

THE TECHNICAL DIRECTION AND ENGINEERING PROVIDED FOR THE 49TH SEASON
OF PORTHOUSE THEATRE IN CONJUNCTION WITH KENT STATE UNIVERSITY
COLLEGE OF THE ARTS,
SCHOOL OF THEATRE AND DANCE
2017

PRODUCTION OF *AIN'T MISBEHAVIN'*

A culminating project paper submitted to the College of Fine Arts of Kent State University in
partial fulfillment of the requirements for the degree of Master of Fine Arts

By
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INTRODUCTION

This paper documents the processes of technical direction and engineering regarding the 2017 Porthouse Theatre production of *Ain't Misbehavin'*, located in Cuyahoga Falls, Ohio. The processes were used to realize the scenic design and directorial concept, while balancing the fiscal, physical, and personnel constraints of the theatre company.

Technical direction and theatrical engineering have specific steps or phases that are applied to nearly every production. In this paper, five steps are laid out and explained. There is an assessment of the challenges and successes of working for the full season of Porthouse Theatre. Additionally, an appraisal of the process and of the finalized production is included along with an evaluation of personal and professional growth. Figures incorporate construction drafting' plates, photographs of the process and realized production, budgets, schedules, and supporting mathematical solutions.

The Production Team:

Director....ERIC VAN BAARS
 Scenic Designer....PATRICK ULRICH
 Technical Director...HEATHER R. SINCLAIR
 Lighting Designer....JAKYUNG SEO
 Costume Designer.....SUSAN WILLIAMS
 Sound Designer.....NATHAN ROSMARIN
 Stage Manager.....HANNAH GRAHAM
 Music Director.....ED RIDLEY
 Properties Master.....PATRICK ULRICH
 Scene Shop Supervisor.....JASON GATES
 Production Manager.....KARL J. ERDMANN

1 Master Carpenter
 1 Lead Carpenter
 5 Carpenters

CHAPTER 1

INTERPRETATION OF THE SCENIC DESIGN

The Design

Patrick Ulrich, the Scenic Designer, made it clear how he wanted the set to come to life. During the first meeting he described an intimate, smoke-filled, jazz club. The main structure was comprised of a platform and three band shells. The design also incorporated an immersive theatre convention where patrons were seated in the playing space.

Challenges of Realizing the Design

Throughout the process, two challenges arose. The first challenge was working with a designer who was also the Properties Master for the summer. The scenic designer was working on three productions while facilitating his concept for *Ain't Misbehavin'*. As a result, a few of the design drawings were missing some critical information and views that were needed to effectively realize the show. This lapse caused a lull in the engineering and building process. However, as he was the head of the properties department and was on-site through the summer and could give real time solutions and advice.

The second challenge for this production was the use of unusual scenic materials. The design called for organic undulating bumps that covered band shells (see Photo 1). This material, aluminum window screen, was chosen by the scenic designer early in the design process. The window screen caused a few issues throughout the build, which will be discussed later in this paper.

CHAPTER 2

THE PROCESS

Phase I

Breakdown of the Scenic Package

I approached the design similarly to how an actor would approach a script. First, I looked at the whole, purely to understand what the overall theme would be. Secondly, I broke it down by the plates, just like scenes in a play. What did each plate have, why were the notes necessary, and how would I implement the artistic virtue of the design? From there the breakdown continued into the individual drawings on each designer plate. What was the size and shape of the item, why were they designed that way, and how would I build it? The final step of the breakdown was the rough material and hardware order for the whole. What materials were needed, why were certain construction methodologies used, and how could I explain this to the carpenters?

The first step of the breakdown is looking at the scenic design as a cohesive unit. I looked at it as a puzzle that is complete and that I must disassemble to fit back into the box, or in this case a 24'-0" box truck. The main concern of the initial "read-through" were the extruded faces of the band shells. The design called for aluminum window screen to be attached as organic waves.

The second step of the breakdown was dissecting each plate and creating a rough estimate of the materials used and their cost for the production. It is important to note that the labor costs were taken from a separate personnel budget and not tied to the show carpentry budget. Using typical theatrical construction methods, I envisioned building each unit and calculated an approximate amount of lumber and other materials. This process took about an hour to complete. The estimates were written on the plates of the design packet. This allowed me to keep my work in one place and would also allow easier collaboration between myself, the scenic designer, and

the scene shop supervisor; as they could see directly how the budget and materials would be broken up. The plate breakdown also revealed more specific questions and concerns. Specific questions stemmed from the window screen wedge pattern. To keep the set as close to the design as possible, the band shells had to be constructed in line with the wedge shapes (see Plate).

