

#### 7041 INTERSTATE ISLAND ROAD, SYRACUSE, NY 13209

#### **GENERAL INFORMATION**

Facility: Indiana University – Jacobs School of Music MAC	Date of Inspection: 8/15-19/2022
Location: 101 N Eagleson	Observer(s): Charlie DiGiorgio, Gwen Van
	Denburg, Bryce Carson, Sam Conan
Last Inspection Date & by Whom: 2018	Report Prepared By: Giancarlo Acciardi
Current Use: University Events, Live Concerts, Ballet &	
Opera	

#### Indiana University Jacobs School of Music MAC Theatre Equipment & Rigging

Description	
Counterweight system	
- 54 Manually Operated Double purchase line sets	
- 5 Motorized Counterweight Assist Motorized Light Bridge	
<ul> <li>- 1 with 2 counterweight arbors and positionable proscenium equipment</li> </ul>	
1 header with 2 catwalks and sliding guide connections to the side torms (1 motor @ grid)	
2 motorized positionable torms (1 motor @ top of torm each)	
4 with 1 counterweight arbor (Bridge #5 Red Tagged by others)	
Cable Management	
- 22 Motorized Gleeson Reels (48"Diameter)	
- 11 Wire Rope driven Gleeson Reels (48" Diameter)	
7 Sound door assemblies	
- 1 Line Shaft driven, counterweighted Sound Door (Upstage)	

- 6 Motor and drive chain, track guided doors with safety stop bumpers

### Wenger Corp / J.R. Clancy Safety Inspection Criteria

Safety and operational efficiency are at the forefront of each facility inspection. Our inspectors are experienced and ETCP certified. The inspection is comprised of those systems and components as described in the report. This report is for the use of the **Indiana University Jacobs School of Music MAC** only, and not intended to be relied upon by any other third-party.

A visual inspection of the facilities theatre equipment and rigging system has been performed. Captured herein are the identified defects observed during the facility inspection, excluding those areas not exposed to view, concealed, or inaccessible. A glossary of terms listed in this report can be found at www.jrclancy.com/resources/glossary.

The inspection report is organized into sections that are grouped by the Equipment Systems, its Elements and Components. Observations made are then characterized using one of three conditions as described below. Included are any comments relating to important factors identified as problematic therefore needing action or immediate attention. In addition, noteworthy photographs (Photo) to help illustrate conditions observed and references to specific line sets (Line Set #) that are affected by a stated problem.

Good	Needs Attention	Immediate Attention		
The conditions observed are good and meet the current industry standard.	The conditions observed needs attention and/or are not meeting the current industry standards. Although	The conditions observed required immediate attention, do not meet current industry standards, and is		
maastry standard.	not likely to cause injury, the equipment	deemed unsafe and a hazard that is		

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may negatively affect the operation and/or will eventually breakdown.	likely to cause an accident or injure persons operating or near the
<i>Recommend conditions are corrected within 9 to 12 months.</i>	equipment. Recommend conditions are corrected immediately.

Upon completion of the facility's Inspection, an Observation Summary and Recommendation is provided to aid in developing the best course of action to address critical condition observations. Our team is available to offer assistance to plan and prioritize any follow up work and to provide price quotes for repairs, system maintenance and training.

#### **Key System Elements and Components**

#### Stage:

Height of Steel: Grid: 12	10'10"	Dimensions:
Head Block: 83'	Loft Block: 119'	Stage: 56'3"x87'10"w
		Positionable Proscenium: 38'9" to 6" h x 67' to 47'10"

#### Fire Curtain:

⊠ Fire Curtain	Type: Water Deluge	Manufacturer: Unknown
Hoist: N/A	Curtain	Manufacturer: Enter Manufacturer
	Voltage: N/A	

#### **Counterweight and set components:**

⊠Counterweight Rigging	# Line Sets: 54	Manufacturer: Tiffin		
□Single ⊠ Double	# Lift Lines: 6 & 8	Lift Line Spacing: 13'8" @ 1-2&7-8 : 12' @ 2-7		
Guide Type: Tee	Locking rails: 1	Set centers: 7.5" @Sets 1-29, 7" @Sets 30+	Loading Gallery? 1	
Arbor size(s): 19'	Cwt Size(s): 6"x14"	Cable size: ¼" 7x19 GAC	Handline Size: 7/8"	
Head blocks –	Loft blocks –	Batten types / length: 2" DIM Schedule 40 @ 84'1" L		
<mark>Upright</mark> or Underhung:	Upright or <mark>Underhung</mark> :			
64 single, 2 double	6 or 8 per set			
Batten terminations: Swaged eye with copper oval - 1/4'" proof coil chain - ¼" Screw Pin Shackle		Headblock terminations: Sy light duty thimble	waged eye with copper oval and	
# Electrics: 5	_	prized and wire traction drive e reels are powered but unu	en cable reels and multi-cable used and out of service.	

