RUTHRAUFF SAUER
Engineers / Mechanical Contractors

Crane Lift Plan

Site Name

CMU CIC Building

Site Address

4720 Forbes Ave. Pittsburgh, PA 15213

400 Locust Street, McKees Rocks PA, 15136

www.ruthrauffsauer.com

412-771-6800

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All items marked with a check are included within this Lift Plan.

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- ☐ Additional Documentation _____
- ☐ Additional Documentation _____
- ☐ Additional Documentation _____

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2. Crane Lift Summary

Project Name / Number: CMU CIC Building

Lift Date: 10/22/2022

Crane Lift Details:

Lift #1 - Lift existing RTU off roof. Lift new RTU curb to roof.

Communication Method:

Two-Way Radios, Hand Signals

Personnel:

Bob Snyder
Matt Ranallo

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3. Crane Drawings

Crane

Liebherr LTM1350-6.1

229.7' Telescopic boom, guyed with Y-frame at the fixed point of the Tele-head (TY) at 61.2°

Base: 75% Outriggers (29.2' x 23,2')

Counterweight: 308,700 lbs

109.4' Lift Radius (360°)

Crane Capacity at 109.4' = 48,600 lbs

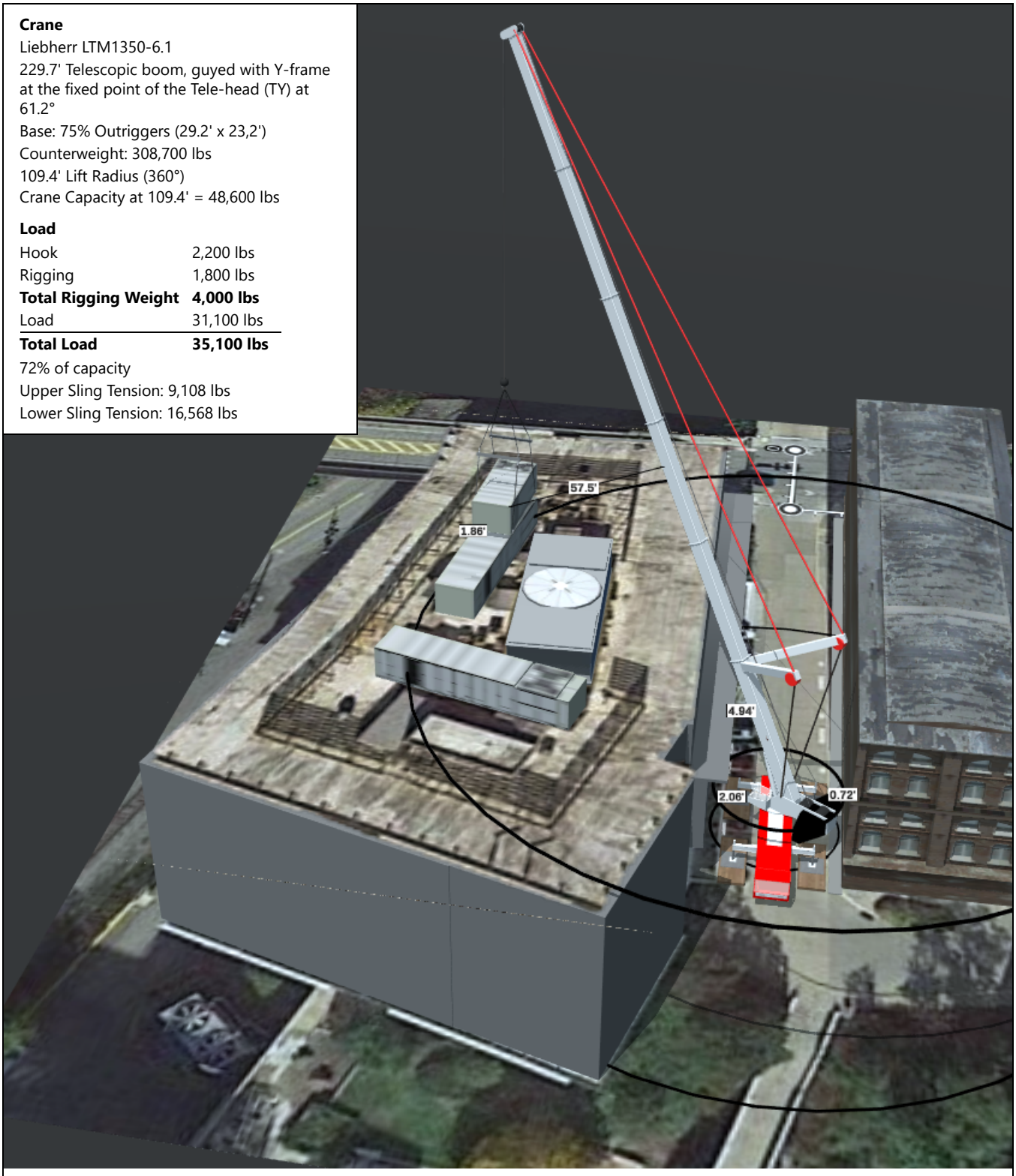
Load

Hook	2,200 lbs
Rigging	1,800 lbs
Total Rigging Weight	**4,000 lbs**
Load	31,100 lbs
Total Load	**35,100 lbs**

72% of capacity

Upper Sling Tension: 9,108 lbs

Lower Sling Tension: 16,568 lbs



Title	Lift Plan
Project	CMU CIC RTU Lift
Customer	Ruthrauff Sauer
Description	(2) Large RTUs to Roof
Drawn By	Adam Malagari 9/7/2022

Created with 3D Lift Plan www.3dliftplan.com

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4. Load Chart(s)

Load Chart

Project	CMU CIC RTU Lift
Customer	Ruthrauff Sauer
Description	(2) Large RTUs to Roof

Liebherr LTM 1350-6.1

Boom:	Telescopic boom, guyed with Y-frame at the fixed point of the Tele-head (TY)
Jib:	-
Base:	75% Outriggers (29.2' x 23,2')
Counterweight:	308,700 lbs
Range:	360°
Capacity:	85%
Chart ID:	071308 - II - 4831

Boom Section Percentages	Boom Length (ft)	Boom Angle	Jib Length (ft)	Jib Offset	Tip Height (ft)	Lift Radius (ft)	Capacity (lbs)	Note
100-100-100-100-100	229.7	74.6°	-	-	232.6	60	75,200	CODE 1082
100-100-100-100-100	229.7	73.3°	-	-	231.1	65	72,700	CODE 1082
100-100-100-100-100	229.7	72°	-	-	229.4	70	70,100	CODE 1082
100-100-100-100-100	229.7	70.7°	-	-	227.6	75	67,500	CODE 1082
100-100-100-100-100	229.7	69.3°	-	-	225.7	80	65,300	CODE 1082
100-100-100-100-100	229.7	68°	-	-	223.6	85	63,100	CODE 1082
100-100-100-100-100	229.7	66.6°	-	-	221.4	90	60,900	CODE 1082
100-100-100-100-100	229.7	65.2°	-	-	219	95	58,600	CODE 1082
100-100-100-100-100	229.7	63.8°	-	-	216.5	100	55,800	CODE 1082
100-100-100-100-100	229.7	62.4°	-	-	213.9	105	52,000	CODE 1082
100-100-100-100-100	**229.7**	**61°**	**-**	**-**	**211.1**	**110**	**48,600**	**CODE 1082**
100-100-100-100-100	229.7	59.5°	-	-	208.1	115	45,500	CODE 1082
100-100-100-100-100	229.7	58.1°	-	-	204.9	120	42,600	CODE 1082
100-100-100-100-100	229.7	56.6°	-	-	201.6	125	39,800	CODE 1082
100-100-100-100-100	229.7	55°	-	-	198	130	37,400	CODE 1082
100-100-100-100-100	229.7	53.5°	-	-	194.3	135	35,000	CODE 1082
100-100-100-100-100	229.7	51.9°	-	-	190.3	140	32,800	CODE 1082
100-100-100-100-100	229.7	50.3°	-	-	186.1	145	30,700	CODE 1082
100-100-100-100-100	229.7	48.6°	-	-	181.7	150	28,700	CODE 1082
100-100-100-100-100	229.7	46.9°	-	-	177	155	26,800	CODE 1082
100-100-100-100-100	229.7	45.1°	-	-	171.9	160	25,000	CODE 1082
100-100-100-100-100	229.7	43.3°	-	-	166.6	165	23,300	CODE 1082
100-100-100-100-100	229.7	41.4°	-	-	160.9	170	21,600	CODE 1082
100-100-100-100-100	229.7	39.4°	-	-	154.8	175	20,100	CODE 1082
100-100-100-100-100	229.7	37.4°	-	-	148.2	180	18,700	CODE 1082
100-100-100-100-100	229.7	35.2°	-	-	141.1	185	17,300	CODE 1082
100-100-100-100-100	229.7	32.9°	-	-	133.4	190	16,000	CODE 1082
100-100-100-100-100	229.7	30.4°	-	-	124.9	195	14,800	CODE 1082
100-100-100-100-100	229.7	27.8°	-	-	115.6	200	13,400	CODE 1082
100-100-100-100-100	229.7	24.9°	-	-	104.9	205	11,500	CODE 1082
100-100-100-100-100	229.7	21.6°	-	-	92.6	210	8,600	CODE 1082
100-100-100-100-100	229.7	17.6°	-	-	77.7	215	5,300	CODE 1082

This data is for reference use only. Operator must refer to in-cab charts to determine allowable lifting capacities.

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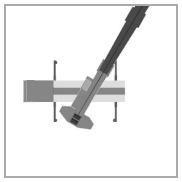
5. Outrigger Pressures

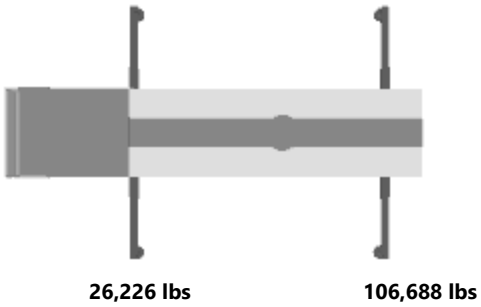
Outrigger Loads

Job Information

Project	CMU CIC RTU Lift
Customer	Ruthrauff Sauer
Description	(2) Large RTUs to Roof
Drawn By	Kyrk Pyros
Date	9/7/2022

302.3° Swing Angle





Crane Information

Liebherr LTM 1350-6.1
229.7' Telescopic boom, guyed with Y-frame at the fixed point of the Tele-head (TY) at 61.2°
75% Outriggers (29.2' x 23,2')
Cwt: 308,700 lbs
109.4' Lift Radius

Crane Weights

Boom	65,000 lbs
upperworks	308,000 lbs
carrier	108,000 lbs
Net Load Weight	35,100 lbs
Total Weight	**516,100 lbs**

Not for construction use. For pre-planning only.

Ground Bearing Pressure Below Crane Mats

Job Information

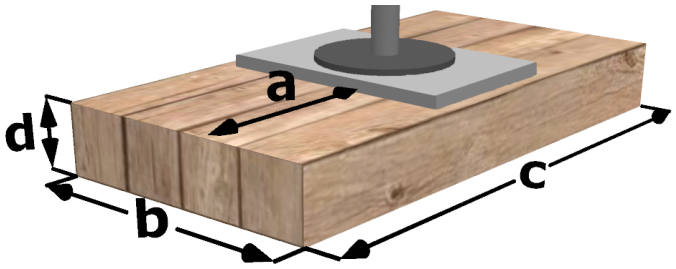
Project	CMU CIC RTU Lift
Customer	Ruthrauff Sauer
Description	(2) Large RTUs to Roof
Drawn By	Kyrk Pyros
Date	9/7/2022

Crane Information

Liebherr LTM 1350-6.1	
229.7' Telescopic boom, guyed with Y-frame at the fixed point of the Tele-head (TY)	
75% Outriggers (29.2' x 23,2')	
Cwt: 308,700 lbs	
Outrigger Load 'P'	257,577.3 lbs
Transition Pad Length	7 ft
Transition Pad Width	7 ft

Mat Information

Mat Material	Oak
Timber Width	12 in
Timber Depth	12 in
Mat Length	20 ft
Mat Width	8 ft
Mats in Width	1
Effective Mat Length 'c'	17.34 ft
Effective Mat Width 'b'	8 ft
Moment Arm 'a'	5.17 ft
Matting Layers 'n'	1
Total Mat Thickness 'd'	12 in



Calculations

Ground Bearing Pressure below mat...

$q = P / (b \cdot c)$ **1,857 psf**

Bending Stress on Mat...