The last step of the scenic design package breakdown was completed by looking closely at each unit as a separate entity. This step is crucial in formalizing a construction plan and predicting any issues that may arise during construction. By building each unit separately, in my mind, I could see where a carpenter might get stuck and have a solution ready. This pre-planning allows for effective drafting. As I had already mentally built the units, all that needed to be done in the drawing phase was placing my mind's eye in the computer or on paper.

Phase II

Drafting and Engineering

The second phase, and arguably, the most important is developing the technical drawings of the scenery. I use the computer program AutoCAD 2016 to create the draftings. This process begins with downloading the designer file. Once downloaded, I create two copies of the full designer package. This allows me to modify or adjust one copy, while keeping one unadulterated and easy to access. Directly below the designer drawings, there is a copy that is stripped of any notes, multileaders, or extraneous information or lines. This barebone version is used as the jumping off point for engineering the unit. From there, I create working drawings for the shop carpenters.

This set was simple. The biggest issue was hiding the lauan seams of the Hollywood flats, which created the band shells. Patrick Ulrich, the Scenic Designer, was on site during the building and planning process and we discussed how to hide the seams. Through our collaboration we concluded that the band shell seams would follow the pattern of the window screen wedges (see Plate A17). The shells had to be constructed in multiple pieces so that they could fit in the box truck that would ship the set to the performance space (see Plate A18). This caused concerns that will be discussed later in this paper.

Another difficulty of the set came from the proscenium columns with light-boxes (see Photo 2). The columns were designed to wrap around the downstage and onstage sides of the proscenium. At the top of the columns were trapezoid light boxes. These light boxes were a source of constant collaboration and discussion with the scenic designer and master electrician. One of the factors that influenced the engineering was the choice of light fixture. There was a back-and-

forth between using LED tape, lamps, or incandescent rope light. In the end, rope light was selected because of the ease of install and the overall look desired by the lighting and scenic designers.

Phase III

On-the-Floor Building and Modifications

The wood construction of the band shells was one of the more challenging builds of the summer. Since the Hollywood flats were engineered to follow the lines of the wedges, there were very few right angles to measure from. To counteract the difficult and extreme angles of the flats, the decision was made to cut out the faces and then frame to fit. The flat faces were cut out using circular saws and the information from the sizes were given from draftings. Before the faces were framed out, the master carpenter instructed the carpenters to layout the skins in the correct placement. This dry-fit check allowed for an understanding of the final layout and allowed me and the scene shop supervisor to ensure that the shells would fit together.

This production, as stated earlier in the paper, implemented unusual materials in the scenic design. The band shells were covered with undulating aluminum window screen. As a result, there was not a common practice in place to effectively realize the design. The carpenters, with the instruction of the scenic designer, spent a few hours developing the skill to wire properly (see Photo 3). The designer wanted the screen to look as organic as possible while maintaining the structure and pattern of bumps. To facilitate this aesthetic, I decided to split the carpenters into teams and have them cover different wedges. A modification of the process was executed by a carpenter when he discovered that the pattern was becoming too regular. He decided to alternate who stapled the screen down after every row. This adjustment was then used with the other teams and allowed for a more organic pattern.

Phase IV

Installation in Stump Theatre

A major modification that took place during the building phase, was the placement of the band shells on the set platform. The play calls for a three-piece band and space for a vocalist on the set. The original design did not allow enough room for the piano, drums, and the upright bass. I discovered the space constraints early in the engineering process and modified the design with the director and scenic designer. However, the director and music director were having difficulty visualizing the actual space, so the scene shop built the set in Stump theatre at the Kent State University main campus (see Photo 4). This temporary install also helped the sound and electrics departments. The sound designer created a plan for cable runs and speaker placement, which cut down on the install time at Porthouse theatre. Jakyung Seo, the Lighting Designer, tested lighting fixtures between the shells. This allowed her to have a concrete idea of sightlines and space concerns. After the production departments examined the spacing of the set, it was decided to move the band shell units as upstage as possible and to widen the space between the shells. I also decided to have an extra 4'-0" x 8'-0" platform legged and painted in case it was needed once we loaded in at Porthouse. This extra platform would be added upstage center of the set platforms and allow the band shells to shift upstage a maximum of 4'-0".

Phase V

Installation at Porthouse Theatre

The first step of the installation of the scenery at Porthouse was loading the truck at KSU. The scene shop rented one 24'-0" box truck. This was used to ship the scenery, props, costumes, and electrics to Porthouse. Loading the truck took a lot of forethought. Each piece of scenery must get on to the truck, but the location and placement is important. For example, the largest band shell

pieces were loaded in the front of the truck near the cab while the stage floor is loaded at the back. This allows, the stage floor to be unloaded first because it is the first thing that is installed in the space (see Photo 5).