#### **Hoists:**

Zero Fleet Hoist# Units: Enter #Manufacturer: Enter ManufacturerVoltage:



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⊠Line Shaft Hoist (Upstage Door)	# Units: 1	Manufacturer: Morse (Borg/Warner) Voltage:208/440
⊠Drum Hoist (Bull winch)	# Units: 1	Manufacturer: SEW/Euro Voltage:208/360
⊠Drum Hoist (Speaker Cluster)	# Units: 1	Manufacturer: Reliance Voltage:208
⊠Drum Hoist (Bull Winch)	# Units: 1	Manufacturer: Reliance Voltage:200
⊠CWT Assist (Light Bridges)	# Units: 5	Manufacturer: Stearns Elec Co. Voltage: 230/460

#### **Orchestra Shells/Pit:**

🛛 Orchestra Shell	Type: Legacy?	Manufacturer: Wenger
🛛 Orchestra Towers		
🛛 Orchestra Lift	Type: Enter #	Manufacturer: Enter Manufacturer
⊠ Pit Safety Net	Type: Enter #	Manufacturer: Enter Manufacturer

#### Other:

 $\boxtimes$  Other: Paint Frame Assembly – CWA assembly – 6 lift lines, 5/16" 7x19 GAC, Swaged eye-Steel Oval-1/2" Screw Pin Shackle at frame connection and arbor connections – 12" underhung loft blocks on double c channel frame anchored to concrete encased beams.

- Upstage sound door hung on ¾" cables terminated with Open-Swaged Sockets connected to Pad Eyes

- Light Bridge Terminations are Spelter Sockets terminated to 1/2" turnbuckles.

Describe Load In Conditions: Single Bay, raised, up slope loading dock with dock plate, through large rollup door to scenery storage bay at Upstage Left.



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### **OBSERVATION DETAILS**

### **Counterweight Rigging System and Components**

1.	Arbor Guide System	Condition?			Comments	Photo	Line Set#	
		NA	Good	Needs Attention	Immediate Attention			
A	Tees					Connecting welds to lock rail have failed.	1	7, 9, 10, 14, 15
						Deformed guide causes seizing in tension block	3	14, 15, 27
						Heavy corrosion on unprotected welds that connect guide wall to lock rail	1	ALL
						Tee Guide is bent/damaged	2	17, 18, 27, 39
						Deformed guide track causes arbor to bind at top of travel	N/A	12, 45
В	Wall Battens		$\boxtimes$					
С	Knee Brace		$\boxtimes$					
D	Arbor Stops			X		Damaged from arbor down crash. Original bumper material was on arbors and has degraded beyond functionality.	4	51, 54
E	Fasteners			X		Heavy corrosion on most connecting hardware throughout the system.	8, 12, 24	ALL
F	U-Clips			$\square$		Bent clip	5	17, 18
						Loose hardware	3&5	14-15
						Loose hardware connecting to Tee Guide	5	27
G	Wire Arbor Guides	$\boxtimes$						
2.	Rope Lock		(	Condition?		Comments	Photo	Line Set#
		NA	Good	Needs Attention	Immediate Attention			
А	Housing		$\boxtimes$					
В	Jaws			$\boxtimes$		Squealing parts, binds when attempting to close lock	N/A	3
С	Handle					Heavy corrosion inside body causes handle to seize, rope compression block is binding inside the housing.	6	7
D	Attachment		$\square$					
E	Adjustment		$\boxtimes$					
3.	Locking Rail	Condition?			Comments	Photo	Line Set#	
		NA	Good	Needs Attention	Immediate Attention			
A	Fasteners			$\boxtimes$		Anchor has pulled loose and will not set	7	16



						Heavy corrosion on anchor bolts	8	ALL
						Missing washer on floor anchor bolt	7	1, 9, 16, 20, 28, 30, 38, 39, 46, 54
В	Stanchions							
С	Rail							
D 4.	Index Light Tension Block			Condition?		Comments	Photo	Line
4.	Tension block			conuntion:		comments	FIIOLO	Set#
		NA	Good	Needs Attention	Immediate Attention			
А	Housing						1	
В	Sheave		$\boxtimes$					
С	Bearings/Shaft						1	
D	Guides/Shoes					Damaged shoes restricting motion of or seizing the block	3	8, 14, 15, 35
5.	Hand Line		(	Condition?		Comments	Photo	Line Set#
		NA	Good	Needs Attention	Immediate Attention			
A	Hand Line					Too long, tension block is on the floor (adjust extension chain to pick up tension block)	9	33
6.	Counterweight Arbor		(	Condition?		Comments	Photo	Line Set#
		NA	Good	Needs Attention	Immediate Attention			
A	Arbor Top					Decayed remnants of original stop	N/A	ALL
1						bumpers remain and collect dust/contaminants, shedding materials to other parts of the system.		
В	Arbor Bottom					dust/contaminants, shedding materials to other parts of the system. Loose arbor rod nut (All others found	10	42
B C	Arbor Bottom Arbor Rods					dust/contaminants, shedding materials to other parts of the system.		42 13, 21, 22, 27- 32, 35, 38, 39, 41, 45
						dust/contaminants, shedding materials to other parts of the system. Loose arbor rod nut (All others found were corrected) Bent Arbor rod indicating deformation in	10	13, 21, 22, 27- 32, 35, 38, 39,
C	Arbor Rods					dust/contaminants, shedding materials to other parts of the system. Loose arbor rod nut (All others found were corrected) Bent Arbor rod indicating deformation in the arbor of varying types. Lateral deflection in backbone causing	10	13, 21, 22, 27- 32, 35, 38, 39, 41, 45 12, 16, 21, 22,
C D E	Arbor Rods Back Bone Spreader Plates					dust/contaminants, shedding materials to other parts of the system. Loose arbor rod nut (All others found were corrected) Bent Arbor rod indicating deformation in the arbor of varying types. Lateral deflection in backbone causing friction against the track guide wall	10 11 12	13, 21, 22, 27- 32, 35, 38, 39, 41, 45 12, 16, 21, 22, 39
C D	Arbor Rods Back Bone					dust/contaminants, shedding materials to other parts of the system.Loose arbor rod nut (All others found were corrected)Bent Arbor rod indicating deformation in the arbor of varying types.Lateral deflection in backbone causing friction against the track guide wallMisplaced spreader plates Insufficient amount of spreader plates in	10 11 12 N/A	13, 21, 22, 27- 32, 35, 38, 39, 41, 45 12, 16, 21, 22, 39 ALL