$f = 3 \cdot q \cdot a^2 \cdot n / d^2$ 1,034.1 psi **OK**

1,200 psi maximum allowed

Horizontal Shear Stress on Mat...

$V = 1.5 \cdot q \cdot a / d$ 100 psi **OK**

100 psi maximum allowed

Notes

Not for construction use. For pre-planning only.

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6. Lift Worksheet(s)

Critical Lift Worksheet

Title: CMU CIC RTU Lift - TY Config - 308k# CWT, 75% Outrigger - Swamp Mats Date: 9/7/2022

Project: CMU CIC RTU Lift Job Number:

Description: (2) Large RTUs to Roof

Jobsite Address: 4720 Forbes Ave, Pittsburgh, PA 15213

Customer: Ruthrauff Sauer P.O./ Contract#:

Lift Plan Drawing and Load Placement Drawing attached? [Yes] No

Notes:

Crane Information

Manufacturer: Liebherr

Model: LTM 1350-6.1 - TY - Guyed Boom

Serial #: -

Crane Rating: 350 t

Crane Inspection Date: -

Notes:

Lift Information

Crane Radius: 109.4 ft

Crane Capacty at Radius: 48,600 lbs

Capacity at Pick Point: 48,600 lbs

Capacity at Set Point: 48,600 lbs

Notes:

Crane Configuration

Crane Carrier: 75% Outriggers (29.2' x 23,2')

Counterweight: 308,700 lbs

Chart Capacity: 48,600 lbs

Main Boom Length: 229.7' Telescopic boom, guyed with Y-frame at t

Boom Sections: 100-100-100-100-100

Parts of Line: 2

Line Size: 0.9 in

Capacity of Line @ Parts: 56,000 lbs

Radius: 109.4 ft

Boom Angle: 61.2°

Tip Height: 213.2 ft

Jib Used? Yes [No]

Jib: N/A

Jib Offset: N/A

Jib Angle from Ground: N/A

Outrigger Load: 257,577 lbs at 302° Swing Angle

Load Configuration

Gross Load Weight: 35,100 lbs

Description:

Dimensions: 12.5 ft x 30 ft, Height: 10 ft

Load Weight: 31,100 lbs

Rigging Weight: 1,800 lbs

Hook Weight: 2,200 lbs

Block Weight: 0 lbs

Load Line Weight: 0 lbs

Hook Height: 109.3 ft

Sling Length: 20'

Sling Angle: 71.9°, 64.6°

Sling Equipment #: N/A

Sling Type: Kevlar

Spreader Bar #: N/A

Spreader Bar Capacity: 32-ton each (qty 2)

Hook Block: 3 sheave

Shackle Type: Screwpin

Shackle Qty: TBD

Shackle Capacity: TBD

Additional Rigging: 0 lbs

Additional Rigging Capacity:

% of Chart Capacity: 72%

Chart Capacity Deduction:

Deduct Capacity:

Notes:

Setup Information

Crane Setup: Over Rear [360°] Over Front Over Side

Setup Distance:

Mat Used? [Yes] No

Mat Dimensions: 8'x20' Oak w/ 7'x7' Steel

Ground Bearing Pressure below Mat: 1,857 psf

Notes:

Not for construction use. For pre-planning only.

Title: CMU CIC RTU Lift - TY Config - 308k# CWT, 75% Outrigger - Swamp Mats Date: 9/7/2022

Project: CMU CIC RTU Lift Job Number:

Notes: Notes:

Pre-Lift Checklist

Crane Operator:	Name:	
Signalperson Assigned:	Name:	
Communication Method:		
Crane Inspected by Operator?	Yes	No
Rigging Inspected?	Yes	No
All Permits Obtained?	Yes	No
Are weather conditions OK?	Yes	No
Wind OK?	Yes	No
Are there Power Lines?	Yes	No
Is Operators Certification Card current?	Yes	No
Is area OK for entry and exit of jobsite?	Yes	No
Has a pre-lift meeting between operator, signalperson, supervisor, and any and all other persons occured?	Yes	No

Other Considerations:

Signatures

Engineer:	Name:		Signature:		Date:
Supervisor:	Name:		Signature:		Date:
Operator:	Name:		Signature:		Date:
Client:	Name:		Signature:		Date:

Not for construction use. For pre-planning only.

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7. Rigging Diagram(s)

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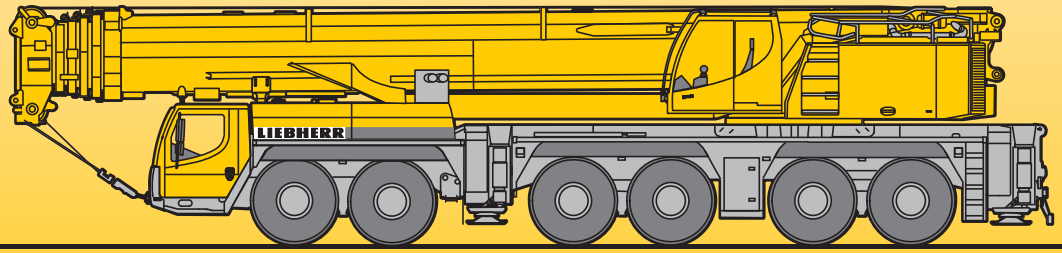
8. Crane Specs

Mobile Crane
Grue mobile

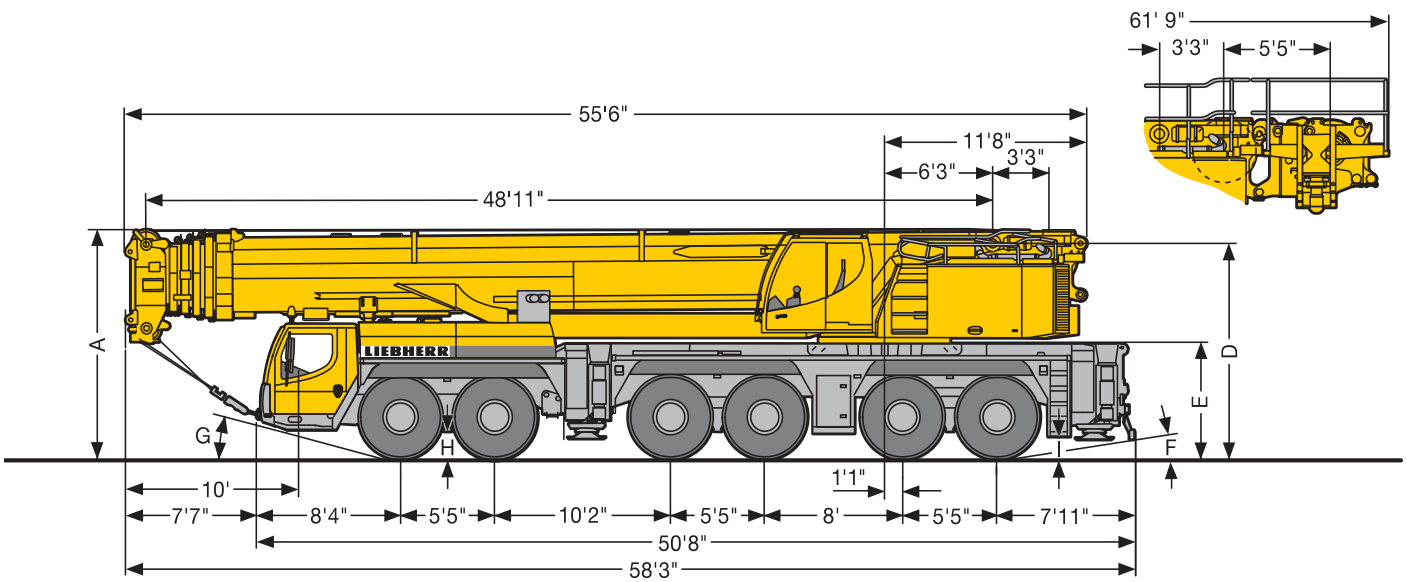
LTM 1350-6.1

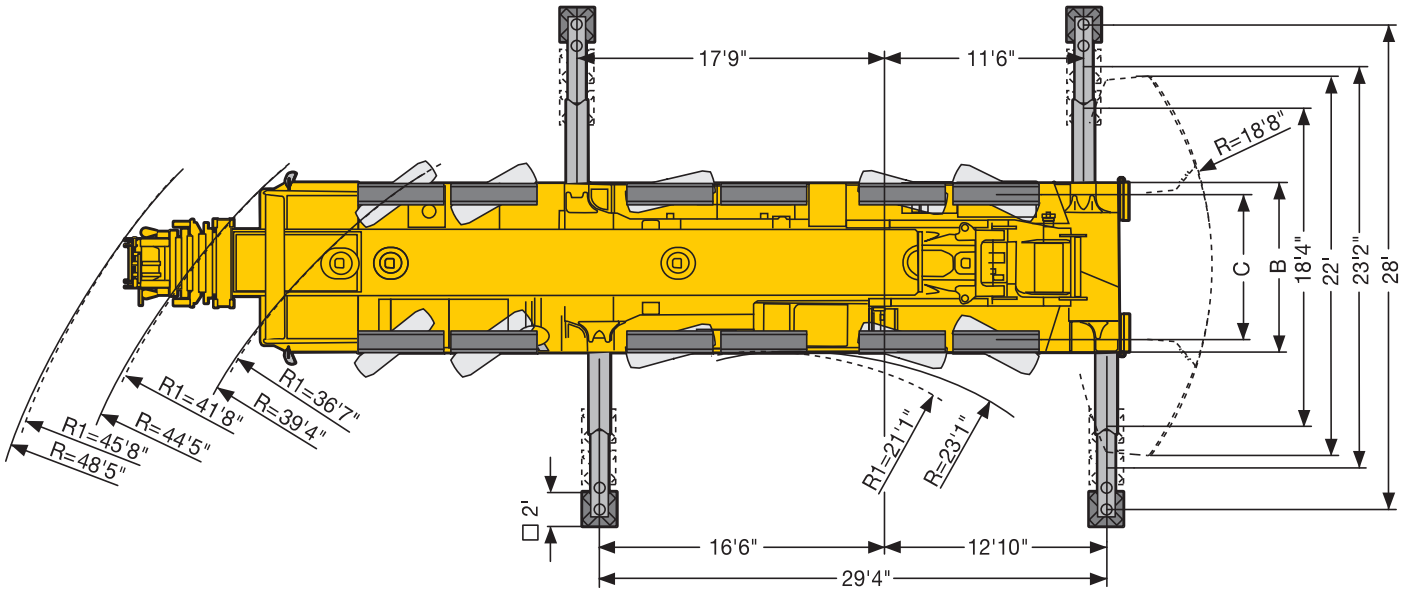
Technical Data
Caractéristiques techniques



LIEBHERR

Dimensions
Encombrement





US2271.03

R_1 = All-wheel steering · Direction toutes roues

	Dimensions · Encombrement									
	A	A 6"	B	C	D	E	F	G	H	I
445/95 R 25 (16.00 R 25)	13'1"	12'8"	9'10"	8'4"	12'4"	6'7"	8°	14°	1'4"	1'2"
525/80 R 25 (20.5 R 25)	13'1"	12'8"	10'2"	8'5"	12'4"	6'7"	8°	14°	1'4"	1'2"

