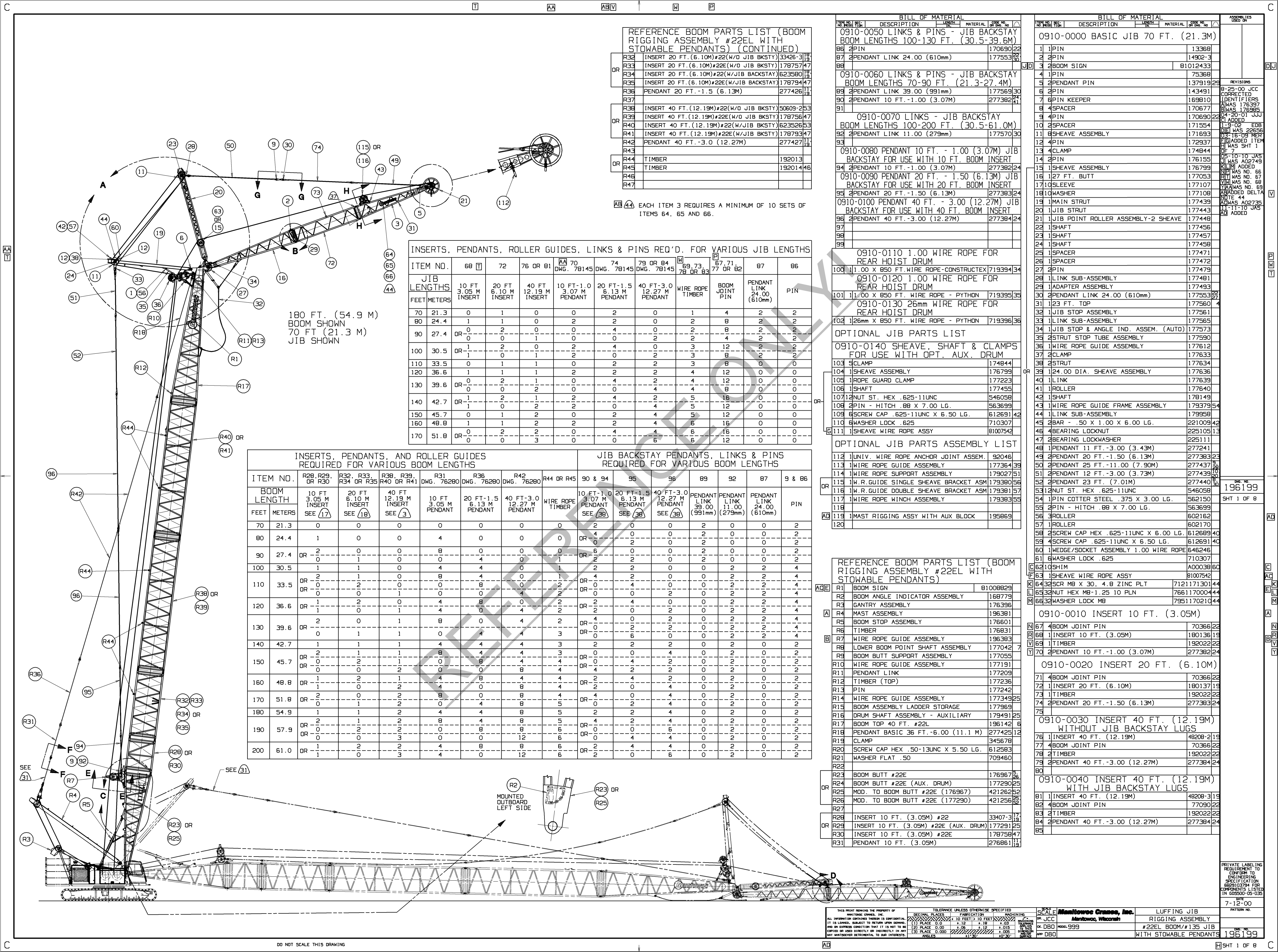
