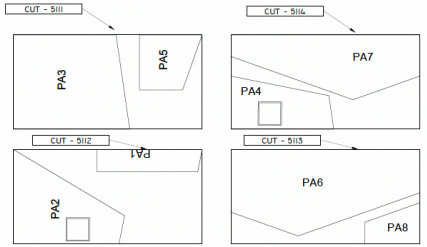


2 5-11 PUBLIC AMENITY STEPS PLATFORM B FRAMING, TOP, FRONT, & SIDE VIEWS
SCALE: 1"=1'-0"

LIDS REMOVED - DASHED LINE SHOWS SEAM IN PLYWOOD
CNC SHAPES PA3 & PA4
2X4 CONSTRUCTION, GLUE & SCREW

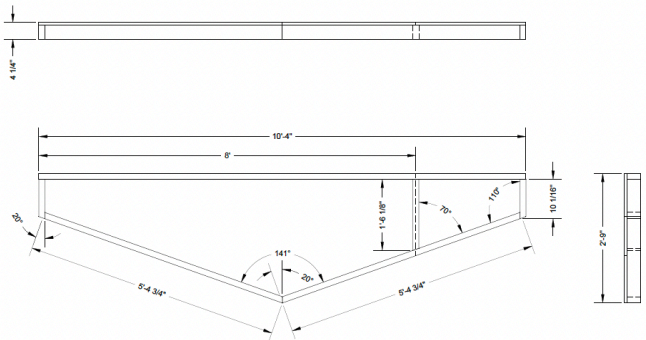


6 5-11 PUBLCIC AMENITY STEPS ISOMETRIC VIEW
SCALE: 3"=1'-0"



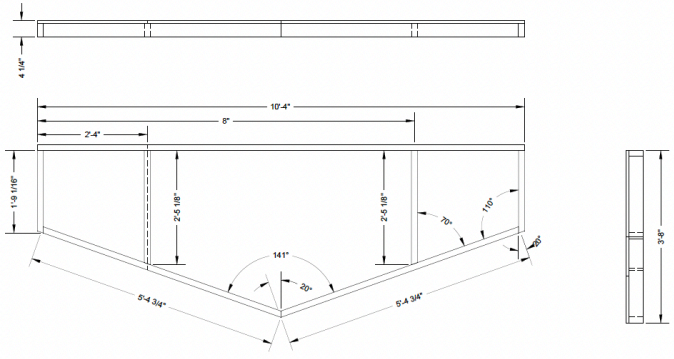
5 5-11 PUBLIC AMENITY STEPS CNC CALLOUTS TOP VIEW
SCALE: 3"=1'-0"

LABEL EACH PIECE AFTER BEING CNC'D
GLUE & STAPLE



3 5-11 PUBLIC AMENITY STEPS PLATFORM C FRAMING, TOP, FRONT, & SIDE VIEWS
SCALE:

LIDS REMOVED - DASHED LINE SHOWS SEAM IN PLYWOOD
CNC SHAPES PA7 & PA8
2X4 CONSTRUCTION, GLUE & SCREW



4 5-11 PUBLIC AMENITY STEPS PLATFORM D FRAMING, TOP, FRONT, & SIDE VIEWS
SCALE:

LIDS REMOVED, DASHED LINE SHOWS SEAM IN PLYWOOD
CNC SHAPES PA5 & PA6
2X4 CONSTRUCTION, GLUE & SCREW

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NOTES:

- PUBLIC AMENITY STEPS PLATFORMS A-D
- 2X4 CONSTRUCTION, GLUE & SCREW
- GLUE & STAPLE CNC LIDS
- CNC SHEETS 5111,5112,5113,5114
- LEG LAYOUT ON SHEET 5-13
- ADDITIONAL PUBLIC AMENITY ESCAPE PLATFORMS ON 5-12
- FACE FRONTS AND SIDES OF PLATFORMS WITH LUAUN TO FIT
- SCREW PLATFORMS A & B TOGETHER FROM UNDERNEATH
- UGC TOWER WILL SIT ON TOP OF PLATFORMS A & B
- PLEXI PANELS WILL SIT IN LIDS OF PLATFORMS A & B

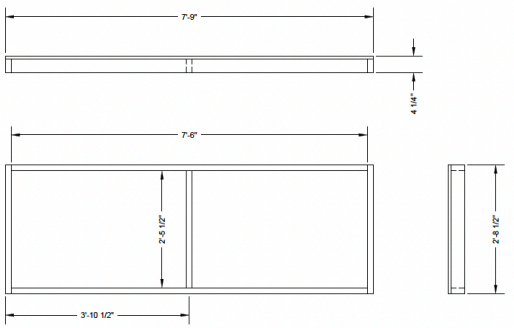
/USERS/EMILYSIMPSON/DESKTOP/URINETOWN/URINETOWN V16.DWG

PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN

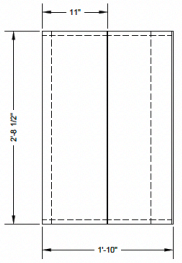
PUBLIC AMENITY STEPS PLATFORMS A-D

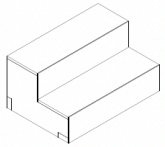
DESIGNER: DAVID KERSNER	DRAWN BY: EMILY SIMPSON
CHECKED: ALIVIA CROSS	SCALE: AS NOTED
1/4"=1'-0"	
11/22/23	
11/27/2023	
11/16/23	

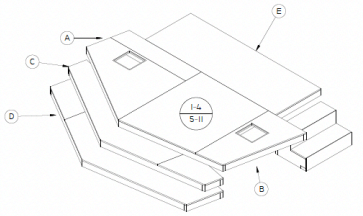
SHEET NO. 5-11



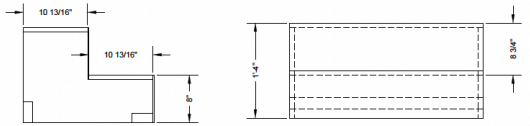
1 / 5-12 PUBLIC AMENITY STEPS PLATFORM E FRAMING TOP, FRONT, & SIDE VIEW
SCALE: 1"=1'-0"
LID REMOVED - RIP 3/4 PLY
2X4 CONSTRUCTION, GLUE & SCREW



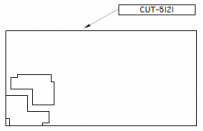




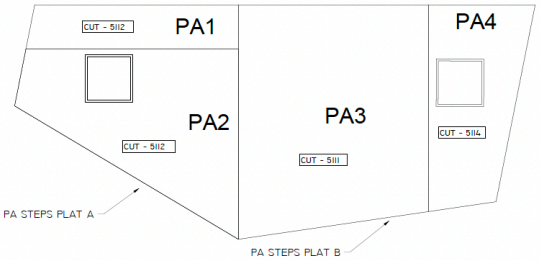
3 / 5-12 PUBLCIC AMENITY STEPS ISOMETRIC VIEW
SCALE: 1"=1'-0"

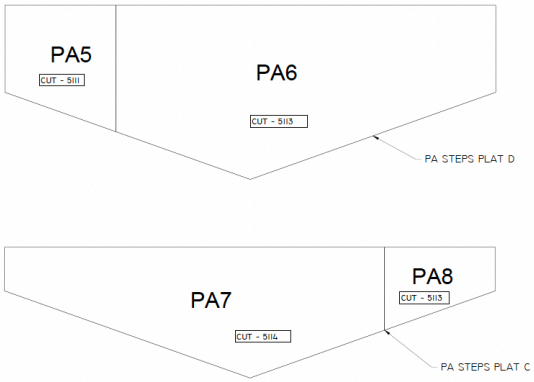


2 / 5-12 PUBLIC AMENITY STEPS ESCAPE STEPS TOP, FRONT, SIDE, & ISO VIEWS
SCALE: 1"=1'-0"
STRINGERS AND TREADS ARE CNC'D 3/4 PLY. FACING IS LUAUN. 2X4 SUPPORTS ALONG BOTTOM.
GLUE & STAPLE