* lowered · abaissé

Boom/jib combinations
Configurations de flèche

T Telescopic boom · Flèche télescopique

Y Y-shaped guying system · Haubanage Y

F Fixed lattice jib · Fléchette treillis fixe

H Auxiliary jib · Fléchette auxiliaire

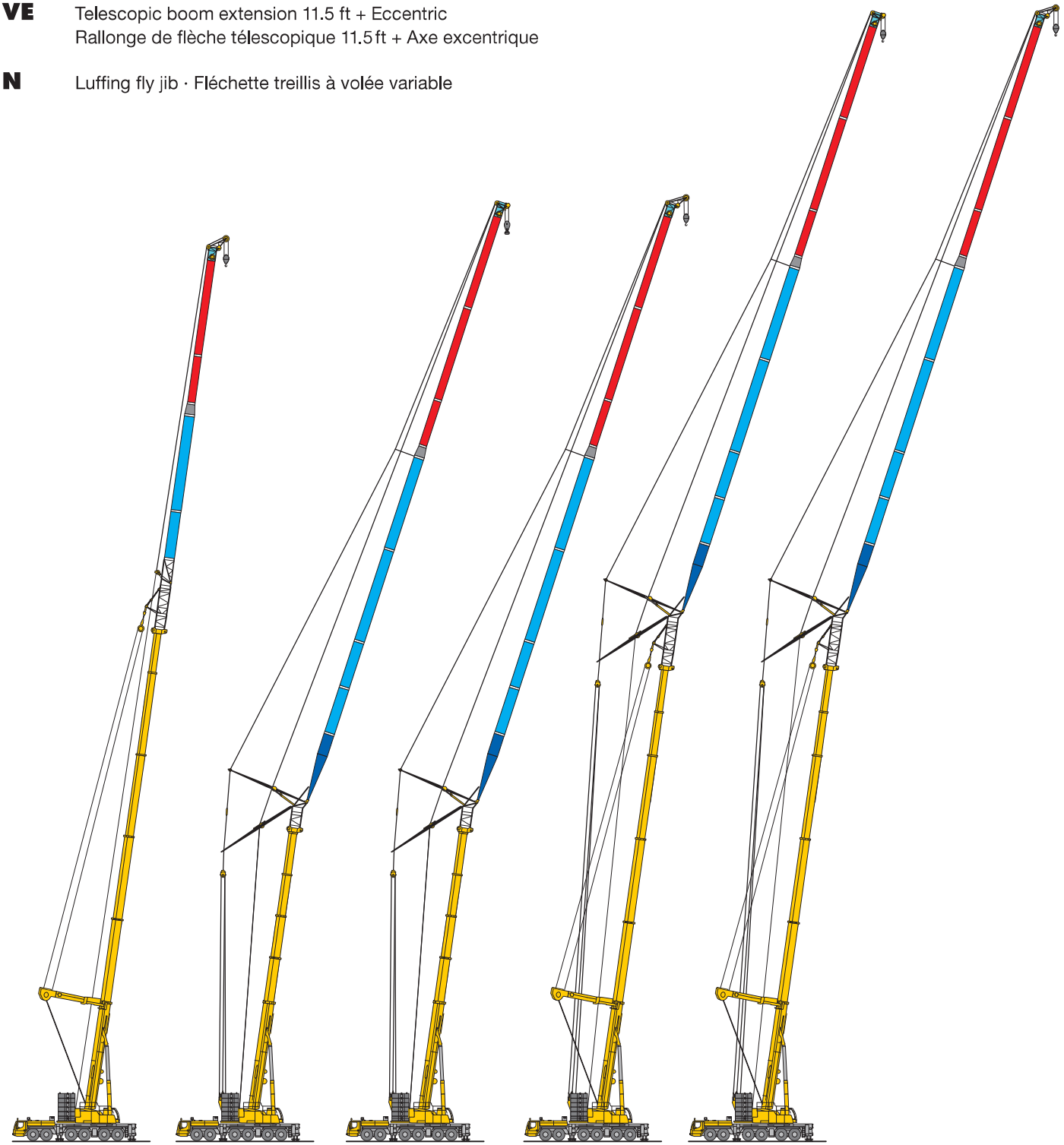
T	TY	TF	TFH	TYVEF
9 – 12	13 – 15	16 – 24		25 – 39

S2586

Boom/jib combinations
Configurations de flèche

VE Telescopic boom extension 11.5 ft + Eccentric
Rallonge de flèche télescopique 11.5 ft + Axe excentrique

N Luffing fly jib · Fléchette treillis à volée variable

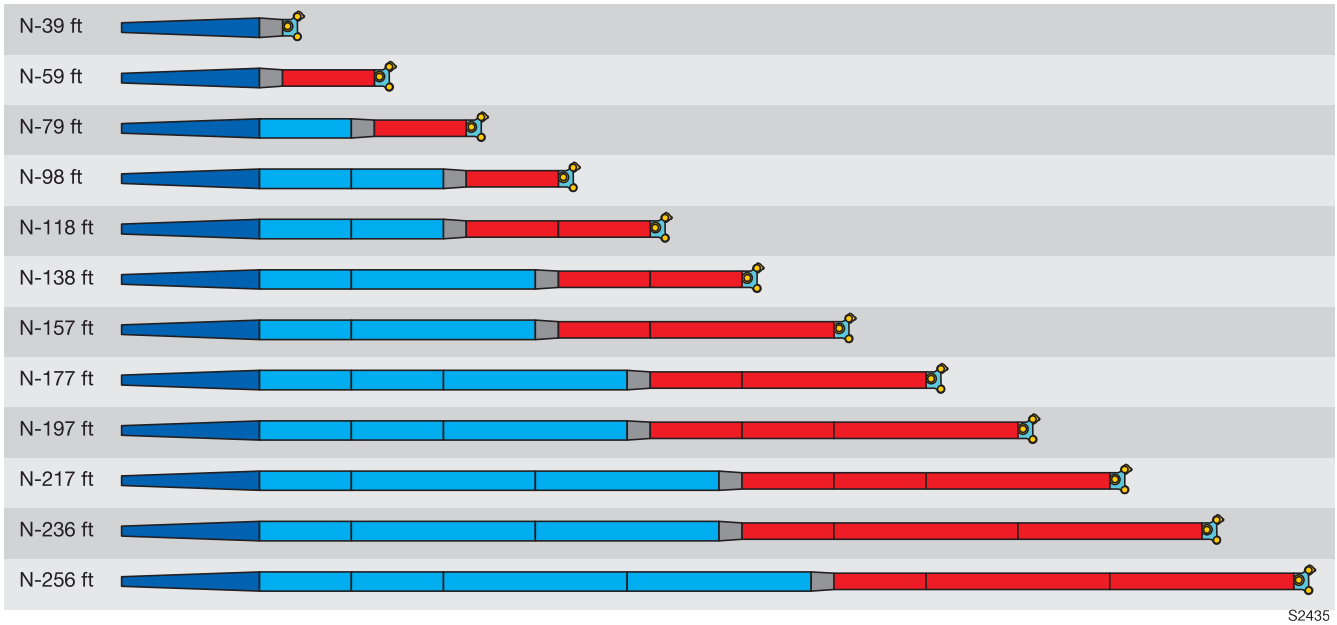


TYVEFH **TN** **TNH** **TYVEN** **TYVENH**

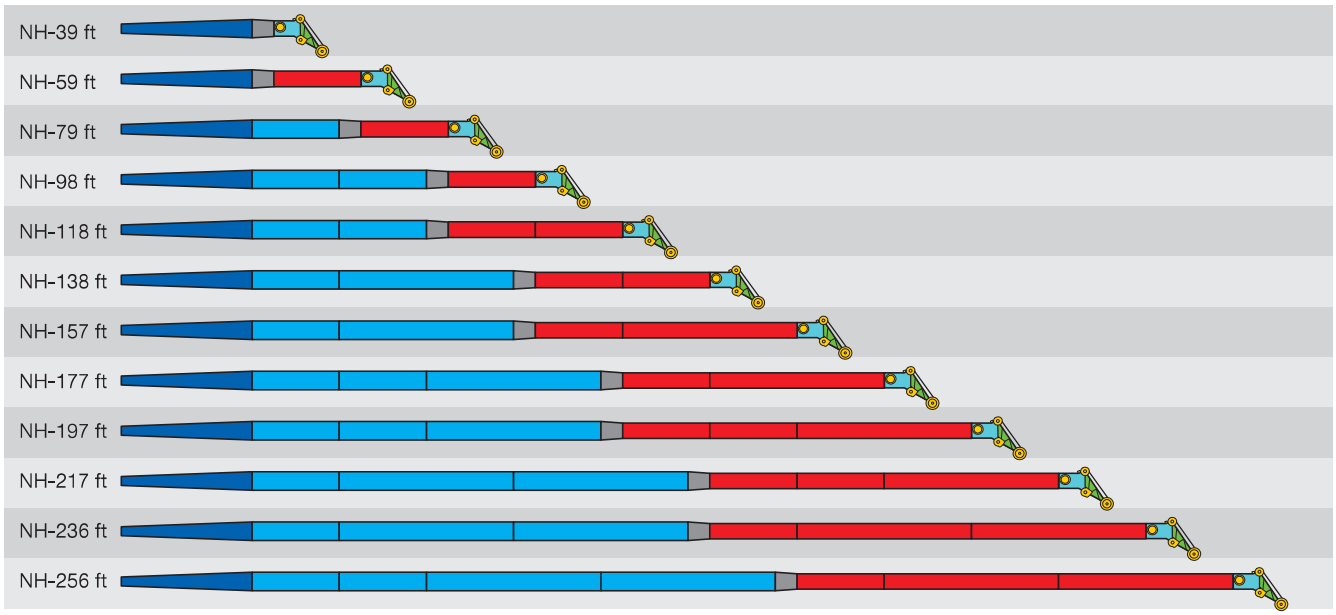
40 – 52 53 – 71

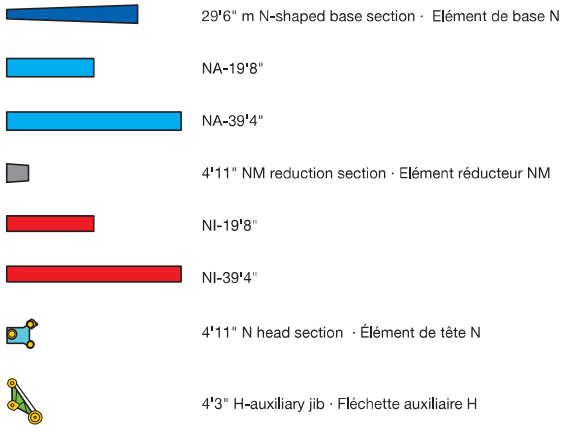
S2586

Boom/jib combinations – Luffing fly jib
Configurations de flèche – Fléchette à volée variable