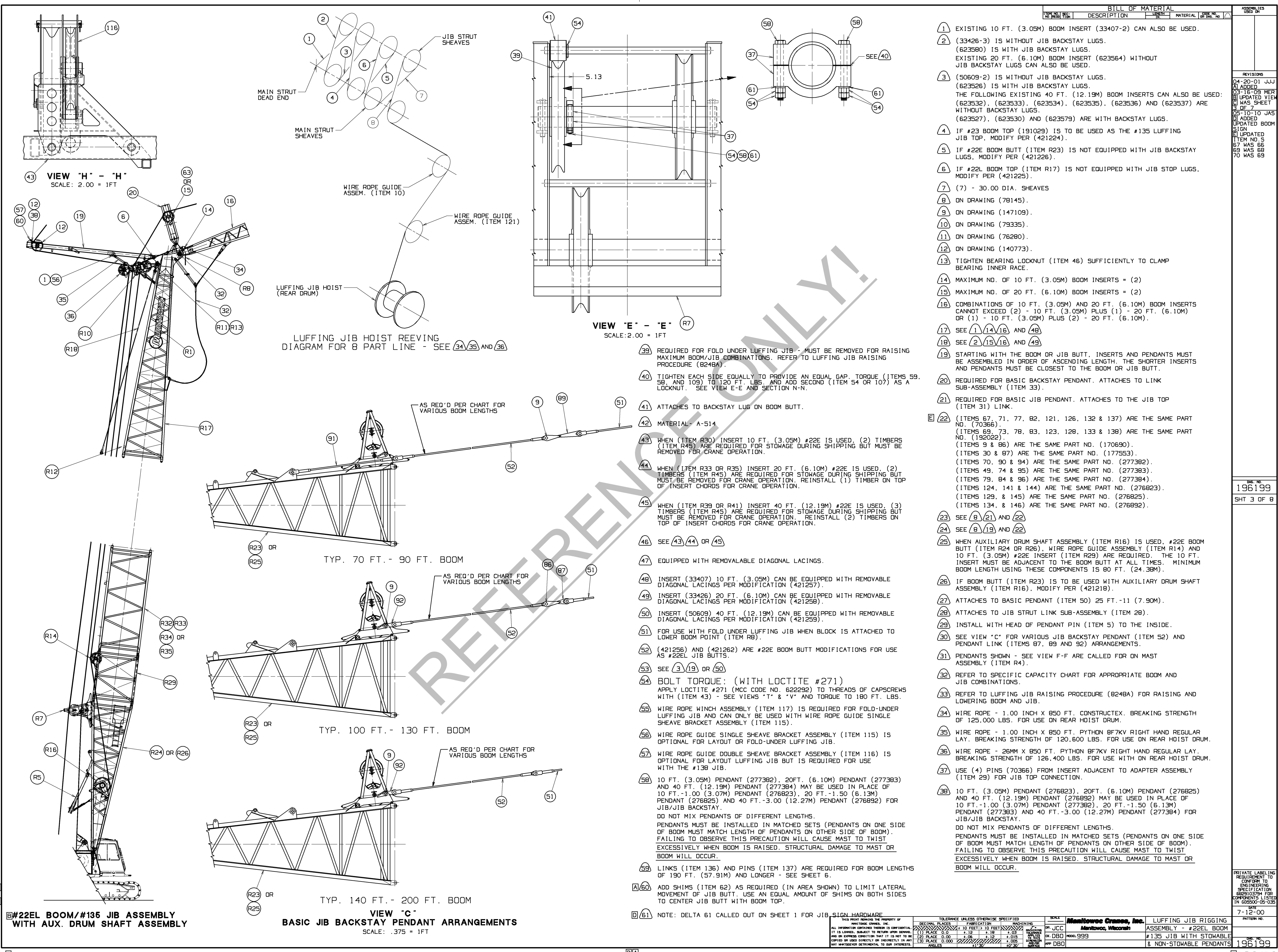