4 / 5-12 PUBLIC AMENITY ESCAPE STEPS CNC CALLOUT
SCALE: 1"=1'-0"
USE SCRAP IF POSSIBLE
CNC SHEET 5121





5 / 5-12 PUBLIC AMENITY STEPS A-B PLYWOOD LAYOUT
SCALE: 1"=1'-0"
CNC SHEETS 5111, 5112, 5113, 5114
3/4" PLY, SQUARES IN PA2&4 GET ENGRAVED TO CREATE SHELF FOR 3/8" PLEXI
SEE 5-11 FOR FRAMING

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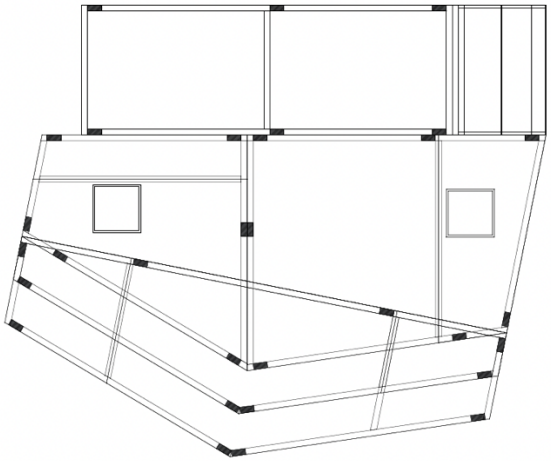
NOTES:
- PUBLIC AMENITY STEPS PLATFORM E, ESCAPE STEPS, & LID LAYOUTS
- PLATFROM E IS 2X4 CONSTRUCTION, GLUE & SCREW
- GLUE & STAPLE CNC LIDS
- LEG LAYOUT ON SHEET 5-13
- FRONT & SIDES WILL BE FACED WITH LUAUN TO FIT
- PLEXI PANELS WILL SIT IN LIDS OF PLATFORMS A & B
- ESCAPE STEPS HAVE $\frac{3}{4}$ PLY TREADS AND STRINGERS, AND LUAUN RISES, 2X4 STABILIZERS. GLUE & STAPLE ALL

/USERS/EMILYSIMPSON/DESKTOP/URINETOWN/URINETOWN V16.DWG

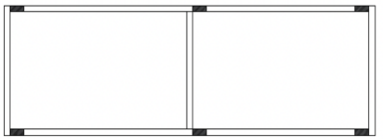
PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN

PUBLIC AMENITY STEPS PLATFORMS A-D

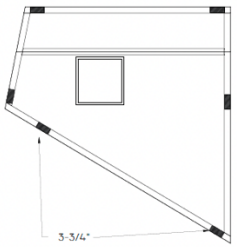
DRAWN BY: DAVID KERSNER	CHECKED BY: EMILY SIMPSON
DRAWN BY: ALIVIA CROSS	SCALE: 1/4"=1'-0"
DATE: 11/22/23	SHEET NO.: 5-11
REVISED: 11/27/2023	
DATE: 11/16/23	



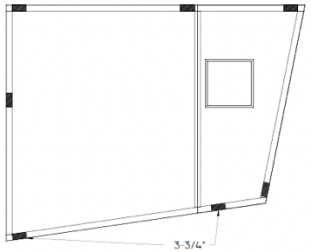
1 / S-13 PA STEPS OVERALL LEG LAYOUT
SCALE: 1"=1'-0"
LEGS HATCHED FOR EMPHASIS - SEE OTHER DRAWINGS ON THIS SHEET FOR HEIGHTS
ALL ARE CUSTOM COMPRESSION LEGS, CARP DISCRETION FOR FINAL LEG PLACEMENTS
FINAL STEP HEIGHTS SHOULD BE 8", 16", 24"



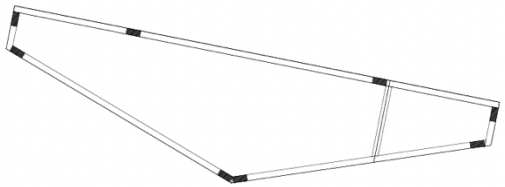
2 / S-13 PA STEPS PLAT E LEG LAYOUT
SCALE: 1"=1'-0"
TOTAL PLATFORM HEIGHT SHOULD BE 24"
COMPRESSION LEGS AT 19-3/4"



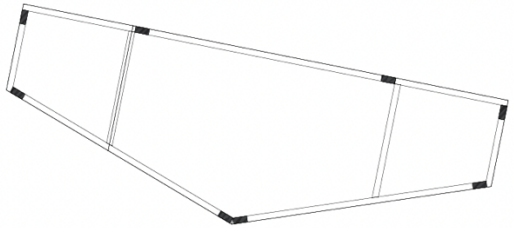
3 / S-13 PA STEPS PLAT A LEG LAYOUT
SCALE: 1"=1'-0"
TOTAL PLATFORM HEIGHT AT 24"
COMPRESSION LEGS AT 19-3/4" UNLESS OTHERWISE NOTED
DS EDGE SITS ON OTHER PLATFORMS



4 / S-13 PA STEPS PLAT B LEG LAYOUT
SCALE: 1"=1'-0"
TOTAL PLATFORM HEIGHT AT 24"
COMPRESSION LEGS AT 19-3/4" UNLESS OTHERWISE NOTED
DS EDGE SITS ON OTHER PLATFORMS



5 / S-13 PA STEPS PLAT C LEG LAYOUT
SCALE: 1"=1'-0"
TOTAL PLAT HEIGHT 16"
ENTIRE PLATFORM SITS ON PLAT D
ALL LEGS AT 3-3/4" (8" TALLER THAN STEP BELOW)



6 / S-13 PA STEPS PLAT D LEG LAYOUT
SCALE
TOTAL PLATFORM HEIGHT 8"
ALL COMPRESSION LEGS AT 3-3/4"

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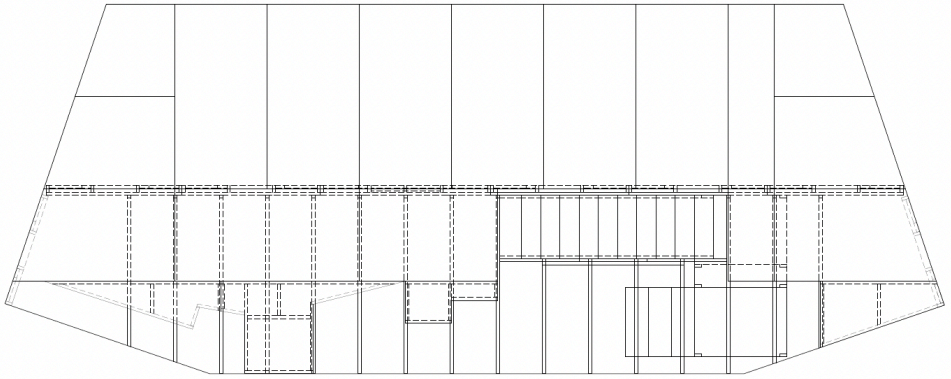
NOTES:

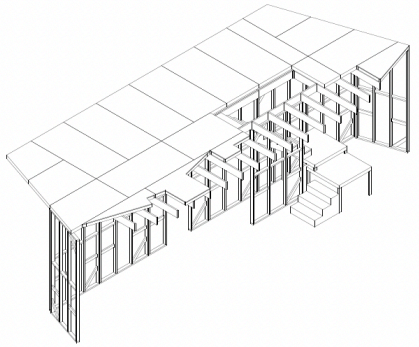
- LEG LAYOUT FOR PUBLIC AMENITY STEP UNIT
- COMPRESSION LEGS
- FINAL LEG PLACEMENT UP TO CARPENTER'S DISCRETION TO ACHIEVE STEP HEIGHTS OF 8", 16", 24"
- FACE DS EDGE AND SIDES OF STEPS WITH LUAN TO FIT
- MASO LAYOUT ON 5-14