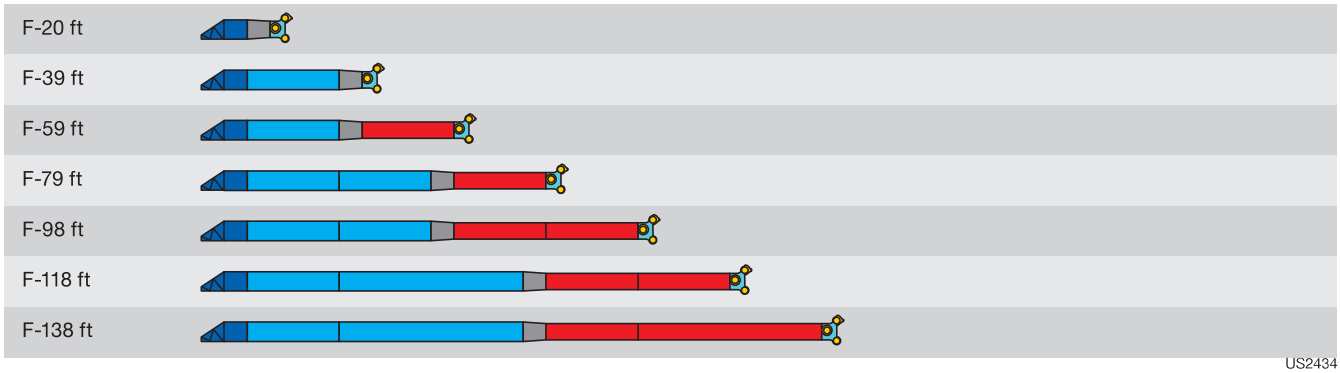
S2435



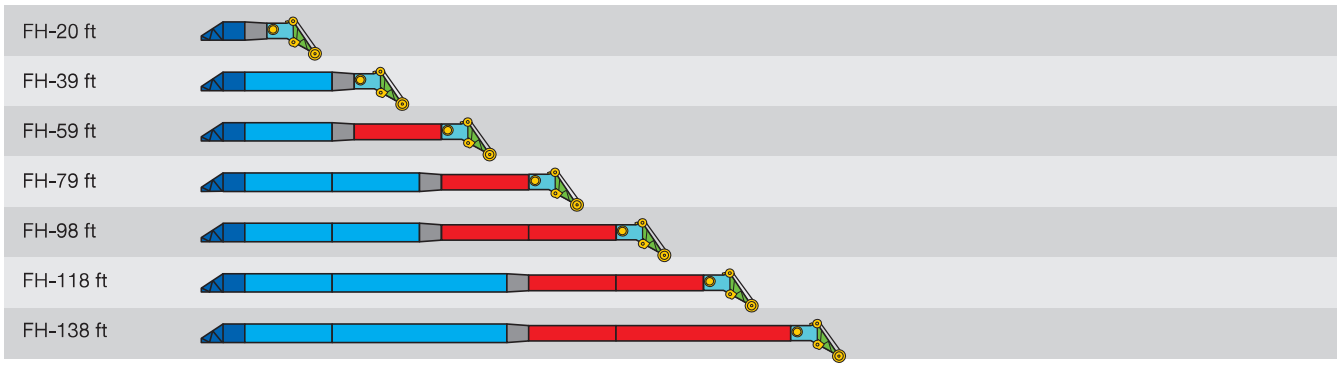


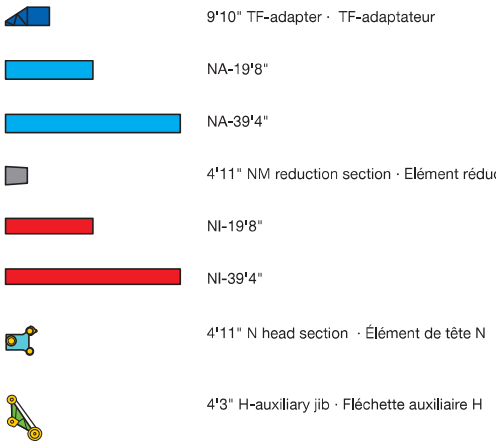
S2583

Boom/jib combinations – Fixed fly jib
Configurations de flèche – Fléchette fixe

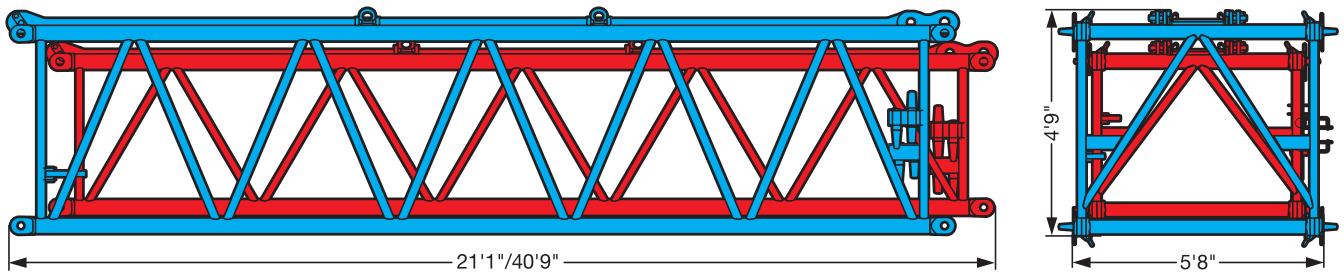


US2434





S2584



US2436

Weights
Poids

Axle Essieu	1	2	3	4	5	6	Total weight lbs Poids total lbs
lbs	26400	26400	26400	26400	26400	26400	158400

Load kips Forces de levage kips	No. of sheaves Poulies	No. of lines Brins	Weight lbs Poids lbs
463	12	24 (20)	7500
343.3	7	14	4850
275.6	5	11	3630
176.4	3	7	3200 / 6615*
79.8	1	3	2200
27.1	–	1	1320

* only necessary for operation with 39 ft luffing fly jib · nécessaire uniquement en cas de fonctionnement avec la fléchette à volée variable de 39 ft

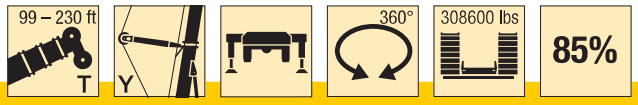
Working speeds
Vitesses

		1	2	3	4	5	6	7	8	9	10	11	12	R 1	R 2	
445/95 R 25 (16.00 R 25) 525/80 R 25 (20.5 R 25)	mph	1.52 – 3.9	4.9	6.4	8.1	10.4	13.3	17.5	22.5	29.1	37.3	47.3	50	1.64 – 4.2	5.3	50.9 %

Drive Mécanismes	infinitely variable en continu	Rope diameter / length Diamètre / Longueur du câble	Max. single line pull Effort au brin maxi.
1	0 – 446 ft/min single line ft/min au brin simple	0.9" / 1148 ft	27420 lbs
2	0 – 459 ft/min single line ft/min au brin simple	0.9" / 2067 ft	27420 lbs
360°	0 – 1.1 rpm		
	approx. 75 seconds to reach 84° boom angle env. 75 s jusqu'à 84°		
	approx. 533 seconds for boom extension from 49 ft – 230 ft env. 533 s pour passer de 49 ft – 230 ft		

Lifting capacities
Forces de levage

TY



ft	99 ft	115 ft	132 ft	149 ft	165 ft	182 ft	194 ft	198 ft	210 ft	215 ft	227 ft	230 ft	ft
26	236.9	217.6											26
28	227	212.9	189.3										28
30	217.3	207.4	186.1										30
32	207.7	199.7	184.2	166.8									32
34	199.5	192.1	179.7	165.3									34
36	192.4	184.4	173.7	163.1									36
38	183.8	177.9	168.6	159.2	144.7								38
40	175.4	171.4	163.4	155	143.2								40
42	167.3	165.2	157.7	150.5	140	124.5	113	106.1		93.9		80.2	42
44	159.9	159.3	152.9	146	136.4	123.8	112.6	105.8	96.6	93.6	82.7	80	44
46	152.9	153.5	148.5	141.5	132.8	122.9	111.9	105.4	96.2	93.1	81.8	79.6	46
48	146.8	147.7	144.2	137.8	129.6	120.5	110.2	104.7	95.4	92.3	80.8	79.2	48
50	140.8	141.9	139.9	134.1	126.3	118.2	108.5	104	94.6	91.5	79.7	78.7	50
55	127.2	128.7	129.1	125	118.4	111.6	104.1	101.5	92.1	88.6	76.9	77.2	55
60	115.5	117.1	118.5	116.2	111	104.5	99.6	98	89	84.9	73.9	75.2	60
65	105.6	107.1	108.7	107.8	104.4	98.3	94.8	92.9	85.5	81.6	70.9	72.7	65
70	96.5	98.3	100	99.9	97.8	92.9	89.7	87.8	82.3	78.4	68.3	70.1	70
75	88.3	90.3	91.9	92.2	91.4	87.6	84.8	83.1	79.1	75.4	65.9	67.6	75
80	79.6	82.9	84.4	84.8	85	82.5	80.3	78.7	75.9	72.6	63.7	65.3	80
85	68.2	76.2	77.9	78.2	78.5	77.6	75.8	74.3	72.4	69.4	61.6	63.1	85
90		70.5	72.2	72.6	72.9	72.5	71.7	70.4	68.6	65.7	59.7	60.9	90
95		63.8	67.1	67.5	67.8	67.4	67.4	66.6	65.1	62.2	57.7	58.9	95
100			62.4	62.8	63.1	62.7	63.1	62.6	61.7	59	55.8	56.8	100
105			58.1	58.5	58.8	58.4	58.8	58.3	58.4	56	53.9	54.5	105
110			53	54.7	55.1	54.7	55	54.6	54.9	53	51.9	52	110
115			45.8	51.2	51.7	51.2	51.5	51.1	51.5	49.8	49.5	49.4	115
120				47.6	48.4	48	48.3	47.8	48.2	46.7	46.8	46.7	120
125				43.6	45.4	45.1	45.3	44.8	45.2	43.7	44	44	125
130				37.8	42.6	42.3	42.7	42.1	42.5	40.9	41.4	41.4	130
135					39.7	39.7	40.1	39.6	40	38.3	38.9	38.9	135
140					36.1	37.3	37.6	37.1	37.5	35.8	36.4	36.5	140
145					31.4	34.8	35.3	34.9	35.3	33.5	34.1	34.3	145
150					25.7	32.5	33.2	32.7	33.1	31.3	32	32	150
155						29.2	31.2	30.5	31	29.3	29.9	30	155
160						25.2	28.8	28.5	29.1	27.4	28	28	160
165						20.5	26	26.5	27.3	25.5	26.1	26.2	165
170							22.6	23.6	25.5	23.8	24.3	24.4	170
175							18.6	20.3	23.5	22.2	22.8	22.8	175
180								16.4	21.1	20.3	21.3	21.3	180
185									18.2	17.9	19.8	19.8	185
190									14.9	15.2	18.2	18.4	190
195										11.9	15.9	16.4	195
200											13.4	14.1	200
205												11.5	205
210												8.6	210