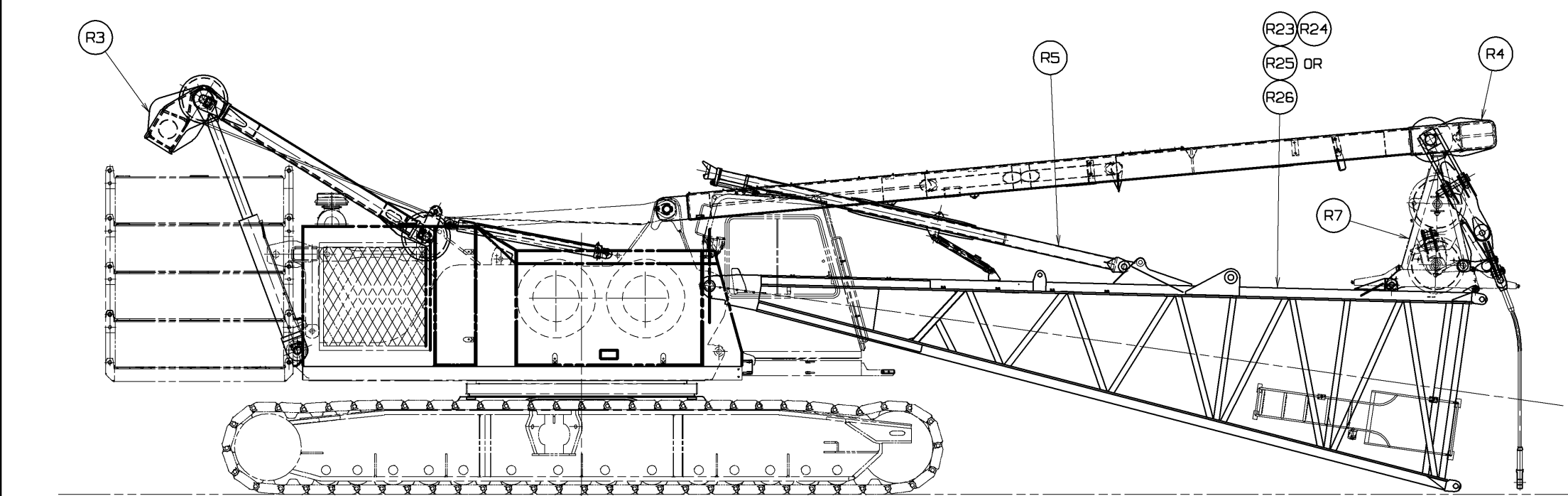
BILL OF MATERIAL				ASSEMBLIES USED IN
NO.	QTY.	DESCRIPTION	UNIT	NO.
REVISIONS				
04-20-01 JJJ				
A1 ADDED				
03-18-09 MER				
B1 UPDATED VIEW				
C1 WAS SHEET				
D1 OF 2				
05-10-10 JAS				
E1 ADDED				
F1 UPDATED				
SIGN				
ITEM NO. 5				
67 WAS 66				
69 WAS 68				
70 WAS 69				
196199				
SHT 3 OF 8				
DATE				
7-12-00				
PATTERN NO.				
PRIVATE LABELING REQUIREMENT TO CONFORM TO ENGINEERING SPECIFICATION 6629103794 FOR COMPONENTS LISTED IN 6629103794-05-025				
196199				
SHT 3 OF 8				