7.	Counterweights		Condition?			Comments	Photo	Line Set#
		NA	Good	Needs Attention	Immediate Attention			
А	Counterweight					Bricks stacked too close to an opening they can fall through.	25	Floor 4
8.	Head Block		Condition?			Comments	Photo	Line Set#
		NA	Good	Needs Attention	Immediate Attention			Seen
А	Mounting Assembly (clips and bolts)							
В	Housing (side plates/base angles)							
С	Sheaves (casting)		$\boxtimes$					
D	Bearing/Shaft		$\square$					
E	Alignment/Fleet Angle							
9.	Loft Block		(	Condition?		Comments	Photo	Line Set
		NA	Good	Needs Attention	Immediate Attention			
A	Mounting Assembly (clips and bolts)							
В	Housing (side plates/base angles)							
С	Sheave (casting)				$\boxtimes$	Groove worn through in cast iron block	13	29, 30
						Treadwear cutting in idler	14	24, 33
						Treadwear cutting in block	14	9, 16, 23, 24, 27, 28, 31, 33, 37, 38
						Frozen bearings, idler no longer turns without additional friction/pressure	N/A	5, 7, 9- 10, 13- 17, 20- 27, 31- 34, 37- 43, 46- 47, 49- 50
D	Bearing/Shaft					Lubricant seeping out indicates drying bearings	15	ALL
						Dry bearing noise present throughout the system	N/A	ALL
							N/A	16, 18



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						Bearing or axle failure in block causing		
						helical motion (wobbling) in the block and		
						contact with the cheeks		
E	Alignment					Fleet angle related wear damaging idler	16	16
E	Angriment					Fleet angle related wear damaging idler	10	10
						Misaligned block creating hard fleet angle	17	5, 7-10,
						for wire rope entering/exiting the block	1/	3, 7-10, 13, 16-
						for whe tope entering/exiting the block		13, 10- 17, 19,
								17, 19, 21, 31,
								21, 51, 38, 41-
								38, 41- 42, 44,
								42, 44, 49, 51,
								49, 51, 54
10.	Wire			Condition?		Comments	Photo	Line
10.	Rope/Terminations			Jonarcion.		connents	1 11000	set#
		NA	Good	Needs	Immediate			
				Attention	Attention			
А	Wire Rope		$\square$					
В	Terminations							
	Head Block		$\boxtimes$					
	Batten			$\boxtimes$		Incomplete bridle construction	23	
	Batten Clew					Incomplete bridle construction	23	
C						Incomplete bridle construction	23	
C D	Clew					Incomplete bridle construction Lift lines climbing side of idler on Loft	23	7, 24,
	Clew Adjustment Devices							7, 24, 33, 46,
	Clew Adjustment Devices Alignment/Fleet					Lift lines climbing side of idler on Loft		
	Clew Adjustment Devices Alignment/Fleet					Lift lines climbing side of idler on Loft		33, 46,
	Clew Adjustment Devices Alignment/Fleet					Lift lines climbing side of idler on Loft		33, 46,
	Clew Adjustment Devices Alignment/Fleet					Lift lines climbing side of idler on Loft Blocks Mild Lift Line chafe on Junction Box above	21	33, 46, 52
	Clew Adjustment Devices Alignment/Fleet					Lift lines climbing side of idler on Loft Blocks Mild Lift Line chafe on Junction Box above 8 <sup>th</sup> Lift Line travels over spacer in idler	21	33, 46, 52
	Clew Adjustment Devices Alignment/Fleet					Lift lines climbing side of idler on Loft Blocks Mild Lift Line chafe on Junction Box above 8 <sup>th</sup> Lift Line travels over spacer in idler generating chafe noises and slowly cutting	21	33, 46, 52
	Clew Adjustment Devices Alignment/Fleet					Lift lines climbing side of idler on Loft Blocks Mild Lift Line chafe on Junction Box above 8 <sup>th</sup> Lift Line travels over spacer in idler	21 N/A	33, 46, 52 38

11.	Battens	Condition?				Comments Photo	Line Set#	
		NA	Good	Needs Attention	Immediate Attention			
A	Battens			$\boxtimes$		Unlevel batten on the drop-down	18	5
						Surface corrosion on batten	19	ALL
						Damaged extension	20	43
						Batten hangs up on electrical drop box when travelling in	N/A	10, 18- 19, 38
В	Splices		$\boxtimes$					
12.	CWT Electrics		(	Condition?		Comments	Photo	Line Set#
		NA	Good	Needs Attention	Immediate Attention			
А	S.O. Power Cable	$\square$						
В	Connector Strip	$\square$						



С	Cable Management	$\boxtimes$						
D	Safety Cables	$\boxtimes$						
13.	CWT Safety		(	Condition?		Comments	Photo	Line
	Information							Set#
		NA	Good	Needs Attention	Immediate Attention			
А	Capacity labels in				$\boxtimes$	None		
	place & match ID label							
В	Rigging Safety Sign installed					None		
С	Maintenance Log Present		$\boxtimes$					
D	Owner has Operation & Maintenance Manuals							