TAB 180_60101_00_000

Lifting capacities
Forces de levage

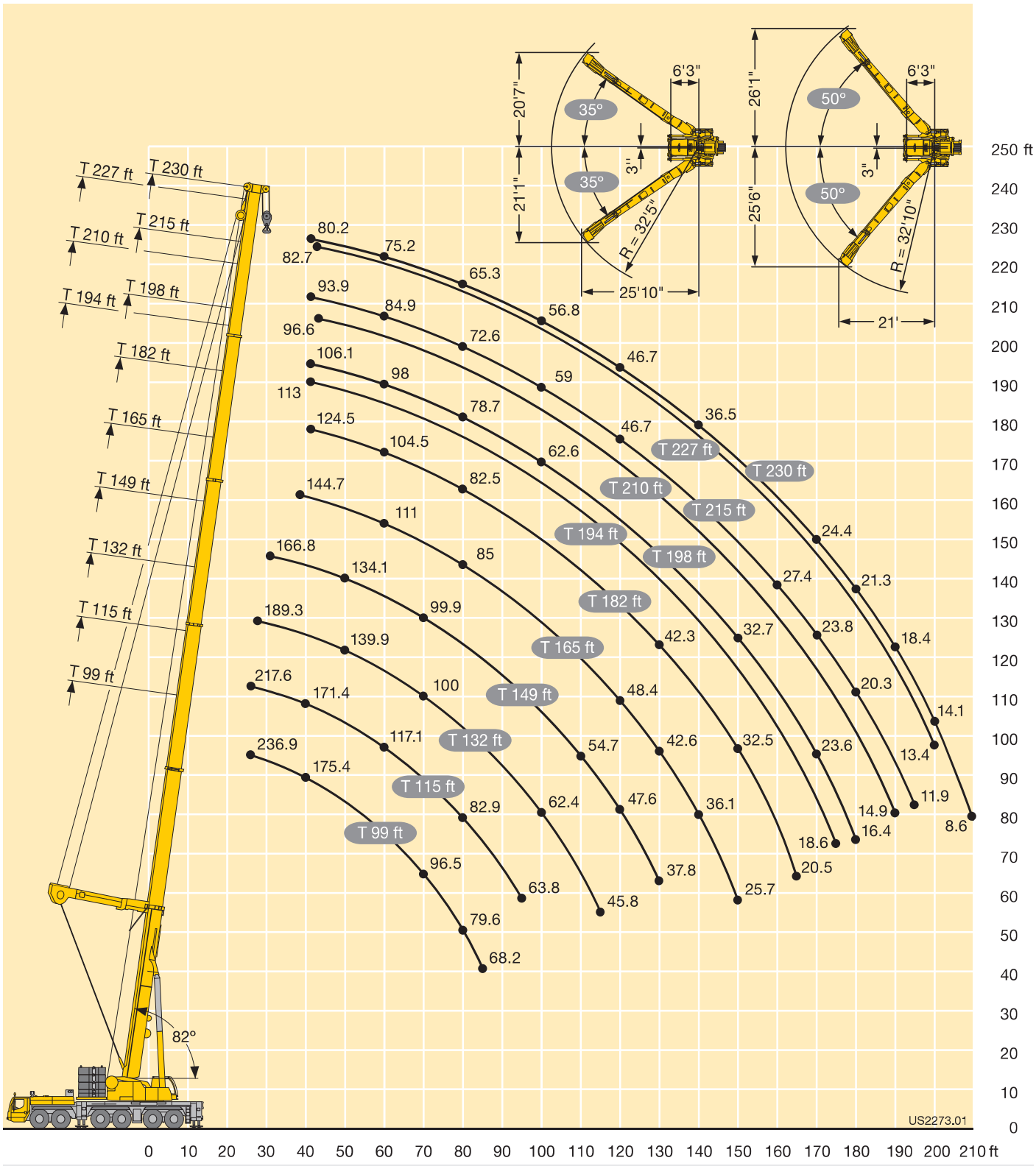
TY

ft	99 ft	115 ft	132 ft	149 ft	165 ft	182 ft	194 ft	198 ft	210 ft	215 ft	227 ft	230 ft	ft
15	256.7												15
16	259.8												16
17	261.2												17
18	261.7												18
20	262	231.6											20
22	259.1	234.4											22
24	251.8	232	198.9										24
26	240.4	224.8	198.8										26
28	228.6	216.1	196.8	167.4									28
30	217.1	207.4	193.9	167.8	145.1								30
32	206.4	199.7	189	167.8	145.3								32
34	196.5	192.1	182.8	166.7	145.4								34
36	187.1	184.4	175.8	164.7	145.4								36
38	177.6	176.7	169.5	159.9	144.7	124.6	113.3	106.3					38
40	168.2	168.8	163.4	155	143.2	124.6	113.3	106.3	97	94.2		79.8	40
42	159.1	160.3	157.7	150.5	140	124.5	113.1	106.1	96.9	93.9	82.8	80.2	42
44	150.8	152.2	151.6	146	136.4	123.8	112.6	105.8	96.6	93.6	82.7	80	44
46	143	144.4	145.4	141.5	132.8	122.9	111.9	105.4	96.2	93.1	81.8	79.6	46
48	136.5	138.1	139.2	136.6	129.6	120.5	110.2	104.7	95.4	92.3	80.8	79.2	48
50	130.1	131.7	133	131.7	126.3	118.2	108.5	104	94.6	91.5	79.7	78.7	50
55	115.7	117.5	119	119.3	117.3	111.4	104.1	101.5	92.1	88.6	76.9	77.2	55
60	103.6	105.3	106.9	107.2	107.3	103.6	99.3	97.8	89	84.9	73.9	75.2	60
65	93.5	95.2	96.8	97.1	97.3	94.7	93	91.4	85.5	81.6	70.9	72.7	65
70	84.7	86.6	88.2	88.5	88.8	86.7	85.5	84.1	81.3	78.1	68.3	70.1	70
75	77	79.1	80.6	81	81.3	79.6	78.6	77.2	76.1	73.4	65.9	67.5	75
80	70.1	72.3	73.9	74.3	74.6	73.2	72.3	71.1	70.3	67.7	63.5	64.8	80
85	63.6	66.1	68	68.3	68.7	67.5	66.8	65.6	64.9	62.4	60.8	61.6	85
90		60.6	62.5	62.9	63.3	62.4	61.8	60.7	60.2	57.7	57	57.1	90
95		55.4	57.4	57.9	58.3	57.7	57.3	56.2	55.7	53.3	53	52.9	95
100			52.8	53.3	53.6	53.2	53.1	52.1	51.7	49.3	49.1	49	100
105			48.5	49	49.4	49	49.2	48.3	47.9	45.7	45.5	45.4	105
110			44.7	45.2	45.7	45.2	45.6	44.8	44.6	42.4	42.3	42.2	110
115			41.1	41.7	42.3	41.8	42.2	41.6	41.5	39.3	39.3	39.3	115
120				38.5	39.1	38.6	39	38.4	38.6	36.5	36.5	36.5	120
125				35.6	36.1	35.8	36.1	35.5	35.9	33.9	33.9	33.9	125
130				32.8	33.5	33.1	33.6	32.9	33.3	31.5	31.6	31.6	130
135					31	30.7	31.1	30.5	30.9	29.2	29.4	29.4	135
140					28.7	28.3	28.8	28.2	28.6	27	27.3	27.3	140
145					26.5	26.2	26.6	26.1	26.6	24.9	25.3	25.4	145
150					24.3	24.2	24.7	24.1	24.6	22.9	23.4	23.5	150
155						22.4	22.9	22.2	22.7	21.1	21.6	21.7	155
160						20.7	21.2	20.5	21	19.4	20	20	160
165						18.5	19.5	18.9	19.4	17.8	18.3	18.4	165
170							18	17.4	17.9	16.2	16.8	16.9	170
175							16.6	15.9	16.5	14.9	15.4	15.5	175
180								14.2	15.1	13.5	14.1	14.1	180
185									13.9	12.3	12.8	12.8	185
190									12.7	11.1	11.6	11.6	190
195										9.9	10.5	10.5	195
200											9.4	9.4	200
205												8.4	205
210												7.3	210

TAB 180_60105_00_000

Lifting heights
Hauteurs de levage

TY



Angle of the Y-suspension between 35° and 50° depending on the extension condition of the individual telescopic sections.
Angle du haubanage Y entre 35° et 50°, en fonction de l'état de sortie des différents éléments télescopiques.

Equipment
Equipement

Crane carrier

Frame	Self-manufactured, torsion-resistant box-type design of high-tensile fine grained structural steel.
Outriggers	4-point supporting system, hydraulically telescopable into horizontal and vertical direction. Operation with remote control, automatic support leveling, electronic inclination display
Engine	8-cylinder Diesel, make Liebherr, watercooled, output 450 kW (612 h.p.), max. torque 2106 lbs-ft. Exhaust emissions acc. to 97/68/EG and EPA/CARB. Fuel reservoir: 127 gallons.
Transmission	Automatic transmission system with torque converter and intarder, make ZF, type TC-TRONIC with 12 forward speeds and 2 reverse speeds, transfer case with transfer differential.
Axles	Low maintenance carrier axles, all 6 axles steered. Axle 1, 3 and 5 are equipped with planetary gears, all driven axles with transverse differential locks, axle 3 with longitudinal differential lock.
Cardan shaft	All cardan shafts with 70° diagonal toothing and maintenance free.
Suspension	All axles are hydro-pneumatically suspended with automatic leveling. Suspension hydraulically lockable.
Tyre equipment	12 tyres, all axles equipped with single tyres. Size of tyres: 445/95 R 25 (16.00 R 25).
Steering	2-circuit system with hydraulic servo steering. Active speed depending rear axle steering, special steering programs for various driving situations.
Brakes	Service brake: all-wheel servo-air brake, all axles are equipped with disc brakes, dual circuit. Additional brakes: exhaust flap brake, Telma Eddy current brake (optional), intarder in gearbox. Hand brake: Spring-loaded, acting on all wheels of axles 2 to 6.
Driving cab	Spacious and comfortable sheet steel cab mounted on rubber shock absorbers, safety glass windows.
Electrical system	Modern data bus technique, 24 Volt DC, 2 batteries of 170 Ah each.

Crane superstructure

Frame	Liebherr-manufactured, torsionally rigid steel construction made from high-tensile fine-grain steel. Triple-roller slewing rim.
Crane engine	4-cylinder Diesel, make Liebherr, watercooled, output 180 kW (245 h.p.), max. torque 845 lbs-ft. Exhaust emissions acc. to 97/68/EG and EPA/CARB. Fuel reservoir: 106 gallons.
Crane drive	Diesel-hydraulic, with 5 axial piston variable displacement pumps, with servo-control and capacity control.
Crane control	Two self-centering control levers (joy-sticks). Pedal switches for telescoping. Infinitely variable crane motions through displacement control of the hydraulic pumps. Additional working speed control by variation of the Diesel engine speed.
Hoist gear	Axial piston variable displacement motor, hoist drum with integrated planetary gear and spring-loaded static brake.
Luffing gear	1 differential hydraulic ram with nonreturn valve.
Slewing gear	Axial piston fixed displacement motor, planetary gear, spring-loaded static brake.
Crane cab	Large screen area, compound glass, comfort furnishing, cabin tiltable 20° to rear.
Safety devices	LICCON2 safe load indicator, test system, hoist limit switches, safety valves against rupture of pipes and hoses.
Counterweight	220500 lbs
Telescopic boom	1 base section and 5 telescopic sections. All telescopic sections extendable individually by means of the rapid-cycle telescoping system TELEMATIK. Boom length 49 ft – 230 ft.
Electric system	Modern data bus technique, 24 Volt DC, 2 batteries of 170 Ah each.

Additional equipment

Guying system for telescopic boom Y	Consisting of guying frames with stay ropes, tiltable hydraulically into transport position Self assembly.
Additional counterweight	4 additional counterweight slabs of 22050 lbs each for a total counterweight of 308600 lbs.
Lattice jibs	Fixed lattice jib 20 ft to 138 ft long, installation at 0°, 20°, 40° or 60°, luffing lattice jib 39 ft to 256 ft long.
2nd hoist gear	For 2-hook operation or for operating the luffing lattice jib.
Tyre equipment	12 tyres, size 525/80 R 25 (20.5 R 25).
Drive 12 x 8	The 4th axle is driven additionally.

Other items of equipment available on request.

Remarks referring to load charts

1. The lifting capacities do not exceed 85 % of the tipping load according to ASME B 30.5.
   The crane's structural steelwork is in accordance with EN 13000 and ASME B 30.5.
2. For the calculation of the load charts at least a wind speed of 23 ft/s (7 m/s, 15.7 mph) and regarding the load a sail area of 1 m² per ton load and a wind resistance coefficient of 1.2 on the load have been taken into account. For lifting of loads with large sail areas and/or high wind resistance coefficients the maximum wind speed as stated in the load charts has to be reduced.
3. Lifting capacities are given in kips.
4. The weight of the hook blocks and hooks is part of the load and therefore it must be deducted from the lifting capacities.
5. Working radii are measured from the slewing centre.
6. The lifting capacities given for the telescopic boom apply if the folding jib is removed.
7. Subject to modification of lifting capacities.
8. Lifting capacities above 343.3 kips / 463 kips only with additional pulley block/special equipment.
9. The data of this brochure serves only for general information. All information is provided without warranty. Instructions for the correct commissioning of the crane please take from the operation manual and the load chart book.

Remarques relatives aux tableaux des charges

1. La capacité de charge ne doit pas dépasser 85 % de la charge de basculement conformément à ASME B 30.5.
   La structure métallique de la grue est conforme à EN 13000 et ASME B 30.5.
2. Une vitesse de vent de 23 ft/s (7 m/s, 15.7 mph) minimum, une surface de prise au vent de 1 m² par tonne ainsi qu'un coefficient de résistance au vent de la charge 1,2 sont pris en compte pour le calcul des tableaux de charge. Lorsque des charges ayant une surface de prise au vent et/ou un coefficient de résistance au vent plus élevé(e)(s) sont levées, la vitesse de vent maximale indiquée dans les tableaux de charge doit être réduite.
3. Les charges sont indiquées en kips.
4. Le poids du crochet de levage resp. de la moufle à crochet est une partie de la charge et doit donc être déduit de la capacité de charge.
5. Les portées sont calculées à partir de l'axe de rotation.
6. Les charges indiquées pour la flèche télescopique sont valables lorsque la fléchette pliante est démontée.
7. Charges données sous réserve de modification.
8. Les charges supérieures à 343.3 kips / 463 kips seulement avec moufle additionnel/équipement supplémentaire.
9. Les données de cette brochure sont données à titre informatif. Ces renseignements sont sans garantie. Les consignes relatives à la bonne mise en service de la grue sont disponibles dans le manuel d'utilisation et le manuel de tableaux de charge.

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RUTHRAUFF SAUER
Engineers / Mechanical Contractors

9. Annual Crane Inspection(s)

Gator's Technical Field Services
168 Church Hill Rd.
Venetia, PA 15367
(412) 789-4894

FolderID: AI6030
FormID: 14224500

Inspection

Allegheny Crane
4200 Stubenville Pike
Pittsburgh, PA 15205

Telescoping Boom Crane

Completed by: Jason Johnson on 08/02/2022

Location:	Allegheny Yard
Serial #:	071 437

Owner Eq #:	N/A
Manufacturer:	Liebherr
Model:	LTM 1350-6.1
Capacity:	400 Tons
Length/Lift:	229'
Hook Type:	Load Block & Hook
Number of Hoists:	1

Priorities Found: **2 - High** **5 - Medium** **118 - Good**

Hours and Miles				
	2.	Lower Hours	**1290**	
	3.	Upper Hours	**2453**	
	4.	Miles	**15.185 Miles**	
Historical Records				
	5.	Monthly Inspection	**(DEF) Deficiency**	
	6.	Documentation of Annual / Comprehensive Inspection	**(SAT) Satisfactory**	
Manuals				
	8.	Crane Operator Manuals	**(SAT) Satisfactory**	
	9.	Operational Aid Operators Manual	**(SAT) Satisfactory**	
General				
	10.	Mfg ID tag Condition / Picture of Tag	**(SAT) Satisfactory**	P10
	11.	Housekeeping	**(SAT) Satisfactory**	
	12.	External Lighting	**(SAT) Satisfactory**	
	13.	Safety and Warning Labels	**(SAT) Satisfactory**	
	14.	Hand Signal Chart	**(SAT) Satisfactory**	
	15.	Sheet Metal	**(SAT) Satisfactory**	
	16.	Paint Condition / Corrosion	**(SAT) Satisfactory**	
Lower Driver's Cab and Station				
	17.	Brakes - Service / Parking / Emergency	**(SAT) Satisfactory**	
	18.	Windows / Mirrors	**(SAT) Satisfactory**	
	19.	Windshield Wipers	**(SAT) Satisfactory**	
	20.	Windshield Defroster	**(SAT) Satisfactory**	
	21.	Seat / Seat Belt	**(SAT) Satisfactory**	
	22.	Steering	**(REC) Recommendation**	P22
	23.	Fire Extinguisher	**(SAT) Satisfactory**	
	24.	Gauges / Light Display	**(SAT) Satisfactory**	
	25.	Access / Grab Rails / Steps	**(REC) Recommendation**	P25
		Bar to hold cab in place bracket broke		
Lower Carrier Power Plant				
	26.	Engine Performance	**(SAT) Satisfactory**	
	27.	Compressor Performance (Air Pressure)	**(SAT) Satisfactory**	
	28.	Exhaust System	**(SAT) Satisfactory**	