A
D
B
C

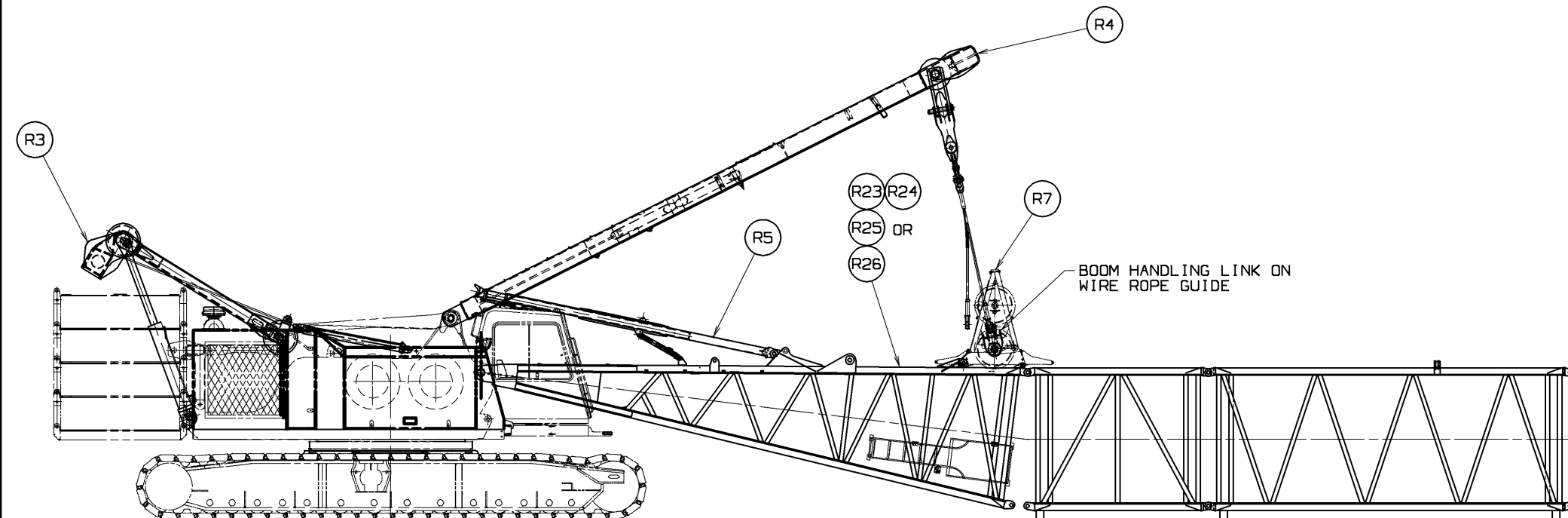
DIA

DO NOT SCALE THIS DRAWING

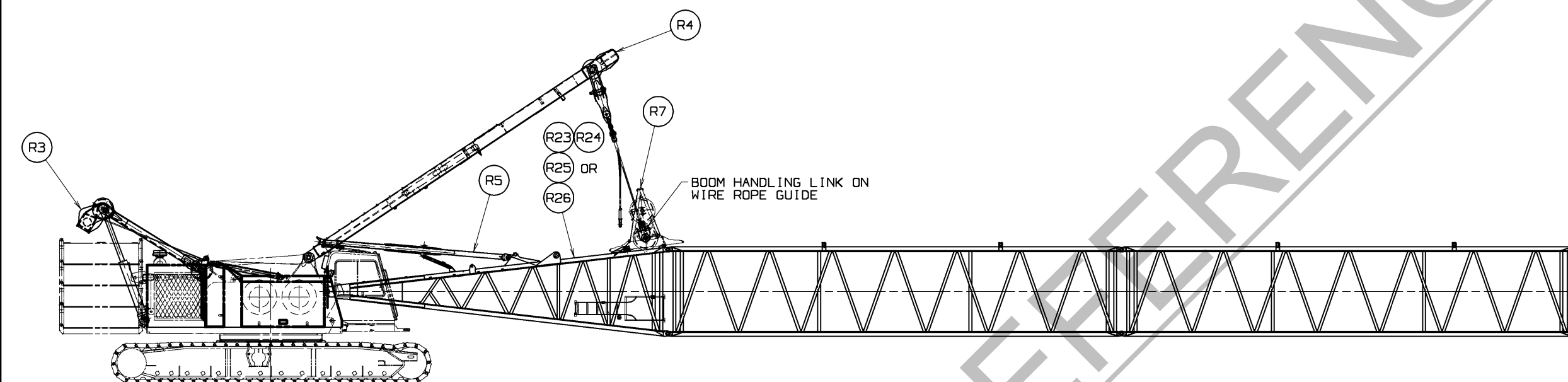
SHT 3 OF 8



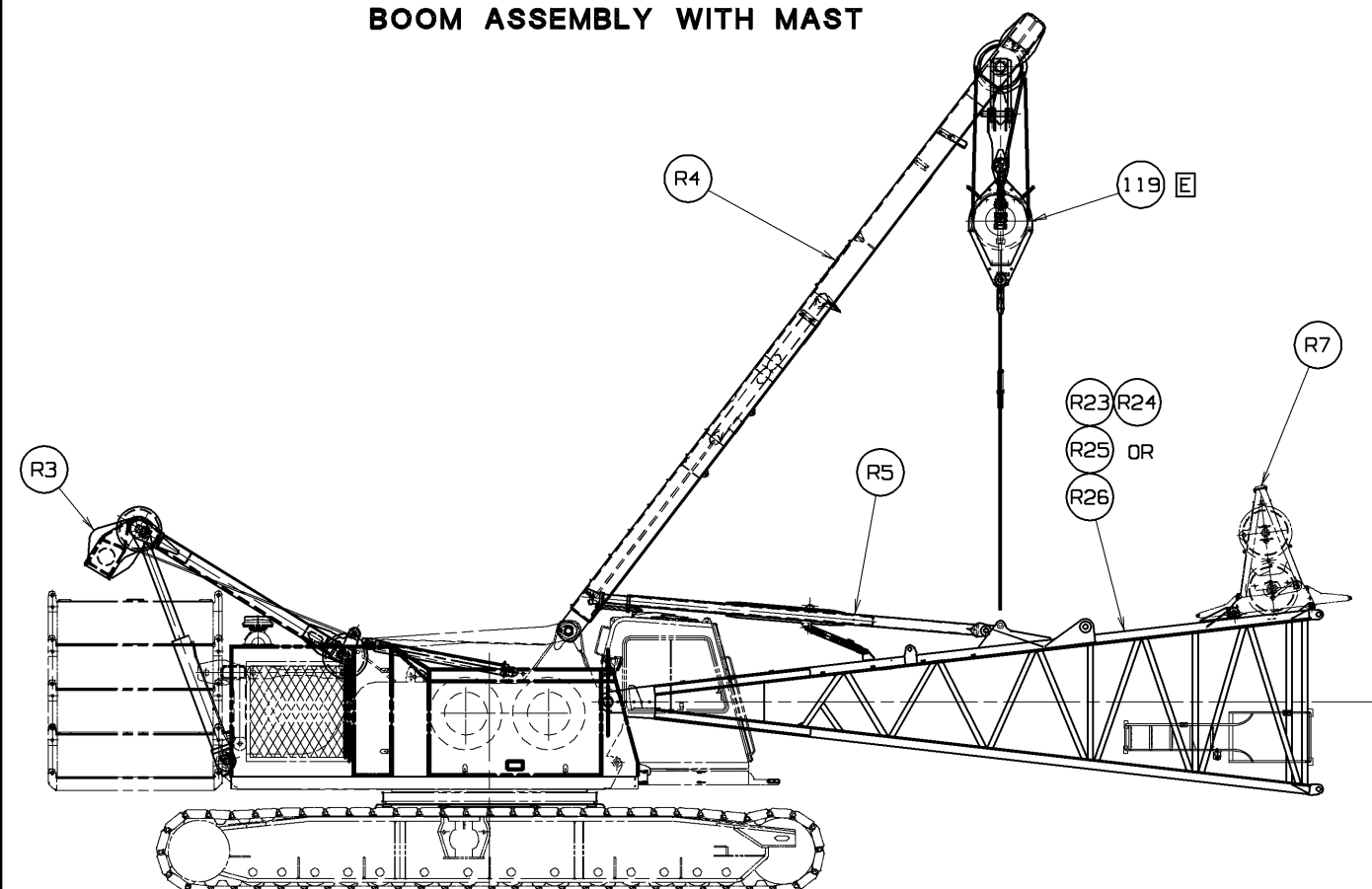
MAST RESTING ON BOOM BUTT WIRE ROPE GUIDE



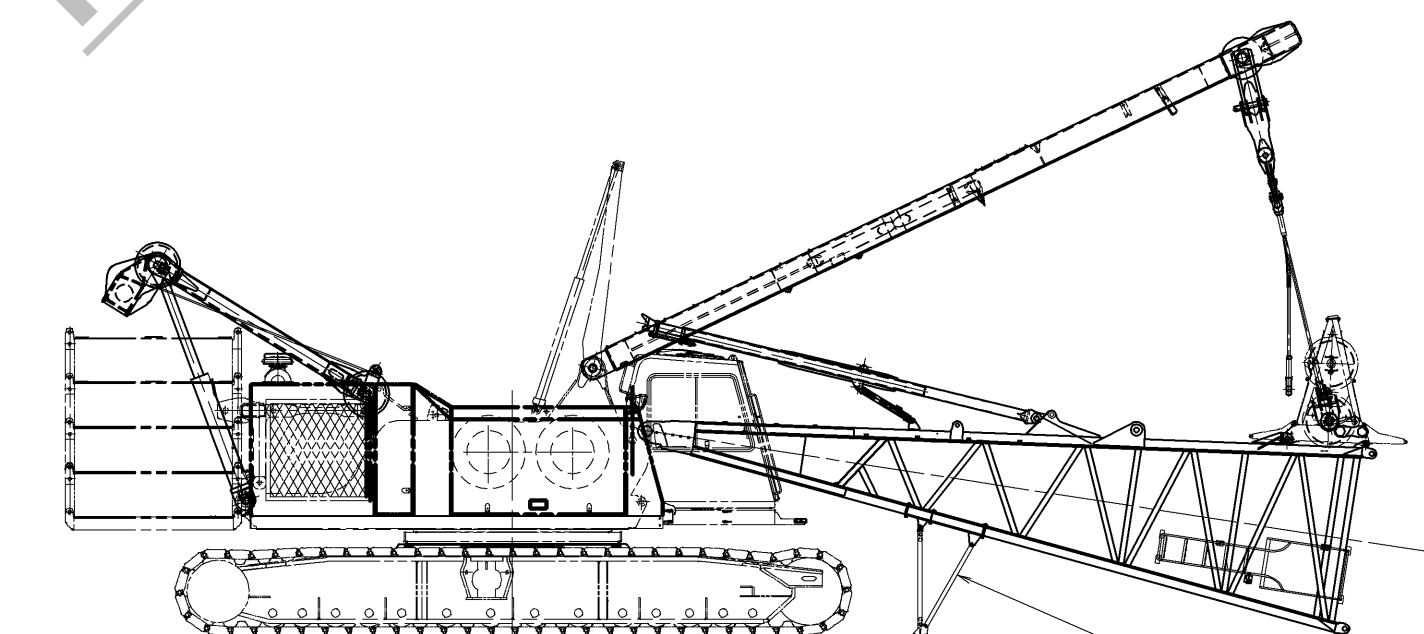
BOOM ASSEMBLY WITH MAST



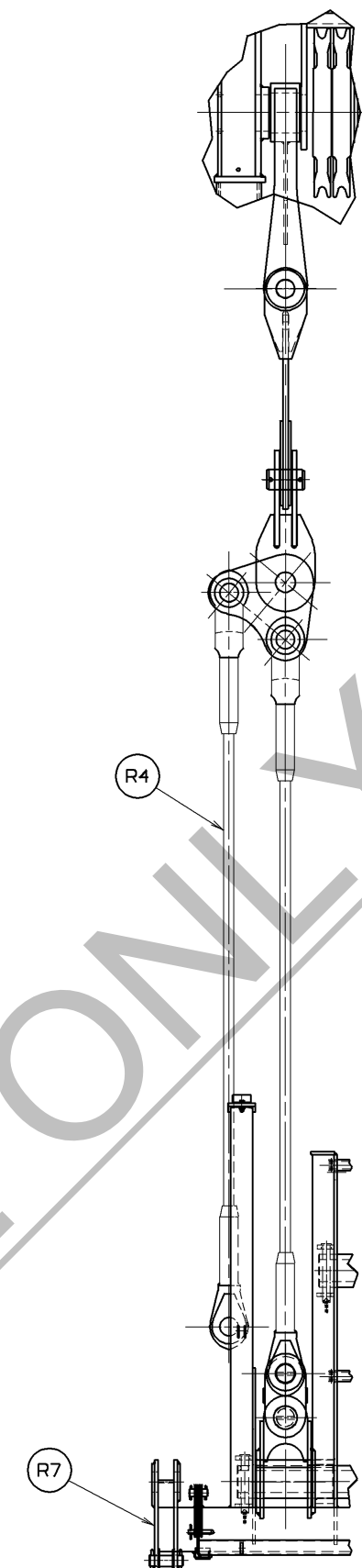
BOOM ASSEMBLY WITH MAST



ATTACHING BOOM BUTT TO ROTOTATING BED USING AUXILIARY BLOCK IN MAST



MAST RESTING ON BOOM BUTT WIRE ROPE GUIDE



VIEW "R" - "R"
SCALE: 1.00 = 1FT

BOOM ASSEMBLY PROCEDURE