Photo 1	
Photo 2	
Photo 3	





Photo 4	
Photo 5	
Photo 6	
Photo 7	
Photo 8	



Photo 9	
Photo 10	
Photo 11	
Photo 12 Note guide marks on track from shoe friction	
Photo 13	



Photo 14	Cutting in idlers	Cutting in blocks
Photo 15		
Photo 16		
Photo 17		
Photo 18		



Photo 19	
Photo 20	
Photo 21	
Photo 22	
Photo 23	
Photo 24	



Photo 25	
	TEI

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### **CWT Assist (Light Bridges & Paint Frame) Rigging System and Components**

1.	CA Machine Covers and mounting			Condition?		Comments	Photo	Line Set#
		NA	Good	Needs	Immediate	LB = Lighting Bridge::PF = Paint Frame		
A	Covers			Attention	Attention			
B	Hardware							
C	Welds							
2.				Condition?		Commonte	Photo	Line
Ζ.	CA Machinery			condition		Comments	Photo	Set#
		NA	Good	Needs Attention	Immediate Attention			
Ą	Motor Brake		$\boxtimes$					
В	Secondary Brake		$\boxtimes$					
С	Sprocket and Chain		$\boxtimes$					
D	Drive shafts and bearings					Surface corrosion on shafts	1	ALL
						Aged lubricant extruded from sides piled up on pillow blocks	2	ALL
E	Oil (level, leaks, etc.)					Slow leak from compromised seals, current fluid levels seem ok	12	LB2-5
3.	CA Electrical		•	Condition?		Comments	Photo	Line Set#
		NA	Good	Needs Attention	Immediate Attention			
A	Control enclosure covers in place							
В	Strain relief connections tight							
С	Power plugs twist locked into receptacles							
D	Control plugs latched into receptacles	$\boxtimes$						
E	Unused control plugs closed and latched							
4.	CA Operation & Limit Switches		(	Condition?		Comments	Photo	Line Set#
		NA	Good	Needs Attention	Immediate Attention			
A	Brackets & activation arms					Mechanical 'in' Limit sticks intermittently. Likely due to age of	N/A	LB4
В	Hard limits set & checked per comment					components or dust contamination. Lower Limit was not readjusted after supplemental support steel for the upstage wagon was installed over the paint pit opening to the basement storage floor (lower approx. 12'6")	3	PF
						Limit switches are non-functional	N/A	PF