	29.	Belts / Pulleys	**(SAT) Satisfactory**	
	30.	Leaks	**(SAT) Satisfactory**	
	31.	Rotating and Reciprocating Parts	**(REC) Recommendation**	P31
		Cooler mounts on lower broke		
Carrier				
	32.	External Lights (Headlights, Taillights, Brake Lights)	**(REC) Recommendation**	P32
	33.	Transmission	**(SAT) Satisfactory**	
	34.	Drive Line	**(SAT) Satisfactory**	
	35.	Tires	**(SAT) Satisfactory**	
	36.	Tire Air Pressure	**(SAT) Satisfactory**	
	37.	Main Frame Members	**(SAT) Satisfactory**	
	38.	Hydraulic Hoses, Fittings, Tubes	**(SAT) Satisfactory**	
	39.	Hydraulic Fluid Level	**(SAT) Satisfactory**	
	40.	Hoses / Tubing / Fittings .	**(SAT) Satisfactory**	
	41.	Slip Resistant Walking surface	**(SAT) Satisfactory**	
	42.	Axle Lockout	**(SAT) Satisfactory**	
	43.	Audible Reverse Signal Alarm	**(SAT) Satisfactory**	
Outriggers				
	44.	Boxes & Beams	**(SAT) Satisfactory**	
	45.	Hydraulic Cylinders	**(SAT) Satisfactory**	
	46.	Positive Position Locks	**(SAT) Satisfactory**	
	47.	Float Pads / Retainers	**(SAT) Satisfactory**	
	48.	Hoses / Tubing / Fittings	**(SAT) Satisfactory**	
	49.	Jack cylinder / Holding Valves	**(SAT) Satisfactory**	
	50.	Caution / Warning Signs	**(SAT) Satisfactory**	
	51.	Outrigger Box Mounting Pins / Cylinders / Keepers	**(SAT) Satisfactory**	
Operator's Station				
	52.	Steps / Ladders / Handrails	**(REC) Recommendation**	P52
	53.	Windows	**(SAT) Satisfactory**	
	54.	Windshield Wipers	**(SAT) Satisfactory**	
	55.	Defrost / Circulation Fan	**(SAT) Satisfactory**	
	56.	Cab Door Latch (open and closed)	**(SAT) Satisfactory**	
	57.	Anti-Skid Stepping Surfaces	**(SAT) Satisfactory**	
	58.	Fire Extinguisher	**(SAT) Satisfactory**	
	60.	Electrocution Warning Sign(s)	**(SAT) Satisfactory**	
	61.	Seat Switch / Armrest Controls Shut Off Switch	**(SAT) Satisfactory**	
	62.	Mirrors	**(SAT) Satisfactory**	
	63.	Level Indicator	**(SAT) Satisfactory**	
	64.	Horn	**(SAT) Satisfactory**	
	65.	Control Lever / Joystick Condition	**(SAT) Satisfactory**	
	66.	Remote Control Condition & Operation	**(SAT) Satisfactory**	
	67.	Low Air Pressure Warning Light / Alarm	**(SAT) Satisfactory**	
	68.	Controls and Switch Labels	**(SAT) Satisfactory**	
	69.	Controls Identified	**(SAT) Satisfactory**	
	70.	Cab Heater / Air Conditioner	**(SAT) Satisfactory**	
	71.	Instrument / Gauges	**(SAT) Satisfactory**	
	72.	Power Plant Controls	**(SAT) Satisfactory**	
Load Chart				

73.	Per Configuration	**(SAT) Satisfactory**	
74.	Matches Make, Model, and Serial Number of Crane	**(SAT) Satisfactory**	
75.	Visible from Operator's Cab	**(SAT) Satisfactory**	
76.	Durable / Legible/ Secured	**(SAT) Satisfactory**	

Safety Devices / Operational Aids

77.	Boom Angle Indicator	**(SAT) Satisfactory**	
78.	Boom Length Indicator	**(SAT) Satisfactory**	
79.	Main Drum Rotation Indicator	**(SAT) Satisfactory**	
81.	Load Moment / Rated Capacity Indicator	**(DEF) Deficiency**	P81
82.	Radius Indicator	**(SAT) Satisfactory**	
83.	Level Indicator	**(SAT) Satisfactory**	
84.	Anti Two-Block Warning Device / Function Lockout	**(SAT) Satisfactory**	P84

Upper Power Plant

86.	Performance	**(SAT) Satisfactory**	
87.	Exhaust System/Guards & Insulators	**(SAT) Satisfactory**	
88.	Hoses	**(SAT) Satisfactory**	
89.	Belts	**(SAT) Satisfactory**	
90.	Reciprocating and rotating parts	**(SAT) Satisfactory**	

Rotating Upper Structure

91.	Turntable / Bearing	**(SAT) Satisfactory**	
93.	Turntable Bolts / Structural Welds	**(SAT) Satisfactory**	
94.	Counterweight / Mounting Structure / Pins / Keepers	**(SAT) Satisfactory**	
95.	Ring and Pinion Gear / Guard	**(SAT) Satisfactory**	
96.	Hydraulic / Electrical / Air Swivel	**(SAT) Satisfactory**	
97.	House Lock and Pin	**(SAT) Satisfactory**	
98.	Hydraulic Tubes, Fitting, and Hoses	**(SAT) Satisfactory**	
99.	OEM Safety / Warning Decals	**(SAT) Satisfactory**	
100.	Swing System / Swing Brake	**(SAT) Satisfactory**	
101.	360 Degree Swing Lock	**(SAT) Satisfactory**	
102.	Counterweight Posted Warnings	**(SAT) Satisfactory**	
103.	Electrocution Posted Warnings	**(SAT) Satisfactory**	

Main Boom

110.	Lift Cylinder(s)	**(SAT) Satisfactory**	
111.	Boom Extension Cylinder(s) / Holding Valve	**(SAT) Satisfactory**	
112.	Hydraulic Hoses, Tubes, and Fittings	**(SAT) Satisfactory**	
113.	Boom Sections Alignment	**(SAT) Satisfactory**	
114.	Wear Pads	**(SAT) Satisfactory**	
115.	Hoist Line Dead End	**(SAT) Satisfactory**	
116.	Sheaves	**(SAT) Satisfactory**	
117.	Boom Hinge Pin / Bushing / Retainers	**(SAT) Satisfactory**	
118.	Boom Head Section	**(SAT) Satisfactory**	
120.	Boom Structure	**(SAT) Satisfactory**	

Main Hoist & Wire Rope

144.	Wire Rope Lay on Drum	**(SAT) Satisfactory**	P144
145.	Diameter and wear		

SIze	Actual diameter measurement
23mm	

146.	Mounting Bolts	**(SAT) Satisfactory**	

147.	Brakes and Clutch System	**(SAT) Satisfactory**	
148.	Lubrication	**(SAT) Satisfactory**	
149.	Rope Damage (broken wires, kinks, crushing, waviness)	**(SAT) Satisfactory**	
150.	Wire Rope Reeving	**(SAT) Satisfactory**	
151.	End Connectors	**(SAT) Satisfactory**	

Auxiliary Hoist & Wire Rope

153. Diameter and wear

SIze	Actual diameter measurement
0	

Load Block & Hook

160.	Overall Picture Block / Ball	**(SAT) Satisfactory**	P160
161.	ID Tag Condition / Picture of tag	**(SAT) Satisfactory**	P161
162.	Sheave(s) / Guards / Wire Rope Retainers	**(SAT) Satisfactory**	
163.	Safety Latch(es) / Lock Pin	**(SAT) Satisfactory**	
164.	0° Hook Bend or Twist	**(SAT) Satisfactory**	
165.	5% Hook Opening or 1/4" Max	**(SAT) Satisfactory**	
166.	10% Hook Wear Max	**(SAT) Satisfactory**	
167.	Bearing	**(SAT) Satisfactory**	
168.	Wedge Socket / End Fitting	**(SAT) Satisfactory**	
169.	Reeving	**(SAT) Satisfactory**	
170.	Pins and Retainers	**(SAT) Satisfactory**	
171.	Cheek Plate(s) / Attachment Hardware	**(SAT) Satisfactory**	P171

No-Load Operational Test

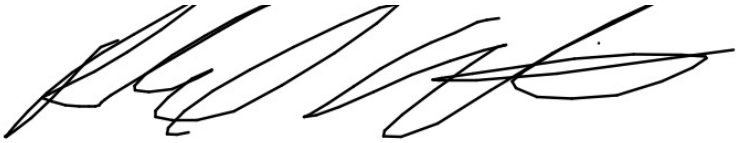
181.	No-Load Operational Test	**(SAT) Satisfactory**	

Verification and Completion

182. Inspector Name and Signature — **Jason Johnson**

183. Date of Inspection — **08/02/2022**

184. Customer Name and Signature — **Richard Whatton**



185. Certificate Issued — **(Y) Yes**

P10.1

P22.2: Leak on cylinder 5th axle back passenger side

P22.3: Leak on cylinder 5th axle back passenger side

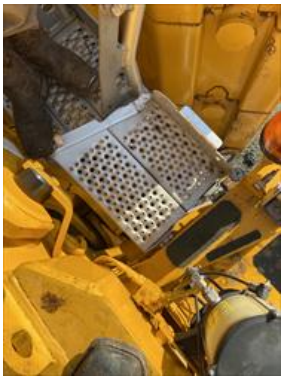
P25.4

P31.5

P31.6

P32.7: Light cover on upper broke

P52.8: Hand rail on luffer winch broke off



P52.9: Step on upper bent up and won't line up

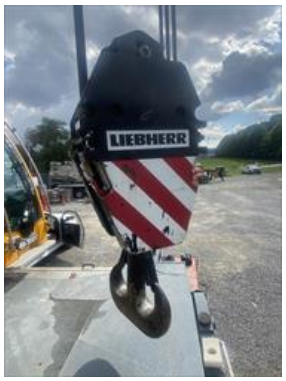
P52.10: Hand rail on upper bent and damaged

P81.11: Luff up limit switch on luffing drum disconnected

P81.12

P84.13

P144.14



P160.15

P160.16

P161.17

P171.18

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10. Daily Crane Inspection / Crane Use Permit

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Crane Use Permit

Use Permit

- A crane use permit is required for *each and every instance* a crane is setup and operated. A Crane use permit may be used for more than one day where conditions have not changed.
- Every new setup or crane relocation will require the issuance of a *new* crane use permit.

Date:		Time of Issue		Expires (Date & Time)	
Subcontractor/ Rigging Company: Ruthrauff|Sauer					
Lead Rigger/Competent Person:					
Crane Company:					
Crane Operator:		License #			
Project:		**Pick Location:**			

1. Crane Information

Make		Model		S/N							
Size (Capacity In Tons)											
Type		☐ Friction	☐ Lattice	☐ Truck	☐ Rough Terrain	☐ All Terrain	☐ Crawler				
Boom Length	Jib Used?	☐ Yes	☐ No	Length	Offset, if Used						

2. Operator to Verify the Following are in the Crane Cab:

☐ Hand Signal Chart	☐ Fire Extinguisher	☐ Load Capacity Charts	☐ 3rd Party Annual Inspection Report	☐ Completed Daily Inspection Sheet, Last 3 Monthly Inspection Forms
☐ Operators Manual	☐ State Crane License/Registration			

3. Operator to Verify the Following:

☐ Anti-two Block Operational	☐ Overhaul Ball Capacity Marked	☐ Wedge Socket/Becket Properly Installed	☐ Outrigger Floats & Dunnage Installed (Minimum 3'X3'x4") Size:	☐ Outriggers Fully Extended Position: Computer Set at:
☐ Boom Angle Indicator Working	☐ Boom High Limit Working (lattice boom)	☐ All warning placards in place	☐ Backup alarm working	
☐ No broken or fogged glass	☐ Light/beacon if boom is higher than 200'	☐ Ground cable provided	☐ Winds not excessive	☐

4. Load Characteristics

Description of Maximum Load Gang boxes and materials	Dimensions of Max Load	Weight of Max Load
Maximum Boom Length .	Minimum Boom Angle	Maximum Radius
Weight of All Rigging	List Rigging Components	Minimum Capacity Component

5. Subcontractor/Rigger to Verify (Mark N/A if Not Applicable)

☐ Safety Latches in Place	☐ Slings Inspected	☐ Counterweight Swing Radius Barricaded	☐ Load Swing Radius Barricaded	☐ Dunnage/Blocking Available to Secure Loads
☐ All wire rope inspected	☐ Chains and chain slings have capacity tags	☐ All hooks inspected for wear and deformation	☐ Signalman Present	☐

6. Subcontractor/Rigger AND Crane Operator Have Verified the Following (Mark N/A if Not Applicable)

☐ Crane Configuration in Compliance with Lift Plan	☐ Lift Area and Equipment Inspected	☐ Lift Plan and Crane Permit Reviewed with Erection/Demolition Crew	☐ Lift Plan and Crane Permit in Cab of Crane	☐ Demolition Plan (if applicable) in Cab of Crane

7. Load/Radius Confirmation (To Be Performed AFTER Permit Completion and Review)

☐ Crane Configuration in Compliance with Lift Plan	☐ Maximum Radius Confirmed (MEASURED) Without Load	☐ Maximum Load Confirmed Prior to Achieving Maximum Radius	☐ All Pick Points Vertically Above Load Center of Gravity (NO SIDE LOADS)	☐ Taglines In Use

ALL sections MUST be filled out prior to ANY load picks. Subcontractor/Rigger and Operator are Responsible for the Accuracy of all Calculations and Inspections.