/USERS/EHL1309PSU/DESKTOP/URINETOWN/URINETOWN 12.11.23.DWG

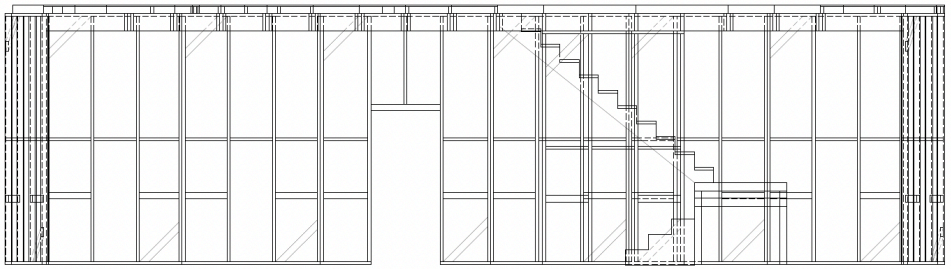
PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN
PUBLIC AMENITY STEPS PLATFORMS A-D

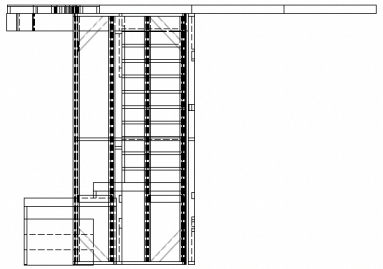
DRAWN	DAVID KERSNAR
CHECKED	ALIVIA CROSS
SCALE	1"=1'-0"
DATE	12/15/23
REVISED	12/15/2023
UPDATED	11/16/23
DRAWN	EMILY SIMPSON
APPROVED	ES
SHEET	5-13





2 10-01 PIT OVERVIEW ISOMETRIC VIEW
SCALE: 1/2"=1'-0"





1 10-01 PIT OVERVIEW - TOP, FRONT, & SIDE VIEW
SCALE: 1/2"=1'-0"

SEE SHEET 10-02 FOR BETTER BREAKDOWN OF PLATFORMS & STUDWALLS, AND FOLLOWING 10- SHEETS FOR BUILD INFO

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NOTES:
- PIT OVERVIEW - SEE SHEET 10-02 FOR BREAKDOWN OF PLATFORM & STUDWALL LAYOUT.
- ESCAPE STAIRS: 8' STAIRS, 2 STOCK 4X4 PLATFORMS, META ESCAPE STAIRS

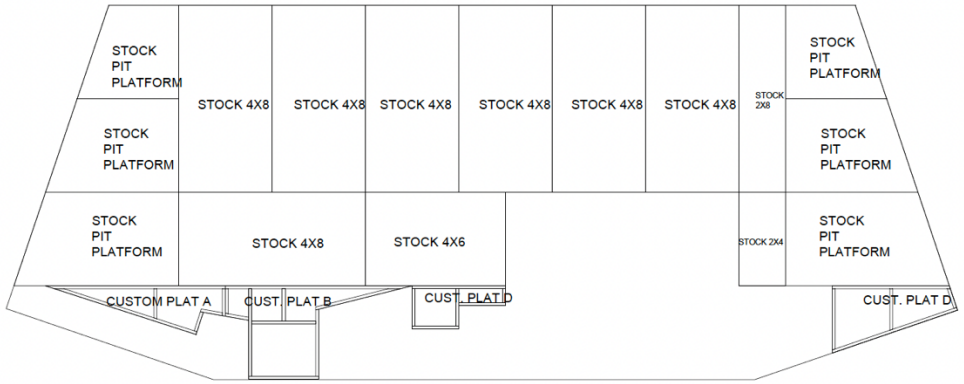
/USERS/EMILYSIMPSON/DESKTOP/URINETOWN/URINETOWN PIT.DWG

PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN

PIT OVERVIEW

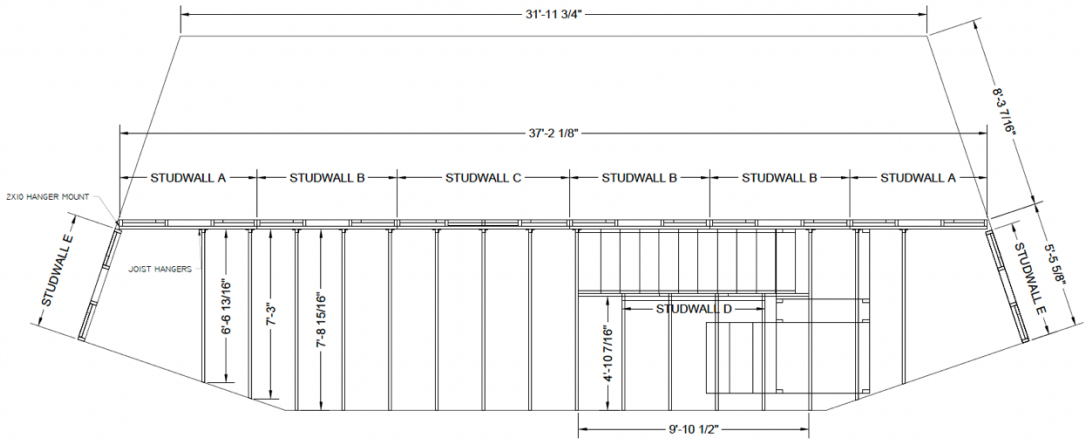
DRAWN	EMILY SIMPSON
DESIGNED	DAVID KERSNAR
CHECKED	ALIVIA CROSS
SCALE	AS DRAWN
DATE	7/29/24, 7/31/2024, 8/16/2022

10-02



1 10-02 PIT PLATFORM LAYOUT TOP VIEW
SCALE: 3/4"=1'-0"

7 STOCK 4X8, 1 STOCK 2X8, 1 STOCK 4X6, 1 STOCK 2X4, 6 STOCK PIT ANGLED PLATS, 4 CUSTOM PLATFORMS
US PLATFORMS WILL SPAN LALLI COLUMN SET-UP TO STUDWALLS (BELOW); DS PLATS WILL SIT ON 2X10 BEAMS (BELOW)
CUSTOM PLAT BUILD INFO ON SHEET 10-13, CNC SHEET S10131, 10132, 10133



2 10-02 PIT - STUDWALL & 2X10 BEAM OVERVIEW - TOP VIEW
SCALE: 3/4"=1'-0"

LEDGERS/ JOIST HANGERS TO BE ADDED TO CENTER STUDWALL STRETCH AS NEEDED FOR BEAMS
SHORTER BEAMS SIT ON STUDWALL D
STUDWALL BUILD INFO ON SHEETS 10-11 & 10-12