d rum         image         image <th< th=""><th>С</th><th>Dead wraps on</th><th><math>\boxtimes</math></th><th></th><th></th><th>Traction drive</th><th></th><th></th></th<>	С	Dead wraps on	$\boxtimes$			Traction drive		
Iocknuts tight         Iocknut	_	drum	_					
F       Load brake engagement       Image       Image       Comments       Photo       Line Set#         Abor       NA       God       Needs       Image       Image <td>D</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	D							
engagement         magement         magement         magement         magement         Photo         Line Set#           S.         CA Counterweight Arbor         NA         Good         Needs         immediate immediate Arbor         Comments         Photo         Line Set#           A         Arbor Top         Immediate Arbor Rods	Е	Motor engagement		$\boxtimes$				
S.         CA Counterweight Arbor         Value         Condition?         Comments         Photo         Line Set#           A         Arbor Top         Image: Attention Atte	F							
Arbor         NA         Good         Needs         Instruction         No.         Set #           A         Arbor Top         Image: Control of the set	5.				Condition?	Comments	Photo	Line
No.         Naterion         Attention         Attention         Image: Naterial system in the sy		-						
B       Arbor Bottom       Image: Constraint of the sector of the			NA	Good				
C         Arbor Rods         Image: Constraint of the section of the sectin of the section of the section of the section of the se	А	Arbor Top		$\boxtimes$				
D       Back Bone       Image: Spreader Plates       Image: Plates       I	В	Arbor Bottom		$\boxtimes$				
E       Spreader Plates       Image of the sector o	С	Arbor Rods	$\boxtimes$					
G       Locking Collars       Image of the second s	D	Back Bone		$\boxtimes$				
H       Guides       Image: Condition?       Comments       Photo       Line Set#         A       Mounting Assembly (clips and bolts)       Image: Condition?       Comments       Image: Condition?       Image: Condit	Е	Spreader Plates	$\boxtimes$					
6.       CA Head Block       Verticity       Comments       Photo       Line Set#         A       Mounting Assembly (clips and bots)       NA       Good       Needs Attention       Immediate Attention       Imm	G	Locking Collars	$\boxtimes$					
Image       Image <thimage< th=""> <thimage< th=""> <thim< td=""><td>Н</td><td>Guides</td><td></td><td><math>\boxtimes</math></td><td></td><td></td><td></td><td></td></thim<></thimage<></thimage<>	Н	Guides		$\boxtimes$				
NA       Good       Needs Attention       Immediate Attention         A       Mounting Assembly (clips and botts)       Immediate Attention       Immediate Attention         B       Housing (side plates/base angles)       Immediate Attention       Immediate Attention         C       Sheaves (casting)       Immediate Angle       Immediate Attention       Immediate Attention         T       CA Loft Block       Immediate Attention       Immediate Attention       Immediate Attention         A       Mounting Assembly (clips and botts)       Immediate Attention       Immediate Attention       Immediate Attention         A       Mounting Assembly (clips and botts)       Immediate Attention       Immediate Attention       Immediate Attention         B       Housing (side plates/base angles)       Immediate Attention       Immediate Attention       Immediate Attention         C       Sheave (casting)       Immediate Attention       Immediate Attention       Immediate Attention         B       Housing (side plates/base angles)       Immediate Attention       Immediate Attention       Immediate Attention         C       Sheave (casting)       Immediate Attention       Immediate Attention       Immediate Attention         B       Housing (side plates/base angles)       Immediate Attention       Immediate Attention	6.	CA Head Block		(	Condition?	Comments	Photo	
Assembly (clips and bolts)       Image: Simply (side plates/base angles)       Image: Simple Image: Simple Simple       Image: Simple Simple			NA	Good				
B       Housing (side plates/base angles)       Image	A	Assembly						
D       Bearing/Shaft       Image	В	Housing (side plates/base						
E       Alignment/Fleet Angle       I <thi< th=""> <thi< th=""> <thi< th="">       I</thi<></thi<></thi<>	С	Sheaves (casting)		$\boxtimes$	$\square$	Visible treadwear cutting	13	ALL
AngleImageImageImageImage7.CA Loft Block	D	Bearing/Shaft		$\boxtimes$				
7.       CA Loft Block       Example of the set of	E	-						
NA       Good       Needs Attention       Immediate Attention       Immediate Attention         A       Mounting Assembly (clips and bolts)       Immediate Assembly (clips and bolts)       Immediate Attention         B       Housing (side plates/base angles)       Immediate Assembly (side plates/base angles)       Immediate Attention         C       Sheave (casting)       Immediate Assembly (side plates/base angles)       Immediate Attention         C       Sheave (casting)       Immediate Assembly (side plates/base angles)       Immediate Attention         C       Sheave (casting)       Immediate Assembly (sible treadwear cutting in blocks)       4       PF         Heavy corrosion present       13 & 14       LB2-5       Heavy corrosion present       13 & 14         D       Bearing/Shaft       Immediate Assembly (clips and bolts)       Immediate Astention       Immediate Astention	7.	-		. (	Condition?	Comments	Photo	Line
Image: series of the series					1			Set#
Assembly (clips and bolts)       Image: Clips and bolts)			NA	Good				
B       Housing (side plates/base angles)       Image: Ima	A	Assembly						
D       Bearing/Shaft       Image: Shaft       Image: Sh	В	Housing (side plates/base						
D     Bearing/Shaft     Image: Constraint of the second se	С	Sheave (casting)				multiline diverter and out of their grooves, lines chafe on each other and	4	PF
Image: Description         Image:						Visible treadwear cutting in blocks	14	LB2-5
						Heavy corrosion present		LB2-5
E Alignment I I K Cable harness block out of alignment N/A LB2-4								
	E	Alignment			$\square$	Cable harness block out of alignment	N/A	LB2-4



8.	CA Wire Rope/Term.			Condition?		Comments	Photo	Line set#
		NA	Good	Needs Attention	Immediate Attention			
A	Wire Rope					Aged cable has substantial material stretch under dynamic tension from movement.	5	LB2-5
						Two Lift Lines make contact near center- right stage in the catwalk area.	15	LB1
В	Terminations							
	Arbor		$\boxtimes$					
	Batten		$\boxtimes$					
С	Adjustment Devices							
D	Alignment/Fleet Angles							
9.	CA Battens			Condition?		Comments	Photo	Line Set#
		NA	Good	Needs Attention	Immediate Attention			
А	Battens		$\boxtimes$					
В	Splices			$\boxtimes$		Threaded couplings on batten	6	LB2-5
10.	CA Electrics		(	Condition?		Comments	Photo	Line Set#
		NA	Good	Needs Attention	Immediate Attention			
А	SO Power Cable					Aging steel cable supports	7	LB2-5
						Unrated wire rope clips	5&7	LB2-5
						Crowded fittings at connection point to bridge	8	LB2-5
В	Connector Strip		$\square$					
С	Cable Management		$\boxtimes$					
D	Safety Cables		$\boxtimes$					
11.	CA Safety Information			Condition?		Comments	Photo	Line Set#
		NA	Good	Needs Attention	Immediate Attention			
A	All Emergency Stops Tested							
В	Capacity labels in place & match ID label					None		
С	Rigging Safety Sign installed					None		
D	Timer is reset with light off					If PowerAssist		
E	Owner has Operation & Maintenance Manuals					None		



12.	CA Other Components		Condition?			Comments	Photo	Line Set#
		NA	Good	Needs Attention	Immediate Attention			Jeen
A	Header					Header catches and lifts tab curtain track when going out.	9	LB1
В	Paint Frame Backbone			$\boxtimes$		Paint frame metal deformed from catch incident.	10	PF
С	Focus Track			$\boxtimes$		Bolt threads do not penetrate ends of locknuts at Stage Left end of rail.	11	LB2
D	Light Bridge Hardware					Heavy Corrosion on all non-resistant hardware materials	16	LB2-5
						No locknuts or lock washers on hardware connections throughout.	16	LB2-5
						Guide shoe material found on components below guide tracks, evidence of wear or misalignment	17	LB1
	Notes		<ul> <li>Lift lines for Light Bridge #1 were replaced in 2010 after one experienced a tension failure</li> <li>Light Bridge #5 has been removed from service by a previous inspection due component and weld failures</li> </ul>					ision