The load in of the second show of the Porthouse season directly follows the strike of the first show. The set for *9 to 5* was struck on Saturday night and then the load in for *Ain't Misbehavin'* began on Sunday morning. The carpentry crew only had eight hours to install the base set. At 5:00 pm the stage management, electrics, and sound departments arrived to begin their work. The crew worked efficiently and installed the set in only six hours. During a walk through with the scenic designer it was decided that the extra 4'-0" x 8'-0" platform was not needed.

CHAPTER 3

Assessment of Ain't Misbehavin'

Collaboration

The discussions with the production team were effective and cordial. The design team worked well together to ensure that the goals of each department were met. My role was practical and organizational rather than as a mediator or problem-solver. The only units that required any length of discussion was the placement of the band shells on the platform, and this has been discussed earlier in this paper.

Personal Reflection

This show felt like a throw-back to basic techniques. While the set was comprised of unusual angles and shapes, it was wood construction. Working with lumber is more forgiving than working with steel. The other two shows of the season, *9 to 5* and *Newsies*, were constructed primarily with metal. I engineered with lumber construction methodologies, and it was refreshing. Lumber is more flexible and easier to modify when needed. Drafting with wood engineering is simpler than steel. The sizes of nominal lumber do not change based on the factory from whence it came. The production allowed me to fine-tune my wood drafting skills.

Material Pricing and Vendors

Porthouse Theatre 2017

Company Name	Item	Size	Pricing each	Weight
Arlo Steel Corporation	1-1/2 sq x 16 Ga wall tubing ASTM A-513	24'-0"	\$60.81	30 lbs
	2 sq x (.83) 14 ga tubing ASTM A-500 Grade B	24'-0"	\$68.90	52 lbs
	2-1/2 Sq x 12 ga wall tubing ASTM A-513	24'-0"	\$99.63	85 lbs
	3 x 1 x 16 ga wall tubing ASTM A-513	24'-0"	\$69.55	41 lbs
	2 x 1 x 14 ga Wall tubing ASTM A-513	24'-0"	\$69.40	38 lbs
	1 sq x 16 ga Wall tubing ASTM A-513	24'-0"	\$72.50	20 lbs
	2 X 2 X 1/4 A-36 ANGLE	20'-0"	\$52.50	64 lbs
	1/4" x 5" A-36 HR Steel	20'-0"	\$53.90	85 lbs
	1/8" x 3" HR Strip CQ	20'-0"	\$19.31	
	1/8" x 4" HR Strip CQ	20'-0"	\$25.18	34 lbs
	1/4 X 2 A-36 HR STEEL	20'-0"	\$56.81	34 lbs
Carter Lumber	CDX Plywood	48" x 96"	\$24.59	
	3/4" Plywood BC Ext YP Sanded	48" x 96"	\$33.09	
	1/4 Masonite	48" x 96"	\$16.99	
	Sureply Lauan	48" x 96"	\$24.59	
	3/4" MDF	48" x 96"	\$38.00	
	1x4 No2 Pine	12'-0"	\$5.79	
	2 x 4 No 2 Pine	12'-0"	\$4.59	
	2 x 8 No 2 Pine	12'-0"	\$10.59	
	1 5/8" #6 Drywall Screws	25 lbs	\$50.19	
	2" #7 Drywall Screws	25 lbs	\$50.19	
McMaster Carr	3" #8 Drywall Screws	5 lbs	\$13.69	
	Cut to Size Lift Off Panel Hanging Brackets 1201A38	72" x 1 7/8"	\$14.04	
	Oval Head Drilling Screws for Metal	100/pack 1.25"	\$8.40	
	Soapstone	Sq 5"x.5x.5	\$58.04	
	Disposable Latex Gloves, L, M, XL	100/pack	\$57.54	
	Push-to-Hold Wall-Mount Door Holder		\$27.67	
	Strap hanger		\$15.31	
	Chalk, Dustless Board White	12/pack	\$4.24	
	Carbide Tip Panel Pilot Router Bit for Wood		\$14.32	
	Roller-Arm Storm Door and Gate Closer		\$14.85	150 lb capacity
Grainger	Ready-to-Use Mop Head with Handle	24oz	\$10.64	
	Magnetic Latch		\$4.64	22lbs max pull
	Right Hand Pivot Hinge with Holes, 40JK93		\$32.85	25lb load limit
Hartville Hardware	2x4x10		\$4.37	
	3/8" Bending Luan 4x8		\$47.99	