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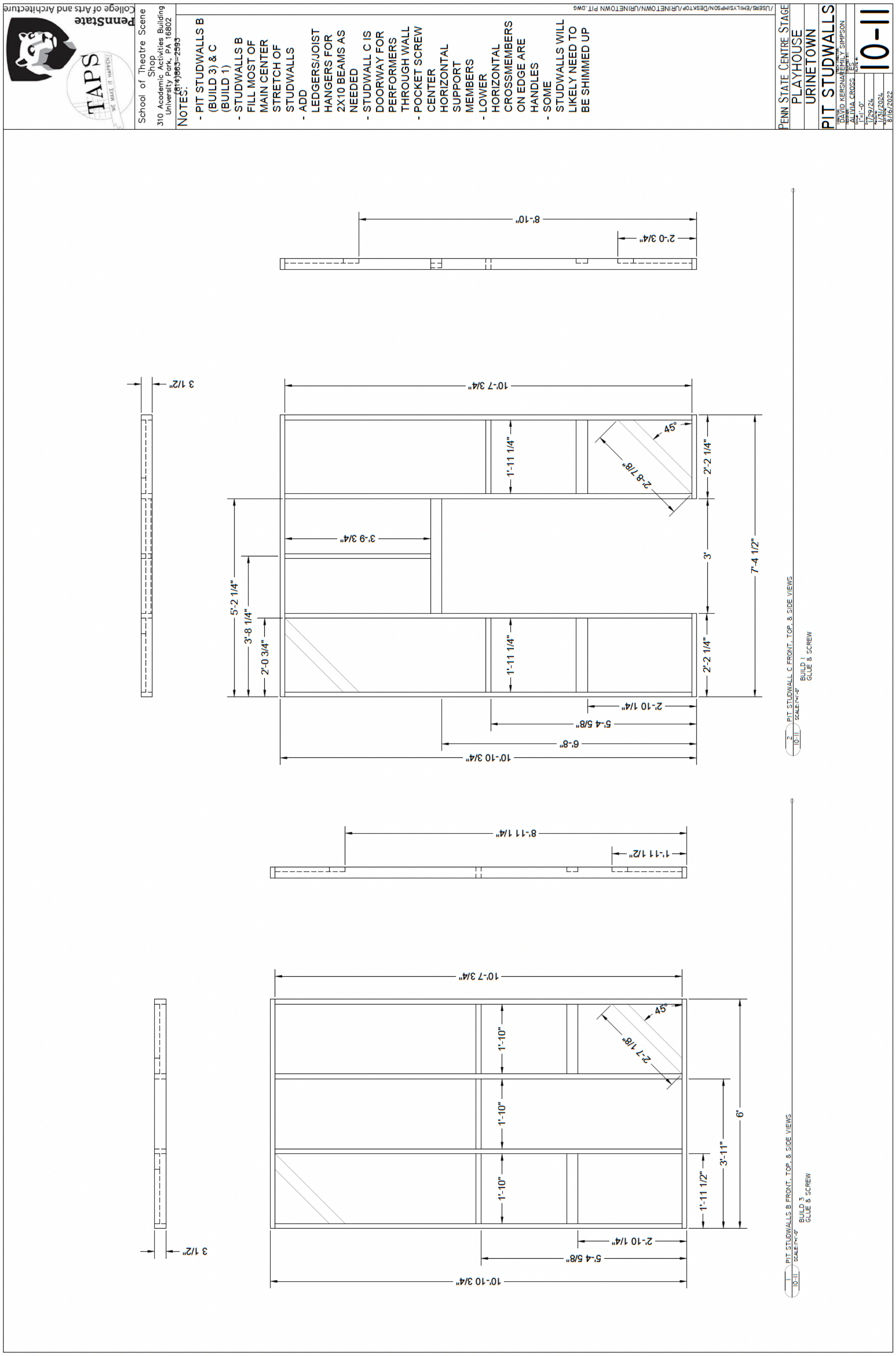
NOTES:
- PIT PLATFORMS, STUDWALLS, & BEAMS (TOP VIEW)
- 16 STOCK PLATFORMS OF VARYING SIZES, 4 CUSTOM PLATFORMS (SHEET 10-13), PLUS 2 ADDITIONAL STOCK 4X4 PLATS USED AS PART OF ESCAPE STAIR SYSTEM
- 9 STUDWALLS OF 5 DIFFERENT TYPES (SHEETS 10-11 &10-12)
- 17 2X10 BEAMS
- ESCAPE STAIRS - 8' STOCK STEPS, STOCK PLATS, & META STEPS
- JOIST HANGERS & 2X8 HANGER MOUNT TO BE ADDED TO FIT

/Users/EMILYSIMPSON/Desktop/URINETOWN/URINETOWN PIT.dwg

PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN
PIT PLATFORM & STUDWALLS OVERVIEW

DRAWN BY	DAVID KERSNAR
CHECKED BY	OLIVIA CROSS
SCALE	1/2"=1'-0"
DATE	12/29/24
REVISED	1/31/2024
	8/16/2022
REV. FROM	EMILY SIMPSON
SHEET	10-02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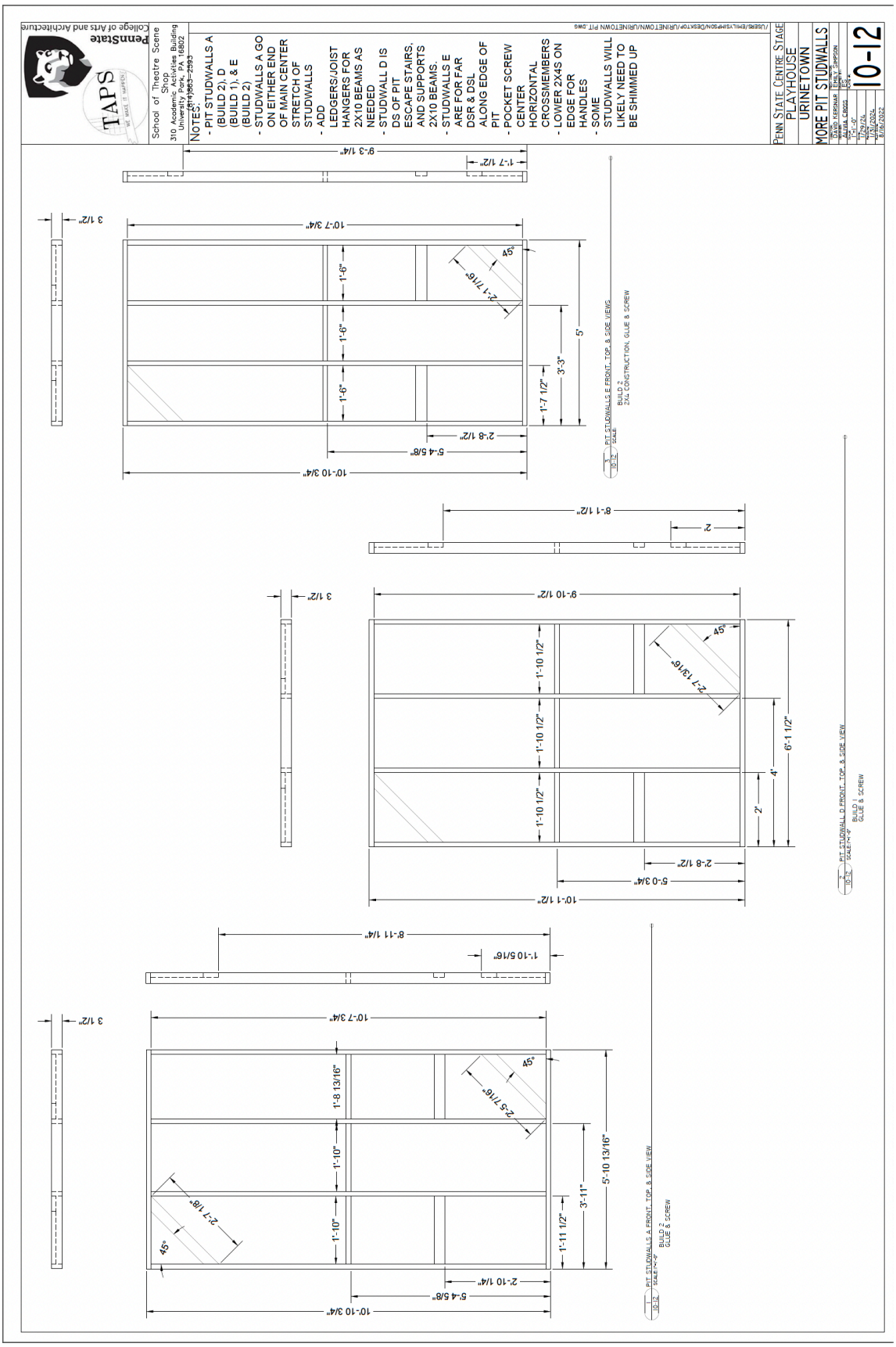
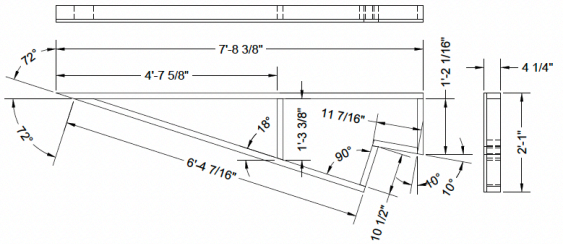
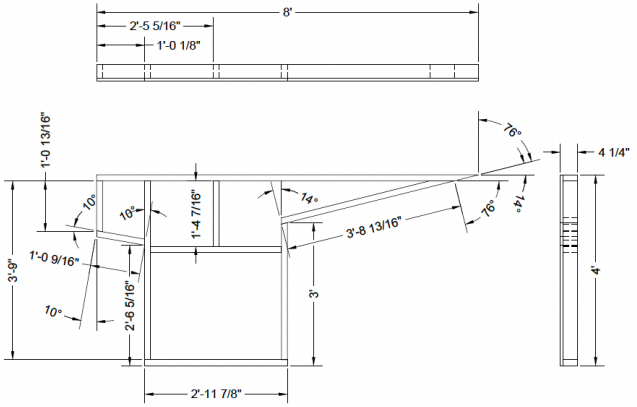
PennState
TAPS
WE MAKE IT HAPPEN
School of Theatre Scene Shop
310 Academic Activities Building
University Park, PA 16802
(814)863-2593
NOTES:
- PIT STUDWALLS B (BUILD 3) & C (BUILD 1)
- STUDWALLS B FILL MOST OF MAIN CENTER STRETCH OF STUDWALLS
- ADD LEDGERS/JOIST HANGERS FOR 2X10 BEAMS AS NEEDED
- STUDWALL C IS DOORWAY FOR PERFORMERS THROUGH WALL
- POCKET SCREW CENTER HORIZONTAL SUPPORT MEMBERS
- LOWER HORIZONTAL CROSSMEMBERS ON EDGE ARE HANDLES
- SOME STUDWALLS WILL LIKELY NEED TO BE SHIMMED UP
PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN
PIT STUDWALLS
DAVID KERSNAR/EMILY SIMPSON
ALIVIA CROSS
10-11
8'-10"
2'-0 3/4"
3 1/2"
10'-7 3/4"
1'-11 1/4"
45°
2'-8 7/8"
2'-2 1/4"
3'-9 3/4"
3'
7'-4 1/2"
5'-2 1/4"
3'-8 1/4"
2'-0 3/4"
2'-10 1/4"
5'-4 5/8"
6'-8"
10'-10 3/4"
PIT STUDWALL C FRONT, TOP, & SIDE VIEWS
BUILD 1
GLUE & SCREW
8'-11 1/4"
1'-11 1/2"
1'-10"
2'-7 1/8"
6'
3'-11"
PIT STUDWALLS B FRONT, TOP, & SIDE VIEWS
BUILD 3
GLUE & SCREW