Photo 1	
Photo 2	



Photo 3 Arbor position at frame maximum safe in position. Limit switches visible at top of photo.	
Photo 4	
Photo 5	
Photo 6	
Photo 7	



Photo 8	
Photo 9	
Photo 10	
Photo 11	
Photo 12	



Photo 13	
Photo 14	
Photo 15	
Photo 16	
Photo 17	

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### Line Shaft/Drum Hoist System and Components (Upstage sound door and speaker cluster)

1.	LS Machine Covers	Condition?			Comments	Photo	Line	
	and mounting						Set#	
		NA	Good	Needs Attention	Immediate Attention	SD=Sound Door :: CL=Speaker Cluster		
А	Covers							
В	Hardware							
С	Welds		$\square$					
2.	LS Machinery		C	Condition?		Comments	Photo	Line Set#
		NA	Good	Needs Attention	Immediate Attention			
А	Motor Brake							
В	Secondary Brake		$\boxtimes$					
С	Sprocket and Chain		$\boxtimes$					
D	Drive shafts and					Moderate surface corrosion	5	SD
	bearings					Misaligned Pillow Block	N/A	SD
						Slow leak of separated fluids from pillow blocks onto grid	5	SD
F	Oil (level, leaks etc.)					Slow leak from failed seal in gearbox	1	CL
3.	LS Electrical			Condition?		Comments	Photo	Line Set#
		NA	Good	Needs Attention	Immediate Attention			500
A	Control enclosure covers in place		$\boxtimes$					
В	Strain relief connections tight							
С	Power plugs twist locked into receptacles							
D	Control plugs latched into receptacles		$\boxtimes$					
E	Unused control plugs closed and latched							
4.	LS Operation & Limit Switches		C	Condition?		Comments	Photo	Line Set#
		NA	Good	Needs Attention	Immediate Attention			
A	Brackets & activation arms		$\boxtimes$					
В	Hard limits set & checked per comment					6" from first obstruction for Fixed Speed, 14" for Variable Speed		
С	Dead wraps on drum		$\boxtimes$					
D	Limit switch locknuts tight		$\boxtimes$					



F	Load brake		$\boxtimes$					
•	engagement							
5.	LS Wire Rope/Term.	Condition?				Comments	Photo	Line set#
		NA	Good	Needs Attention	Immediate Attention			
Α	Wire Rope		$\boxtimes$					
В	Terminations							
	Batten		$\boxtimes$					
	Drum		$\boxtimes$					
С	Adjustment Devices					Incorrectly installed wire rope clips on positioning wires	2	CL
D	Alignment					Strong fleet angle exiting downstage blocks	3	CL
6.	LS Battens		C	ondition?		Comments	Photo	Line Set#
		NA	Good	Needs Attention	Immediate Attention			
А	Battens	$\boxtimes$						
В	Splices	$\boxtimes$						
7.	LS Electrics	Condition?			Comments	Photo	Line Set#	
		NA	Good	Needs Attention	Immediate Attention			
А	SO Power Cable		$\boxtimes$					
В	Connector Strip		$\boxtimes$					
С	Cable Management		$\boxtimes$					
D	Safety Cables		$\boxtimes$					
8.	LS Safety Information		C	Condition?		Comments	Photo	Line Set#
		NA	Good	Needs Attention	Immediate Attention			
A	All Emergency Stops Tested	$\boxtimes$						
В	Capacity labels in place & match ID label					None		
С	Rigging Safety Sign installed					None		
D	Timer is reset with light off					If Powerline		
E	Owner has Operation & Maintenance Manuals					None		
9.	LS Other Components		C	Condition?		Comments	Photo	Line Set#
		NA	Good	Needs Attention	Immediate Attention			
A	Sound door cap					Screws backing out of header, some missing.	4	SD



Photo 1	
Photo 2	
Photo 3	
Photo 4	
Photo 5	

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### **Smoke Hatch Elements**

1.	SH Diverter Pullies		C	ondition?		Comments	Photo
		NA	Good	Needs Attention	Immediate Attention	Hydraulically Opened vents at top of gallery, control at Downstage Right corner.	
A	Mounting Assembly (clips and bolts)						
В	Housing (side plates/base angles)						
С	Sheave (casting)	$\boxtimes$					
D	Bearing/Shaft	$\boxtimes$					
Е	Alignment/Fleet Angle	$\boxtimes$					
2.	SH Wire Rope/Term.			ondition?		Comments	Photo
		NA	Good	Needs Attention	Immediate Attention		
А	Wire Rope	$\boxtimes$					
В	Terminations	$\square$					
С	Adjustment Devices	$\square$					
E	Alignment/Fleet Angles	$\square$					
4.	Release Mechanisms			ondition?		Comments	Photo
		NA	Good	Needs Attention	Immediate Attention		
А	Operating Winch	$\boxtimes$					
В	Motor / Gearbox	$\boxtimes$					
С	Fusible Links	$\boxtimes$					
D	Electro-thermal	$\boxtimes$					
4.	Other		C	ondition?		Comments	Photo
		NA	Good	Needs Attention	Immediate Attention		
Α	Signage	$\boxtimes$					
В	Type of Doors	$\boxtimes$				Single or Double? SLATS	
С	Additional Acoustic Doors	$\boxtimes$				Do the doors open down? <mark>N/A</mark>	

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### **Curtain and Track Elements**