Use Back Side for Continuations/Explanations. Please Reference Section Number

Printed Names & Signatures

Crane Operator		Subcontractor/Rigger	
Signature		Signature	

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11. Critical Lift Checklist

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12. Operator Certifications

NCCCO CERTIFIED

Operator

Certification #:1504112764R

Certification Designations:
LBT,LBC,TLL,TSS,BTF,STC

Issued to: **RICHARD E. WHATTON**

Issued: **04/30/2020** **Expires:04/30/2025**

Verify cardholder status at www.verifycco.org. Subject to provisions of suspension or revocation.

National Commission for the Certification of Crane Operators

Commonwealth of Pennsylvania Department of State
Bureau of Professional and Occupational Affairs

Crane Operator

License Number
LCO005025

Expiration Date
10/31/2022

Active

RICHARD E WHATTON
228 GIBSON DR
ELIZABETH, PA 15037

OFFICIAL DOCUMENT

READ THE FOLLOWING INFORMATION CAREFULLY CONCERNING YOUR LICENSE:

1. SIGN THE WALLET CARD AND CERTIFICATE WHERE INDICATED.
2. DETACH THE WALLET CARD AND CERTIFICATE AT PERFORATION.

Pennsylvania Licensing System (PALS)

Visit our website at: www.pals.pa.gov to renew your license, change your personal or license address, or order duplicate licenses.

RICHARD E WHATTON
228 GIBSON DR
ELIZABETH, PA 15037

DISPLAY THIS CERTIFICATE PROMINENTLY • NOTIFY AGENCY WITHIN 10 DAYS OF ANY CHANGE

Commonwealth of Pennsylvania
Department of State
Bureau of Professional and Occupational Affairs
PO BOX 2649 Harrisburg PA 17105-2649

20 0345350

License Type
Crane Operator

RICHARD E WHATTON
228 GIBSON DR
ELIZABETH, PA 15037

License Status
Active

Initial License Date
03/17/2016

Specialties	
Telescopic Boom Crane W/Fixed Control Station	NCCCO
Telescopic Boom Crane W/Rotating Control Station	NCCCO

License Number
LCO005025

Expiration Date
10/31/2022

NCCCO CERTIFIED

Rigger

Certification #: 1911183891

Certification Designations:

Rigger Level I

Rigger Level II

Issued to: **RICHARD E. WHATTON**

Issued: 11/30/2019 Expires: 11/30/2024

Kerry Hulse. President. NCCCO Board of Directors

Thom Sicklesteel. Chief Executive Officer. NCCCO

Verify cardholder status at www.verifycco.org. Subject to provisions of suspension or revocation.

National Commission for the Certification of Crane Operators

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13. Rigging and Signaling Certifications


BENSHAW
QUALIFIED RIGGER / SIGNAL PERSON
as per OSHA 29CFR part 1926.1430
Robert L Snyder
STEAMFITTERS
LOCAL 449
PITTSBURGH PA
Joint Apprentice & Journeymen
Training Committee of
Steamfitters L.U. 449 and the
Mechanical Contractors Association of WPA
Instructor
03/04/2014
Course Date


United Association
Industrial Rigging
Certificate of Qualification
Qualified in Strict Compliance with the
EPRI
Standardized Task Evaluation Program
MICHAEL SAMBROAK
ID: 002141664 Local: 449
General President

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14. Job Safety Analysis (JSA)

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CRANE LIFT JSA

Superintendent: Rick Gralish
Phone #: 412-260-9715

LIFT DATE: 10/22/2022

Foreman:
Phone #:

PROJECT NAME: CMU CIC Building412

JOB NUMBER:

JOB HAZARDS AND RISK DETAILS

TODAY'S DETAILED WORK SCOPE OR TASK DESCRIPTION & WORK AREA: Crane Lift

PPE REQUIRED: Safety Glasses, Hard Hat, Hivisibility Vest/ Shirt, Gloves, Safety Toe Shoes/Boots

TASK #	TASK	P0TENTIAL HAZARDS	CONTROL/PROCEDURE TO BE USED	DAILY CHECK LIST	Y	N	NA
1	Check the intended route and point of placement	SLIPS, TRIPS, FALLS, CRUSH INJURY, crane tip	Inspect the area immediately around the load and the route for clearance and tripping hazards. Clear movable objects from the route. Check for uneven terrain. Clean up spills that could affect foot traction.	Competent Person On Site?	✔		✔
		Lacerations, Splinters	Examine object for snags, burrs, splinters, sharp edges, nails. Remove objects prior to lift and/or wear gloves for hand protection.	Inclement Weather in The Forecast?	✔		
2	Secure the area	Pedestrians in site, struck by, slips, trips, and falls,	Secure area with caution/danger tape, have traffic controllers in place as well as people watching pedestrians in the area.				
2	Evaluate the load	Crush Injury	Check object for greasy/slippery surfaces. . Wear gloves to improve grip. Wear safety toe shoes/boots.	Emergency Response Plan in Place?	✔		
		Trips, Falls	If load will block your vision, get help.	Hot Work Permit Required?		✔	
	Performing the Lift	Crush Injury	Make sure lift is properly secured and person securing load is trained to do so. Do not pinch object between your thumb and forefinger. Wear gloves to improve grip. Make sure that tag lines are used and that nobody is under lift while object is being raised.	Required MSDS/SDS Available?	✔		
3	Setting equipment from crane	Crush injury, lose load	Make sure that there are trained professionals on site to give signals. This ensures that the correct signals are given to the crane operator and the load isn't swung in the wrong direction.	First Aid Kit w/Blood Borne Pathogen On Site?	✔		
4		Fall	100% fall protection - Flag line, Personal Fall Arrest System when outside of flag ine	Fire Extinguisher Required?	✔		
8	Break down crane	Slips, trips, falls, crushed by, stuck between,	Make sure the proper trained people are performing this task. Take your time and make sure you are doing the task properly and not rushing yourself because the lift has been completed.	Overhead Power lines/Utilities Present?		✔	
9				Under Ground Utilities Present/Identified?	✔		
10				GFCI Required?		✔	
11				Adequate Lighting in the Work Area?	✔		
12				Excavation/Trenching Check List Required?			✔
13				Dig Permit Required?			✔
14				Confined Space Permit Required?			✔
15				LOTO Required?			✔
16				Atmospheric Testing Required?			✔
17				Lift Plan Required?	✔		
18				Rigging/Slings Inspected?	✔		
19				Hooks/Shackles Inspected	✔		
20				Arial/Man Lift Pre-Inspection Required?			✔
	EMPLOYEE SIGNATURES:	7	**PAUSE**	PPE Required?	✔		
1		8	**What has changed?**	Fall Protection Required?		✔	
2		9	***Scope of Work**	Hearing Protection Required?		✔	
3		10	***Unexpected events, local activities**	Any Trip Hazards in Work?		✔	
4		11	***People: Pace, fatigue, etc.**				
5		12	***Other exposures**				
6		13					

RUTHRAUFF | SAUER SUPERINTENDENT/FOREMAN SIGNATURE:

Addional Notes:

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15. Activity Hazard Analysis (AHA)

Activity Hazard Analysis (AHA)

ACTIVITY/WORK TASK:	Crane Lift	Overall Risk Assessment Code (RAC) (Use highest code)	**M**
		Activity #	AHA #
FACILITY	CMU CIC Building	**Risk Assessment Code (RAC) Matrix**	
PRIME CONTRACTOR:	Ruthrauff-Sauer		
SUBCONTRACTOR:			
PREPARED BY	Eric Kostick		
CONTRACTOR COMPETENT PERSON:	Rick Gralish		
SITE SAFETY & HEALTH OFFICER			

SEVERITY	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Review each **"Hazard"** with identified safety **"Controls"** and determine (RAC)

E = EXTREMELY HIGH (PWO/OICC/ROICC)

H = HIGH RISK (FEAD DIRECTOR)

M = MODERATE RISK (CM or ET or PAR)

L = LOW RISK (ET or PAR)

Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" .Place the highest RAC at the top of AHA. This is the overall risk assessment code for this activity

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible after controls are in place

"Probability" is the likelihood to cause an incident, near miss, or accident did occur and identified as: Frequent, Likely, Occasional, Seldom, or Unlikely after controls are put in place.

Job Steps	Hazards	Controls	RAC
Basic & General Job Steps			
1. General Duties	1. Personal Injury, cuts, scrapes, lacerations, falling & flying objects, slips, trips and falls	**1.** **Standard PPE:** Hard hat, safety glasses, safety toe work boots (6" minimum), Safety vest, long pants, sleeved shirt	**L**
		1.1 **Additional PPE per task:** Personal fall arrest system, face shield, gloves, respirator, welding hood, rubber boots.	**L**
2. Use of power electrical tools	2. Puncture, Lacerations, muscle fatigue, shocks, energy surge.	**2.** Gloves rotate grip or hand position, elevate flex cords, GFCI protection required for all temp power except concrete vibrators Min - 12/3 Gauge extension cord, **HOT Electrical work is prohibited**.	**L**
3. Spills	3. Slips, trips, falls.	**3.** Maintain good housekeeping practices. Clean up all spills immediately, wastes and debris regularly all day – everyday.	**M**
4. Lifting Heavy Materials	4. Muscle sprains & sprains		

		4. Lift with your legs, Get help or use mechanical lifting device for heavy loads. Limit to 50lbs per person. Keep the load in front of you and close to your body.	**L**
5. Elevated work (general)	5. Falls to lower levels, falls onto hazardous objects	**5.** Only access areas that are secure walking surfaces. If an authorized walking/working surface is not available report to your supervisor for an authorized method of access. Barricade area below any/all elevated work activities (red danger tape with sign "Men Working Overhead"). Fall protection required when > 4" above working walking surface below.	**M**
6. Elevated work (Ladders)	6. Falls & Falling objects	**6.** Step ladders shall be fully extended with spreaders locked open. Extension ladders shall be secured at the top and bottom or held in place while in use. Use 3 point stance while ascending and descending ladders. Do not over reach while on ladder, your naval shall not extend beyond the ladder uprights. Barricade (danger tape) area below the elevated work to prevent unauthorized access. Employees trained on proper ladder safety. Users inspect ladders each use, Competent Person documented monthly inspections.	**M**
7. Elevated Work Activities Aerial Work Platforms	7. Falls, falling objects, caught between Struck by, tip over, electrocution.	**7.** Operator certification, Full body harness & lanyard. Maintain 10' minimum clearance from live power lines up to 50kv. Add 5' for each additional 150kv. Maintain ample clearance from immovable objects. Keep all body parts within the guard rail system.	**M**
8. Elevated work from scaffolding	8. Fall to lower, falling objects, slips, trips,	**8.** Use guardrail system when > 4' above working/walking, surface below. Keep materials and tools to the side of the of the walk area.	**M**
9. Other adjacent activities	9. Hearing loss, flying objects, falling Objects, asphyxiation, struck by, Slips, trips and falls.	**9.** Communicate with other trades working in close proximity to ensure hazard awareness for all personnel. Provide strong housekeeping practices all day and every day.	**L**
10. Material deliveries. Forklift	10. Rollover, falling loads, struck by, caught between.	**10.** Operators MUST be trained on equipment they operate. Check route surface to ensure obstacles are removed. Wear seat belt. Verify load weight and complete a dry run to ensure load is within load chart ratings. Extend boom into load & never drive into load. Cradle load firmly against forklift cage.	**M**
11. Laser Use	11. Flash Burn	**11.** DO NOT STARE INTO THE BEAM! Documented training on laser use safety. Post proper signage and barricades.	**L**
12. General Hot Work (flame or spark producing tasks)	12. Fire, explosion, burns.		**M**