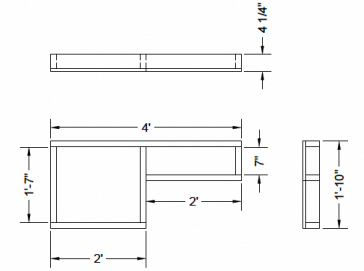

Pennstate
College of Arts and Architecture
TAPS
School of Theatre Scene Shop
310 Academic Activities Building
University Park, PA 16802
(814) 863-2593
NOTES:
- PIT STUDWALLS A (BUILD 2), D (BUILD 1), & E (BUILD 2)
- STUDWALLS A GO ON EITHER END OF MAIN CENTER STRETCH OF STUDWALLS
- ADD LEDGERS/JOIST HANGERS FOR 2X10 BEAMS AS NEEDED
- STUDWALL D IS DS OF PIT ESCAPE STAIRS. AND SUPPORTS 2X10 BEAMS.
- STUDWALLS E ARE FOR FAR DSR & DSL ALONG EDGE OF PIT
- POCKET SCREW CENTER HORIZONTAL CROSSMEMBERS
- LOWER 2X4S ON EDGE FOR HANDLES
- SOME STUDWALLS WILL LIKELY NEED TO BE SHIMMED UP
/USERS/EMILYSHIPSON/DESKTOP/URINETOWN/URINETOWN PIT.DWG
PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN
MORE PIT STUDWALLS
DRAWN: KERSHAW
CHK'D: SIMPSON
ALVIA CROSS
SCALE: 1"=1'-0"
12/29/12
REVISIONS
2/19/2013
8/19/2013
10-12
9'-3 1/4"
1'-7 1/2"
3 1/2"
10'-7 3/4"
1'-6"
1'-6"
1'-6"
45°
2'-1 7/16"
5'
3'-3"
1'-7 1/2"
2'-8 1/2"
5'-4 5/8"
10'-10 3/4"
3 PIT STUDWALLS E FRONT, TOP, & SIDE VIEWS
10-12 SCALE: 1"=1'-0"
BUILD 2
2X4 CONSTRUCTION, GLUE & SCREW
8'-1 1/2"
2"
9'-10 1/2"
1'-10 1/2"
1'-10 1/2"
1'-10 1/2"
2'-7 13/16"
2"
4"
6'-1 1/2"
2'-8 1/2"
5'-0 3/4"
10'-1 1/2"
1 PIT STUDWALL D FRONT, TOP, & SIDE VIEW
10-12 SCALE: 1"=1'-0"
BUILD 1
GLUE & SCREW
8'-11 1/4"
1'-10 5/16"
10'-7 3/4"
1'-8 13/16"
1'-10"
1'-10"
45°
2'-5 7/16"
2'-7 1/8"
45°
1'-11 1/2"
3'-11"
5'-10 13/16"
2'-10 1/4"
5'-4 5/8"
10'-10 3/4"
4 PIT STUDWALLS A FRONT, TOP, & SIDE VIEW
10-12 SCALE: 1"=1'-0"
BUILD 2
GLUE & SCREW



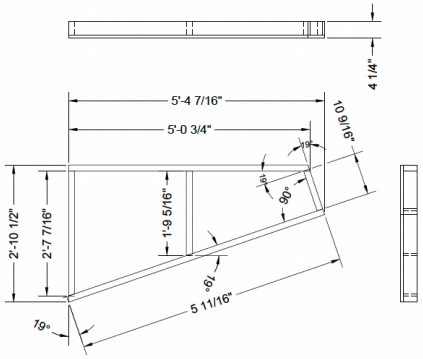
1 10-13 PIT CUSTOM PLAT A FRONT, TOP, & SIDE VIEW
SCALE: 1"=1'-0"
LID REMOVED IN TOP VIEW
2X4 CONSTRUCTION, GLUE & SCREW
CNC SHEET 10131



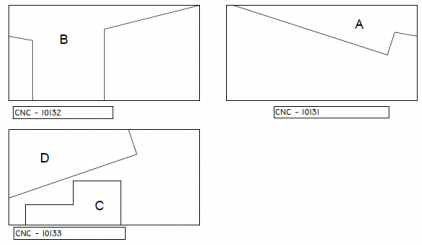
2 10-13 PIT CUSTOM PLAT B TOP, FRONT, & SIDE VIEWS
SCALE: 1"=1'-0"
LID REMOVED IN TOP VIEW
2X4 CONSTRUCTION, GLUE & SCREW
CNC SHEET 10132