	3/4" CDX Plywood	48"x96"	\$23.88
	1/2" BC Yellow Pine Plywood	48"x96"	\$22.75
	1x4x8 Foam R-10 25 PSI	48"x96"	\$18.61
	2x4x8 Foam R-10 25 PSI	48"x96"	\$33.32
	1x4x12 White Pine #2	12'	\$5.36
E & T Plastics	Twin Wall Polycarbonate Sheet Clear General Purpose	48" x 96"	\$67.5
Lowes	2x4 No 2 Pine	10'-0"	\$3.97
	23/32 Plywood	48x96	\$23.78
	23/32 BC Plywood	48x96	\$27.88
	Lenox 6" Sawzall Blade Pack	6"	\$13.98
	2x10x12 Top Choice #2 SYP	Pine	\$14.3
	Lenox 8" Sawzall Blade Pack	8"	\$13.58
	Gallon Elmer's Glue-All White	Gallon	\$14.98
	Irwin 1/2" Trim bit x 1/2" H	1/2" blade	\$19.98
	NYW 48"x25' Brite Aluminum Screen		\$27.98
	24 Pack Red Shop Towels		\$5.98
	Painter's Terry Cloth 12 pack		\$7.38
	128 fl oz Simple Green LE		\$9.98
	3M safe Release Tape Pack		\$31.98
	25 lb 1 1/4" CRS Drywall Screws	25lbs	\$39.96
	Dewalt 4.5" Angle Grinder		\$59
	Dewalt 4.5" T29 80 Grit Flap Disk		\$8.98
	Solid Braid Poly Rope 1/2"x75'		\$20.98
	Bolt Snap with Key Ring, 5/8"x3.75"		\$2.48
	Stanley 1/4"x4" eye bolt		\$0.52
	Irwin 1/4"x3/4" socket adapter		\$3.98
Sherwin Williams	5 Gallon A86W1151 SPR Int Fl extra	5 gallons	\$13.46
	5 Gallon B30B4600 PM 400 0 FL Black	5 gallons	\$12.38
	Gallon A6W151 A100 Ex FL Extra	1 Gallon	\$39.47
	Gallon A6W151 A100 Ex FL Extra	1 Gallon	\$39.47
	Gallon A6W151 A100 Ex FL Extra	1 Gallon	\$39.47
Rose Brand	Paint Artists Choice Gallon Silver #7725	1 Gallon	\$98
Home Depot	Minwax Polycrylic Satin Gallon	1 gallon	\$47.96
	Minwax Polycrylic Gloss Gallon	1 Gallon	\$47.96
	2" Utility Brush, Flat Basic Brush	2"	\$2.97
	1.88" Scotch blue Tape		\$6.25
	Specialty Metallic Gold Spray Paint		\$3.76
	Stops Rust Satin Black Spray Paint		\$3.76
	Minwax Polycrylic Gloss 12oz	12 oz	\$8.68
	Minwax Polycrylic Sat 12oz	12 oz	\$8.68
	Stops Rust Satin White Spray Paint		\$3.76

	Goo Gone Spray Gel	12 oz	\$4.46	
	1" Black Pipe	10'-0"	\$19.76	
Amazon	Saint-Gobain ADFORS BRIGHT ALUMINUM SCREEN	36"x100'	\$75.2	
	Bead Smith Super-Lon Cord, Size 18 Twisted Nylon	77 yd	\$4.51	Black
	Yeuton Pendants-teardrop Chandelier Crystal Pendants	12/pack	\$9.99	Clear
Vincent Lighting	Rosco OB Yellow Ochre Gallon	1 Gallon	\$34.1	
	Rosco OB Orange Gallon	1 Gallon	\$46.95	
	Rosco OB Burnt Umber Gallon	1 Gallon	\$37.1	

Photo 1



Process Photo

Porthouse Theatre 2017, Cuyahoga Falls, Ohio

Ain't Misbehavin'

Photo 2



Process Photo

Porthouse Theatre 2017, Cuyahoga Falls, Ohio

Ain't Misbehavin'

Photo 3



Process Photo

Porthouse Theatre 2017, Cuyahoga Falls, Ohio

Ain't Misbehavin'

Photo 4



Production Photo

Porthouse Theatre 2017, Cuyahoga Falls, Ohio

Ain't Misbehavin'

Photo 5



Load In Photo

Porthouse Theatre 2017, Cuyahoga Falls, Ohio

Ain't Misbehavin'

Photo 7



Production Photo

Porthouse Theatre 2017, Cuyahoga Falls, Ohio

Ain't Misbehavin'

Photo 8



Production Photo

Porthouse Theatre 2017, Cuyahoga Falls, Ohio

Ain't Misbehavin'

Photo 9



Production Photo

Porthouse Theatre 2017, Cuyahoga Falls, Ohio

Ain't Misbehavin'

Media List

1. Porthouse *Ain't Misbehavin'* Technical Drafting Timelapse 1 of 2

<https://www.youtube.com/watch?v=c-PA1YsuffQ>

2. Porthouse *Ain't Misbehavin'* Technical Drafting Timelapse 1 of 2

<https://www.youtube.com/watch?v=sZ7kuVgIX8c>

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