The AHA shall be reviewed and modified as necessary to address changing site condition, operations or change of competent/qualified person's

13. Extreme Weather (Heat) 14. Use of 4” or 7” side grinders. 15. Changing of conditions and/or work activities or job steps.	13. Sunburn, Heat exhaustion, stress, stroke. 14. Flying objects & particles, sparks/fire, strains & sprains, hearing loss, > 85 decibels. 15. Hazardous Conditions frequently and constantly change. Changes are usually rapid or without notice.	**12.** Hot work Permit Required. Fire extinguisher, fire blankets. Protect nearby combustible materials. Protect all rigging gear from sparks and slag. **13.** Use sunscreen as needed, drink 8 – 12 ounces of water every 15 – 20 minutes. Continuous monitoring of personnel. **14.** Face shield, fire watch, fire blankets to protect nearby materials and/or equipment. Use both hands on grinder, with side handle, hearing protection. **15.** Stand back and take a minute to re-assess the work area for any hazards and hazardous conditions that may have appeared since the initial hazard assessment. Any/all hazards that were not addressed on the AHA / JSA shall be documented on same. AHA / JSA are living documents. The re-assessment practice shall be frequently throughout the day as needed. Use the 20 – 20 – 20 rule; Every 20 minutes, take 20 seconds and look 20 feet.	**L** **M** **M** **L**
(Insert task) **Task Specific Job Steps:** 1. General Duties 2. Use of power tools 4. Lifting heavy materials 5. Elevated work (general)	**Task Specific Hazards:** 1. Personal Injury, cuts, scrapes, lacerations, falling & flying objects, slips, trips and falls 2. Puncture, Lacerations, muscle fatigue, shocks, energy surge. 3. Slips, trips, falls. 4. Muscle sprains & sprains	**Task Specific Controls:** Standard PPE: Hard hat, safety glasses, safety toe work boots (6" minimum), Safety vest, long pants, sleeved shirt 1.1 Additional PPE per task: Personal fall arrest system, face 2. Gloves rotate grip or hand position, elevate flex cords, GFCI protection required for all temp power except concrete vibrators Min - 12/3 Gauge extension cord, HOT Electrical work is prohibited. 3. Maintain good housekeeping practices. Clean up all spills immediately, wastes and debris regularly all day – everyday.	L L L

The AHA shall be reviewed and modified as necessary to address changing site condition, operations or change of competent/qualified person’s

Encl. (4)

Job Steps	Hazards	Controls	RAC
6. Elevated work (ladders) 8. Elevated work from scaffolding 9. Other adjacent activities 14. Use of grinders 16. Changing of condition and/or work activities 17. Crane Lift	5. Falls to lower levels, falls onto hazardous objects 6. Falls and falling objects 7. Caught between, struck by, tip over, electrocution 8. Slips trips and falls 14. Flying objects and particles, sparks/fire, strains/sprains, 16. Hazardous condition constantly change. Changes are usually rapidly and without notice. 17. Pinch points, caught between, suspended loads, slips/trips/falls, overhead hazards, school pedestrians, tag line usage.	4. Lift with your legs, Get help or use mechanical lifting device for heavy loads. Limit to 50lbs per person. Keep the load in front of you and close to your body. 5. Only access areas that are secure walking surfaces. If an authorized walking/working surface is not available report to your supervisor for an authorized method of access. Barricade area below any/all elevated work activities (red danger tape with sign "Men Working Overhead"). Fall protection required when > 4" above working walking surface below. 6. Step ladders shall be fully extended with spreaders locked open. Extension ladders shall be secured at the top and bottom or held in place while in use. Use 3 point stance while ascending and descending ladders. Do not over reach while on ladder, your naval shall not extend beyond the ladder uprights. Barricade (danger tape) area below the elevated work to prevent unauthorized access. Employees trained on proper ladder safety. Users inspect ladders each use, Competent Person documented monthly inspections. 8. Use guardrail system when > 4' above working/walking, surface below. Keep materials and tools to the side of the of the walk area. 9. Communicate with other trades working in close proximity to ensure hazard awareness for all personnel. Provide strong housekeeping practices all day and every day. 16. Stand back and take a minute to re-assess the work area for any hazards and hazardous conditions that may have appeared since the initial hazard assessment. Any/all hazards that were not addressed on the AHA / JSA shall be documented on same. AHA / JSA are living documents. The re-assessment practice shall be frequently throughout the day as needed. Use the 20 – 20 – 20 rule; Every 20 minutes, take 20 seconds and look 20 feet. 17. Be aware of the load at all times. Do not walk under any suspended loads. Have communication with signal person and crane operator at all times. Provide a clear path to material to be transported for tag liners and cart workers.	L M M M L L

The AHA shall be reviewed and modified as necessary to address changing site condition, operations or change of competent/qualified person's

Encl. (4)

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
Crane & Rigging Gear Forklift, Pallet Jacks **Ladders** Scaffolding Aerial Work Platforms **Personal Fall Arrest System** **Hand & Power Tools** Material Jacks Laser Levels Oxygen / Acetylene Torch Set Up Welder **Portable Generator** **Fire Extinguisher** Smoke eater Fans	**Training** **Equipment Operator** **Rigging & Hand Signals** Forklift Ladder Safety Scaffold Erector & Competent Person **Fall Protection User & Competent Person** Respiratory Protection **Tool Specific** Lasers **Competent / Qualified Persons by Discipline** Lift Supervisor CP Scaffolds CP **Fall Protection CP** **Fall Protection QP** Confined Spaces CP Respiratory Protection CP Welding / Cutting CP	**Equipment (Daily)** Ladders (Daily) Scaffolds (Each shift & per change) PFAS (Daily User) PFAS (Semi Annual CP) **Guard Rail Systems (Daily CP)** Respirators (Daily User) **General PPE (Daily User)** **Tools (Daily User)** **Fire Extinguishers (Monthly CP)**

The AHA shall be reviewed and modified as necessary to address changing site condition, operations or change of competent/qualified person's

Encl. (4)

Instructions for completing Contractor Activity Hazard Analysis

1. **Activity/Work Task – Insert work/task this AHA is written for i.e. excavation, scaffold building, foundation preparation.**
2. **Enter name AHA accepted by for contract**
3. **Enter Prime Contractors name**
4. **Enter Subcontractors name**
5. **Enter name of contractor competent person on site for this activity**
6. **Enter name of Site Safety and Health Officer**
7. **Overall Risk Assessment code is highest code assigned to any Job step after Hazards are assessed and controls have been assigned**
8. **Schedule number is activity number from production daily reports**
9. **AHA number is the sequential number of all AHA's for this contract.**
10. **Job steps is the complete sequence of work, not general statements to complete the entire activity**
11. **Hazards is the known safety risks associated with completing the task**
12. **Controls is the safety measures in place to reduce the hazard to the lowest level possible**
13. **Risk Assessment code is where Severity and Probability intersect, place that letter E, H, M, or L in the RAC column**
14. **List all equipment to be used to complete this activity i.e. crane, backhoe, vehicle, all heavy equipment**

The AHA shall be reviewed and modified as necessary to address changing site condition, operations or change of competent/qualified person's

Encl. (4)

RUTHRAUFF SAUER
Engineers / Mechanical Contractors

Additional Documentation

SCHEDULE

ROAD AND
SIDEWALK
CLOSURE MAP

SCHEDULE

October 17-21
Shut down RTU, evacuate refrigeration circuits, disconnect power to unit, disconnect duct to unit, disassemble shipping split of unit in preparation of rigging

October 22
Crane existing (2) RTU sections down and onto trucks, lift roofing material, lift duct material, lift roof curb pieces, lift miscellaneous material and tools

October 24-November 4
Remove existing curb, install new curb, miscellaneous duct, electrical, control work to prepare for new unit install

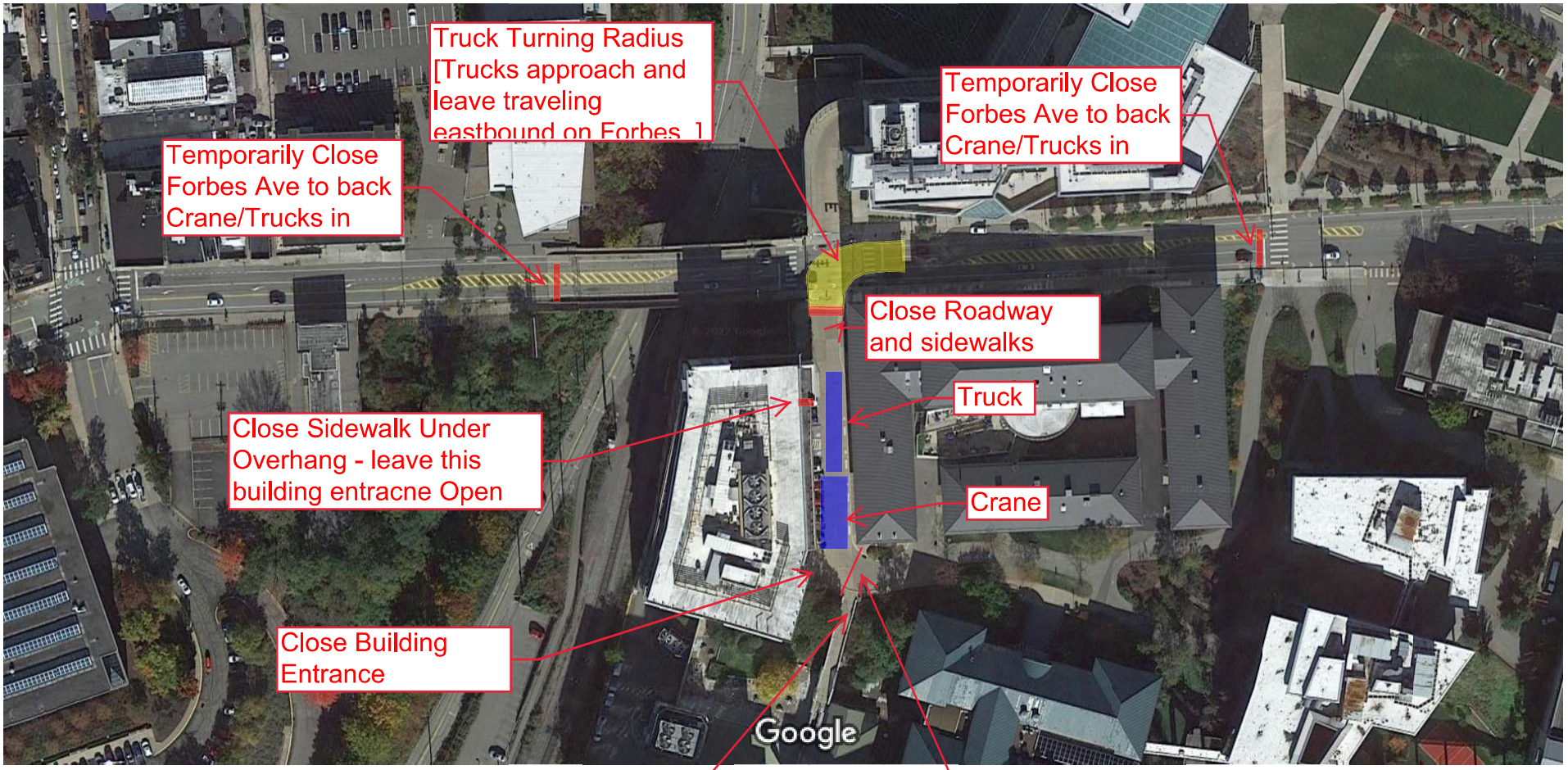
November 5
Lift (3) new RTU sections to roof and set on new curb, lift old curb pieces and roofing debris from prior curb demolition/installation

November 7-11
Startup, checkout new RTU

The new unit can operate and have any issues addressed before the second unit is changed out starting Monday, January 2, 2023 using the same timeline as above. Again, this is all tentative and we will prepare and send a more formal schedule once we have an approved Crane Lift Plan and approval of the start date.

The above timeline does not account for any possible weather delays, particularly associated with the roofing work.

Google Maps



Misc Notes:
Need traffic & pedestrian control plan to submit to Carnegie Mellon University.
Contractor is Ruthrauff Sauer.
This closure will occur (4) times
Start 6pm Friday night, build crane through night, pick first thing Saturday Morning, Tear down and out of there by Saturday Night - Sunday is contingency day. Crane must be out of there by 6am Monday Morning.