3 10-13 PIT CUSTOM PLAT C TOP, FRONT, & SIDE VIEW
SCALE: 1"=1'-0"
LID REMOVED IN TOP VIEW
2X4 CONSTRUCTION, GLUE & SCREW
CNC SHEET 10133



4 10-13 PIT CUSTOM PLAT D TOP, FRONT, & SIDE VIEW
SCALE: 1"=1'-0"
LID REMOVED IN TOP VIEW
2X4 CONSTRUCTION, GLUE & SCREW
CNC SHEET 10133



5 10-13 CUSTOM PIT PLATS CNC CALLOUTS
SCALE:
SHEETS 10131, 10132, 10133
3/4" PLY

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School of Theatre Scene Shop
310 Academic Activities Building
University Park, PA 16802
(814)863-2593

NOTES:
- CUSTOM PIT PLATFORMS A-D
- 2X4 CONSTRUCTION, GLUE & SCREW
- CNC LIDS ON CNC SHEETS 10131, 10132, & 10133.
- BUILD FRAMING TO CNC LIDS IF EASIER
- DIMS OF ANGLED PIECES GIVEN L-L TYP
-

I:\USERS\EMILYSIMPSON\DESKTOP\URINETOWN\URINETOWN PIT.dwg

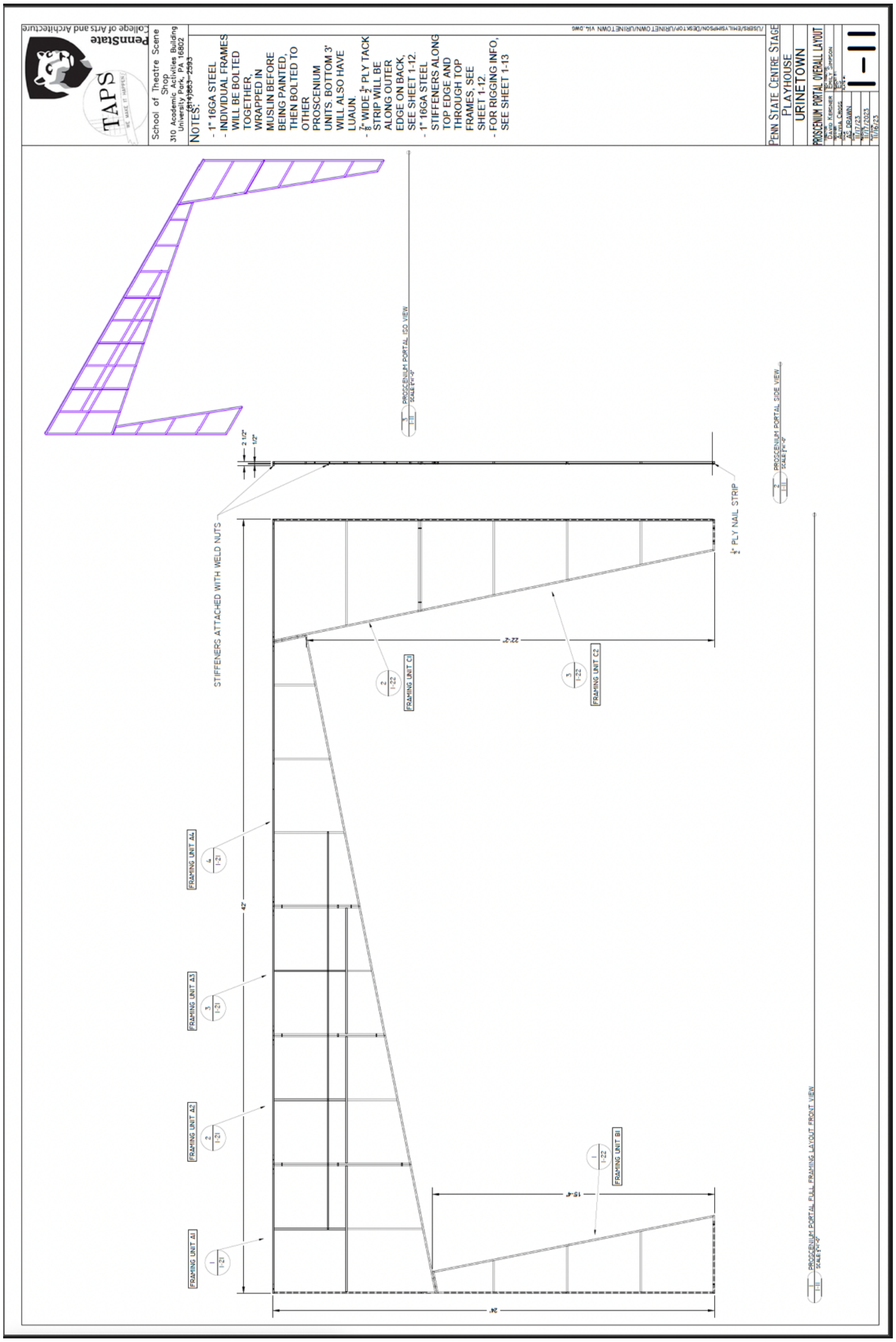
PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN

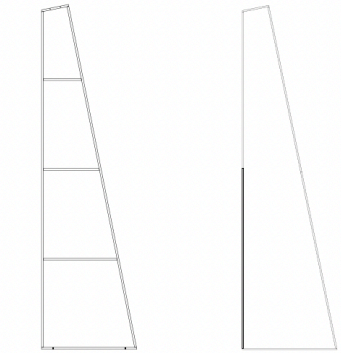
PIT CUSTOM PLATS

DRAWN BY: DAVID KERSNAR	CHECKED BY: EMILY SIMPSON
DRAWN BY: ALIVIA CROSS	CHECKED BY: ES
SCALE: 1"=1'-0"	SHEET #: 10-13
DATE: 7/29/24	
DATE: 1/31/2024	
DATE: 8/16/2022	

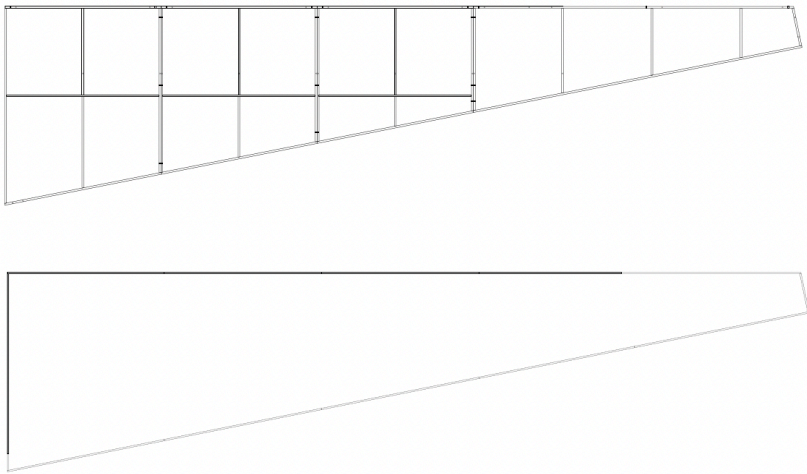
Appendix D Old Versions of Drafting & Other Referenced Materials