1.	Curtain			Condition?		Comments	Photo	Line Set#
		NA	Good	Needs Attention	Immediate Attention	All stage drapes upstage of the proscenium were removed from the system and stored in hampers for the inspection. Drapery downstage of the Proscenium was in good condition.		
А	Condition		$\boxtimes$					
В	Flame Retardants			$\boxtimes$		2008		
С	Traveler	$\boxtimes$						
D	Border	$\boxtimes$						
Е	Leg	$\boxtimes$						
F	Scrim	$\boxtimes$						
G	Valance	$\boxtimes$						
F	Cyclorama		$\square$					
G	Blackout	$\boxtimes$						
2.	Track			Condition?		Comments	Photo	
		NA	Good	Needs Attention	Immediate Attention			
А	Track		$\boxtimes$					
В	Track Hardware		$\boxtimes$					
С	Attachments/Suspension		$\boxtimes$					
D	Curtain Machine	$\boxtimes$						

TRAIN INSPECT MAINTAIN

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### **Orchestra Shell Elements**

1.	Shell Ceilings		C	ondition?		Comments	Photo
		NA	Good	Needs Attention	Immediate Attention		
A	Ceiling Panel/Assembly Cloud					Position holes for stay arms are worn and damaged, many do not function properly anymore.	1
В	Frame					Curvature in the frame causes collisions with the next upstage batten in the gallery as the two pass each other (Sets 33&34) Damage to frame members in some spots	N/A 4
						from collisions or rough handling/age	
С	Rigging Attachment					Open hook, no latching mechanism or safety.	2
2.	Tower Frame		C	ondition?		Comments	Photo
		NA	Good	Needs Attention	Immediate Attention		
А	Panel Attachment		$\square$				
В	Frame		$\square$				
С	Tower Mover		$\square$				
3.	Integrated Lighting		C	ondition?		Comments	Photo
		NA	Good	Needs Attention	Immediate Attention		
А	Tip Switches	$\boxtimes$					
В	Fixtures	$\boxtimes$					
С	Distribution	$\boxtimes$					
4.	Signage		C	ondition?		Comments	Photo
				$\square$		No safety signage.	

Photo 1	
Photo 2	1



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Photo 3 Aging face	
Photo 4	

#### **Sound Door Elements**

Stage Right Sound Door

- Door Controls Non Functional
- Scenery stored against and crowding the door (Photo 1)
- Abrasion marks on both sides of the door from contact while passing through wall slot (Photo 2)
- Motor inaccessible due to crowded scenery storage in upstage right shop
- Limit switch sensor functional

Right Storage (Room #124) Doors

- Door to Stage Right wing was undergoing maintenance during the rigging inspection
- Door to Rear Stage (room #130) has scenery towers crowding it and could not safely be moved (photo 3)
- Abrasion marks on door from contact while passing through the wall slot (photo 4)

#### Left Stage (Room #136) Doors

- Door to Room #140 key switch control wasn't tested due to key not being present

Stage Left Wing (Room #140)

- Door experienced a malfunction during test. Clutch pins to manual operation chain stuck and did not reengage after door was closed. Panel had to be reset at controls.







Note: Text in picture	
was for inspector's	
reference.	
Photo 2	
Photo 3	
Photo 4	

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### **OBSERVATION SUMMARY AND RECOMMENDATIONS**

#### Summary

The Counterweight System and its motorized components were most recently inspected in 2018. Few other inspections seem to have been conducted in the past 12 years (the date of the earliest record accessible to staff present at inspection). Multiple past reports have evaluated the condition of the equipment as having reached or **exceeded its useful life**, and the conclusions of this inspection concur with those findings. The #5 Light Bridge has been removed from service due to failing conditions in its rigging components. That decision to remove the Bridge from service is agreed with as well. These, numerous other deficiencies, and deteriorations in the condition of the rigging and mechanical components are all clear indicators of progressing decay and extreme wear. Such issues, repeated observations, the past tension failure of the lift line in the #1 Light Bridge, derelict S.O. cable and cord reels, and recurrent operational issues in the Sound Doors should be taken as clear indicators that these failures will continue to accumulate and likely accelerate no later than within the next 3-5 years.

There is an insufficiency of safety signage present for the system. Signs warning of cutting/crushing hazards on access catwalks to the #1 Light Bridge/Header, offstage sides of the torms, on the walks of the bridge itself, and around the sound doors and wagons are needed to inform of bodily hazards. Access restriction and/or zone control methods can be installed to restrict access to areas in observable to the operator during motion of the machinery, as the control station is a booth inside the Stage Left Torm. Electrical additions to the torms do not appear to have been accompanied by adjustments to the mechanical limits of these members to prevent crushing of the electrical cabling now spanning the aperture.

<u>While not currently in such a state</u>, any substantial accident or shock load (especially to the #2-5 light bridges) should be treated as having the potential to warrant additional emergency inspection and possibly create a state of Clear and Present Danger. Repositioning or reusing previously abandoned or less heavily worn components of the system should be considered insufficient to the need to replace the entire system as they are of the same age/manufacture and equally deserving of retirement. Excepting this is only (temporarily) the rope lock for the Act Curtain due to the extreme difficulty with which that component now functions and the importance of its duties.

The characteristics and deficiencies noted in this report may not be comprehensive. The MAC is a large space that had many conditions which commanded observation, investigation, and recording. Deficiencies that went unobserved or unrecorded due to this constraint may present themselves over time.