Proscenium Portal – original plates

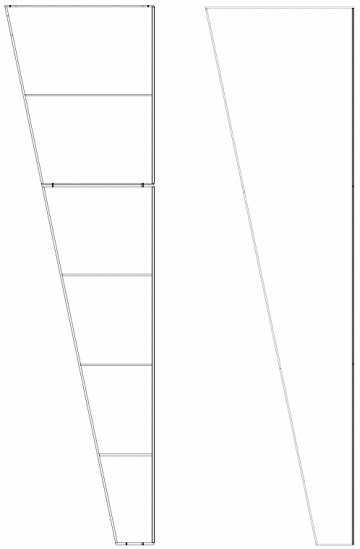

PennState
College of Arts and Architecture
TAPS
School of Theatre Scene Shop
310 Academic Activities Building
University Park, PA 16802
(814)863-2593
NOTES:
- 1" 16GA STEEL
- INDIVIDUAL FRAMES WILL BE BOLTED TOGETHER, WRAPPED IN MUSLIN BEFORE BEING PAINTED, THEN BOLTED TO OTHER PROSCENIUM UNITS. BOTTOM 3' WILL ALSO HAVE LUAUN.
- 7/8" WIDE 1/2" PLY TACK STRIP WILL BE ALONG OUTER EDGE ON BACK, SEE SHEET 1-12.
- 1" 16GA STEEL STIFFENERS ALONG TOP EDGE AND THROUGH TOP FRAMES, SEE SHEET 1-12.
- FOR RIGGING INFO, SEE SHEET 1-13
PENN STATE CENTRE STAGE
PLAYHOUSE
URINETOWN
PROSCENIUM PORTAL OVERALL LAYOUT
DAVID KERSNER
EMILY SIMPSON
ALIVIA CROSS
AS DRAWN
11/17/23
11/17/2023
11/16/23
1-11
PROSCENIUM PORTAL ISO VIEW
PROSCENIUM PORTAL SIDE VIEW
PROSCENIUM PORTAL FULL FRAMING LAYOUT FRONT VIEW
STIFFENERS ATTACHED WITH WELD NUTS
1/2" PLY NAIL STRIP
2 1/2"
1/2"
FRAMING UNIT A1
FRAMING UNIT A2
FRAMING UNIT A3
FRAMING UNIT A4
FRAMING UNIT B1
FRAMING UNIT C1
FRAMING UNIT C2
42'
34'
22'-2"
15'-6"



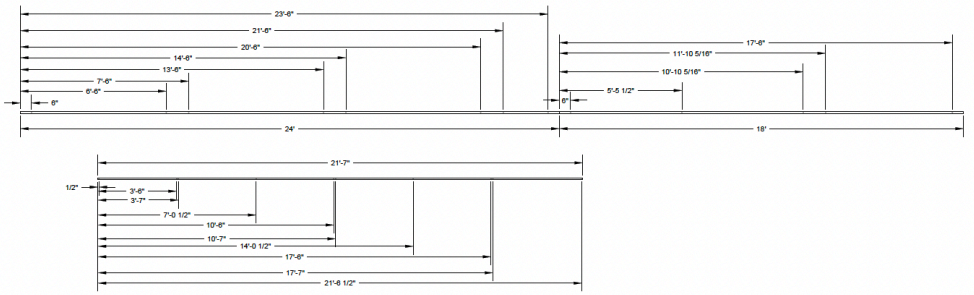
1 / 1-12 PROSCENIUM FRAMING B - FRONT VIEW & NAIL STRIP DETAIL
SCALE: 1"=1'-0"
7/8" WIDE 1/2" PLY NAIL STRIP, CENTERED & T-NAILED TO BACK OF FRAMING



3 / 1-12 PROSCENIUM FRAMING A - FRONT VIEW & NAIL STRIP DETAIL
SCALE:
7/8" WIDE 1/2" PLY NAIL STRIP, CENTERED & T-NAILED TO BACK OF FRAMING



2 / 1-12 PROSCENIUM FRAMING C - FRONT VIEW & NAIL STRIP DETAIL
SCALE:
7/8" WIDE 1/2" PLY NAIL STRIP, CENTERED & T-NAILED TO BACK OF FRAMING



4 / 1-12 PROSCENIUM FRAMING STIFFENERS - CALLOUT & BOLT HOLES
SCALE:
3 PIECES OF 1" I6GA BOX TUBE
1/2" HOLES AS DIRECTED TO CONNECT TO FRAMING WITH WELD NUTS & BOLTS

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School of Theatre Scene Shop
310 Academic Activities Building
University Park, PA 16802
(814)863-2593

NOTES:

- DETAIL OF HOW FRAMES SHOULD BE BOLTED TOGETHER BEFORE BEING WRAPPED WITH MUSLIN
- 7/8" WIDE 1/2" PLY NAIL STRIP FOR ATTACHING MUSLIN SHOULD BE T-NAILED ON THE BACK OF EACH FRAMING UNIT AROUND EDGES, AS DRAWN.
- USE SCRAPS OF 1/2" FIRST FOR NAIL STRIP
- STIFFENERS SHOULD GET 1/2" HOLES DRILLED AS DRAWN - WILL BE BOLTED THROUGH WELD NUTS TO FULLY ASSEMBLED PROSCENIUM BEFORE BEING FLOWN.

/USERS/EMILYSIMPSON/DESKTOP/URINETOWN/URINETOWN V16.DWG

PENN STATE CENTRE STAGE PLAYHOUSE
URINETOWN
PROSCENIUM PORTAL DETAIL

DRAWN BY	David Kersner
DRAWN	Emily Simpson
CHECKED	Alivia Cross
SCALE	1/2"=1'-0"
DATE	10/12/23
REVISED	11/17/2023
	11/16/23

1-12

Lineset Schedule

PENN STATE School of Theatre
116 Theatre Building, University Park PA 16802

PennState College of Arts and Architecture

Show Title:	Chirstmas Carol -> Urinetown
Updated By:	Ashley Hungerford
Date Modified:	4/2/2024

CURRENT

LINE	FROM	Old	NEW DESCRIPTION	TRIM	OPEN OFF C	LOA	NOTES
F.C.	3"	DEAD-HUNG MOTORIZED	DEAD-HUNG MOTORIZED			N/A	Non-Movable
1	1'-5	-Parting/Guillotine Main Curta	Bi-Parting/Guillotine Main Curtain			21 bricks	Non-Movable
2	2'-5	Snow Bag	1st Electric	23'6"			
3	3'-1	Snowbag					
4	3'-7		Hideout Drop				
5	4'-1	1st Electric	2nd Electric's Marry	25'2"			MARRIED to LS6
6	4'-7	2nd Electric	2nd Electric	25'2"			
7	5'-3	Border w/ Garland #1					
8	5'-11	Legs #1					
9	6'-9	3rd Electric	Scrim #1			3 bricks	
10	7'-3	On Air Signs	Downstage Wing Foldback	28'		3.5 bricks	20' taildown
11	7'-1						
12	8'-7	4th Electric					
13	9'-3						
14	9'-11	Station Sign	1st Border	24'			
15	10'-7	Thunder Sheet / Audio Foldba	1st Legs	Floor	20' from Center	2 Bricks	
16	11'-3	5th Electric	3rd Electric	27'			
17	11'-11	Border w/ Garland #2					
18	12'-9	Legs #2	Storage Legs	Floor		2 Bricks	
19	13'-3	6th Electric					
20	13'-11		4th Electric	28'6"			
21	14'-7	Work LX					
22	15'-3		Audio Foldback	25'		3 Bricks	
23	15'-11	7th Electric	Focus Track				
24	16'-7		2nd Border	24'			
25	17'-7	Border w/ Garland #3	2nd Legs	Floor	21' from Center		
26	18'-5	Legs #3					
27	18'-11	8th Electric					
28	19'-5	Full Stage Black	5th Electric	28'			
29	20'-1	CYC (Stored)					move to 42
30	20'-9	9th Electric					
31	21'-5	FOCUS TRACK				14 Bricks	
32	22'-1	Work LX	6th Electric	30'			
33	22'-9		3rd Border	24'			
34	23'-5	10th Electric	3rd Legs AND US Portal	Floor	legs in to portal		CANNOT FLY ONCE LOADED IN
35	24'-5						
36	25'-1						
37	25'-9	11th Electric					
38	26'-5		border				
39	27'-1	12th Electric	legs				
40	29'-1	Scrim	Scrim #2	Floor		3 Brick	
41	31'-1	13th Electric	7th Electric	30'			
42	33'-2	RP Screen	Cyc	Floor		5 bricks	