The manual counterweight system and motorized sets in commission are operable -though many with difficultyand all should be used with care. Consideration should be given that their current condition will likely not safely tolerate maximum engineered loads.

Priority	ltem	<b>Recommendation including ANSI Standard to follow</b>	By Whom
(H-M-L)	#		(Staff or Rigging Contractor)
Η	1	Download and review the current ANSI Standards pertaining to entertainment. They can be found here: <u>http://tsp.esta.org/tsp/documents/published docs.php</u> . They need to be made available to theatre staff to review and implement	Staff



Н	2	Test the Fire Safety Curtain at least once every 90 days. It must be deployed twice. Once from each pull station, and once with the Smoke Vents closed, and then open, per ANSI E1.22 and NFPA 80.20 regulations. Document the results. Close the curtain when the stage is not in use as per code	Staff
Н	3	Test the smoke vents with the Fire Safety Curtain at least every 90 days and document the results, as per ANSI E1.22 and NFPA 80.20 requirements	Staff
Н	4	Have regular inspections performed per ANSI E1.47-2020 Frequency Of Inspections Chart	Staff
н	5	Replace all original components of Manually Operated Counterweight system. Recommend new counterweight rigging be equipped with chain compensators if possible due to the great height of the gallery.	Rigging Contractor
н	6	Perform regular maintenance on all Counterweight Assist and Line Shaft Hoists and components congruent to manufacturer's guidelines, clean and regrease all pillow blocks, drive chains, and bearings as recommended.	Staff/Rigging Contractor
Н	7	Replace all aged and worn components of Counterweight Assist and Line Shaft Hoists such as cut and failing rigging blocks, fatigued wire ropes and unrated fittings, aged electrical components and limit mechanisms, repair/redo failing seals inside hoist motors and gearboxes.	Rigging Contractor
Н	8	Replace aged sound shell ceilings.	Rigging Contractor
Н	9	Clean and lubricate all mechanical Limit Switch activators for Counterweight Assist (Light Bridge) arbors.	Staff/Rigging Contractor
Η	10	Install Warning Signage and clear demarcation for all Manual and Motorized Rigging indicating capacities, danger zones (example: the offstage space and catwalks of the movable torms), alerting of crushing or cutting hazards, and general safety surrounding moving or powered equipment congruent with guidelines in ANSI Z535.4	Staff
Μ	11	Update and consolidate Maintenance, Service, and Operational Logs for ease of reference, coordination, and presentation.	Staff
Μ	12	Replace damaged batten extension on Line Set #20	Staff
Μ	13	Complete installation of one unfinished bridle point at Stage Right.	Rigging Contractor
Μ	14	Reactivate and adjust mechanical limit activators for Paint Frame Hoist assembly.	Electrical Contractor
Μ	15	Replace malfunctioning Rope Lock on Main Curtain Line Set with an unused lock from elsewhere on the rail of satisfactory	Staff/Rigging Contractor



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		condition and function. Clean thoroughly and lubricate moving parts if necessary, taking care not to transfer fluids to the Purchase Line.	
Μ	16	Correct position of Lift Lines for Paint Frame in Multiline Diverter block, then monitor for recurrence and possible cause.	Rigging Contractor/Staff
Μ	17	Install additional insertable spreader plates in arbors to allow conformity to current spacing standards.	Staff/Rigging Contractor
Μ	18	Redistribute counterweight bricks on Floor 4 to give a minimum clearance to access stair of 36".	Staff
Μ	19	Establish and record safety and watch protocols to ensure safe, well monitored movement and clearances of all components of the Light Bridges at all times when the set is in motion.	Staff
L	20	Correct the batten position on Line Set #5 to be level and even across its entire length.	Staff
L	21	Clean corrosion off of all pipe batten and coat with a rust neutralizing/inhibitive primer.	Staff
L	22	Retract Electrical drop boxes and store appropriately on grid or cord reels to remove fouling hazard for functional battens as they move through the gallery.	Staff
L	23	Add locknuts or split washers to non-locking hardware connections throughout Light Bridges.	Staff
L	24	Monitor material degradation of knife guides on the #1 Light Bridges, watching for buildup of brassy shavings on components below the guides. Note any increase or progression of buildup.	Staff/Rigging Inspector
L	25	Monitor contact points of Lift Line wires in the catwalk area below the walkable grid, between the blocks. Watch for material wear on the wire rope, shavings on the catwalk or on the wire rope itself. Note all damage to wire rope.	Staff/Rigging Inspector
		ANSI Code references: E1.4-1 2016: Ch3.2.2, 3.2.3, 3.4.4.4.2, 3.7.7.3, 3.9, 4.6.1, 6.1, 6.5, 6.7, 6.8.3, 6.9, 6.10, 6.11, A.3.9, A.6	

When requesting a repair quote, please specify the item numbers you would like quoted.



### MAINTENANCE AND INSPECTION LOG

Use this log to keep track of required annual inspections and any service performed on your motorized rigging equipment. Keep this in a binder along with other service information such as inspection reports.

DATE	SET #		SERVICE PROVIDER	INITIALS
	ALL	Level 2 Rigging Inspection	Wenger Corp/JR Clancy	
19/2022				
	-			
22   D /				





### **End of Report**

Respectfully submitted,

GIANCARLO ACCIARDI On behalf of Wenger Corporation/JR Clancy, Syracuse, NY

Service Contacts – Anthony, Andy, and Marilyn (service@jrclancy.com)