Load-in Plan

9:00 am – 11:00am **Plot Points as needed**

Hideout Drop
5 People

- Prepare line set batten
  - Hailey and Vega on mid/load rail
  - Fly in Line set 4
  - Add pulleys and rigging hardware to frames
- Assemble Drop Frame
  - Bolt top two frames together
  - Use 3/8" hardware
- Attach top frame to line set batten
  - Attach rigging hardware and level
  - Add 6 bricks to line set
  - Fly out to add bottom two pieces
- Attach bottom frames to line set batten
  - Bolt frames together
  - Use 3/8" hardware
- Fly Line set Out
  - Add 3 bricks to line set
  - Fly to grid

Sewer Wall
4 People

- Remove existing stage deck
  - Store on SL or wherever makes sense
- Install Stud walls
  - Stud wall A (wall) → C/D → B (front)
  - Screw together, hammer drill stud wall A to cinder block
- Install Ladders
  - First in the hallway, attached to stud wall A
  - Second on front unit, attached to stud wall B

Truck Unload (Ongoing)
4 People

- Move materials, scenery, and tools from TAPS to theatre
  - See trucking list for more information

11:15 am – 1:00 pm

Main Platform

6 People

- Install Stud walls
  - Stud walls J/K → E/F → C/D → A/B
  - Side Stud walls G/H
- Install Platforms
  - Start with stage side
  - Coffin lock and tie together from underneath
- Install Maso Deck

Public Amenity Steps

4 People

- Install Stud walls & Platform
  - UGC Plat. Stud wall 3 → PA Steps Plat. E
  - Screw together and to deck
- Install Steps
  - Led by John
  - Reference PA Steps Leg Layout (5-13)

2:00 pm – 4:00 pm

Main Platform Bridge

8 People

- Install Stud walls
  - Angled stud wall on SL side
  - Little stud wall on top of main platform
    - Install after deck is completed
- Hoist Bridge Platform
  - Use Genie Super Hoist, in combination with people
    - People on ground, platform, and ladders to assist
- Install Bridge Deck
  - Screw in deck to stud walls

UGC Platform

6 People

- Install Stud walls
  - UCG Plat. Studwell 1 → UGC Plat. Stud wall 2
  - Install stud wall brace, check with Emily
- Position Platform
  - Use ladders, lift and bridge (if installed)
  - Screw to stud walls
  - Orient so seam is not where overhang side is

4:15 pm – 6:00 pm **UGC Tower**

5 People

- Install Hoist System
  - Fly in Line set 19
  - Set up block and fall system for upper UGC
  - Fly out Line set 19
- Assemble Columns
  - Screw to each other
  - Should be a SL and a SR unit
- Install Lower UGC Tower
  - Walk up, screw to stud wall and deck
- Install Upper UGC Tower
  - Attach Upper UGC to block and fall
  - Hoist Upper UGC tower into position
    - Stabilize with people on ladders and lifts
  - Screw into stud wall and Lower UGC

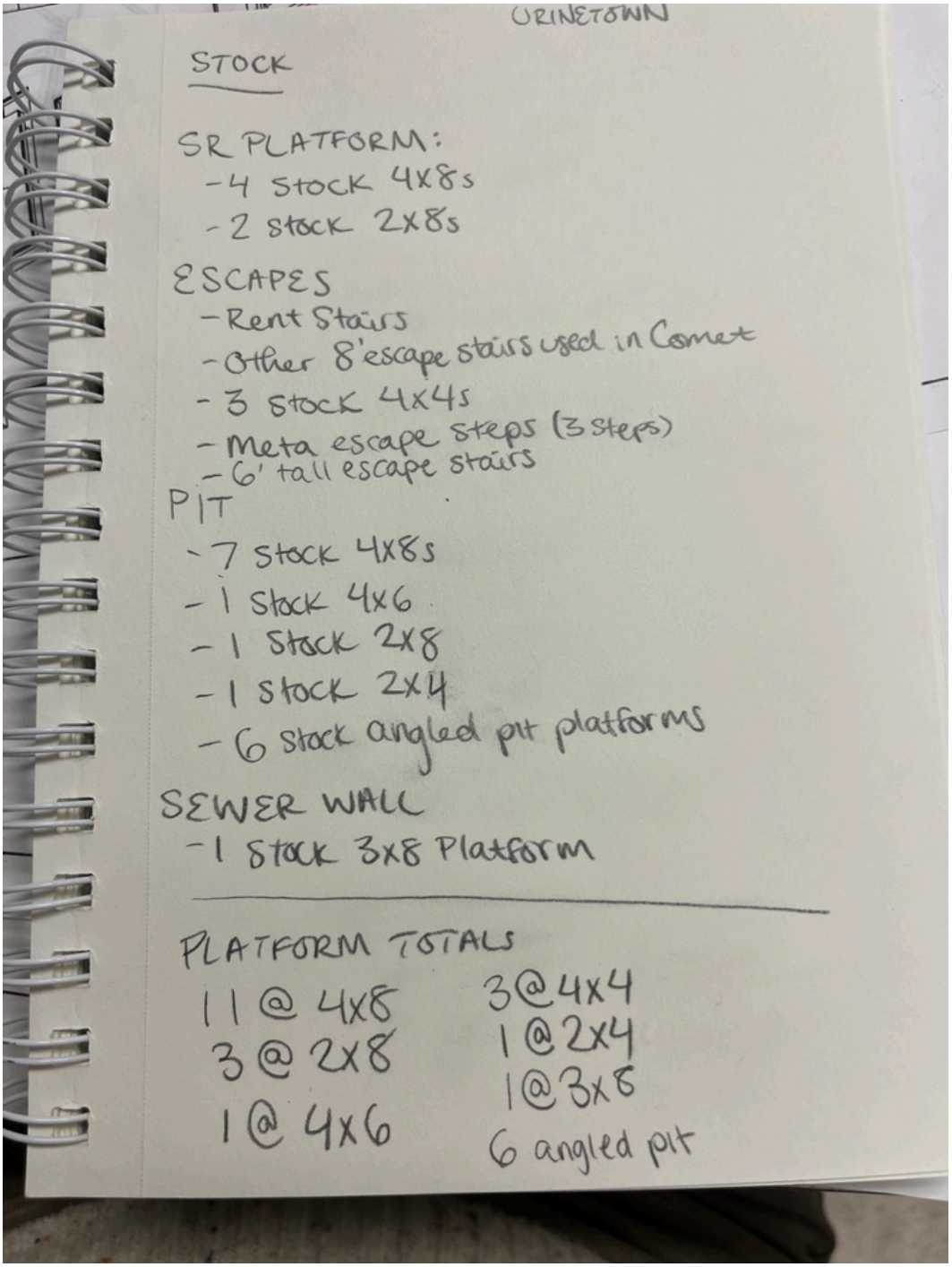
Miscellaneous

4 People

- Main Platform Stairs
- Mid Platform Stairs
- Main Platform Escape Stairs
- Railings
- Door

Complete Other Tasks as Needed

List of stock scenery utilized



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Cross, Alivia. *Urinetown Final Drafting Package,* 10/20/23.

Kotis, Greg, and Mark Hollmann. *Urinetown: The Musical*. Nick Hern Books, 1998.