(MAST CAN BE USED TO ASSEMBLE ALL RIGGING COMPONENTS.)

1. ASSEMBLE BOOM COMPLETE, WITHOUT BUTT.
2. ATTACH ROPE GUIDES, PENDANTS, LINKS AND PINS AS REQ'D.
3. USING THE MAST WITH AUXILIARY BLOCK (ITEM 119) OR THE OPTIONAL BOOM BUTT SUPPORT INSTALL THE BOOM BUTT WITH ROPE GUIDE AND BOOM STOPS TO ROTATING BED.
(BOOM STOPS MUST BE IN SHIPPING (LOWER) POSITION.)
4. BOOM DOWN AND ATTACH INSIDE MAST PENDANT TO BOOM HANDLING LINK ON ROPE GUIDE (ITEM R7) - SEE VIEW "R-R"
5. BOOM UP TO CLEAR GROUND WITH BUTT.
6. POSITION MACHINE TO ALIGN UPPER PIN CONNECTOR HOLES ON BOOM BUTT WITH UPPER PIN CONNECTOR HOLES ON FIRST BOOM INSERT AND INSERT PINS.
7. SLOWLY BOOM UP TO ALIGN LOWER PIN CONNECTOR HOLES ON BOOM BUTT WITH LOWER PIN CONNECTOR HOLES IN FIRST BOOM INSERT AND INSERT PINS.

WARNING:

DO NOT BOOM UP PAST LOWER CONNECTOR HOLES. IF BOOMING UP CONTINUES AFTER CONNECTORS BOTTOM OUT OR AFTER PINS ARE INSERTED, DAMAGE TO ROPE GUIDE AND BOOM BUTT WILL OCCUR.

8. BOOM DOWN TO DISCONNECT MAST PENDANT FROM ROPE GUIDE LINKS.
9. ATTACH MAST PENDANT TO BOOM PENDANTS.
10. BOOM UP TO REMOVE SOME SLACK FROM PENDANTS.
- ☒ 11. CONNECT HANDLING PENDANTS TO BOOM STOPS AND RAISE BOOM STOPS INTO POSITION. PIN STRUTS IN EXTENDED POSITION. STOW HANDLING PENDANTS.
12. BOOM UP TO DESIRED BOOM ANGLE.

TO DISASSEMBLE BOOM

1. BOOM DOWN AND SUPPORT BOOM ON BLOCKING.
2. LOWER BOOM STOPS.
3. DISCONNECT MAST PENDANT FROM BOOM PENDANTS
4. CONNECT INSIDE MAST PENDANTS TO HANDLING LINK ON ROPE GUIDE (ITEM R7) - SEE VIEW "R"-"R"
5. BOOM UP TO REMOVE SLACK FROM MAST PENDANT.

WARNING:

DO NOT BOOM UP TO PUT TENSION INTO MAST PENDANT. (REMOVE SLACK ONLY)
TENSION IN MAST PENDANT WILL DAMAGE ROPE GUIDE AND BOOM BUTT.

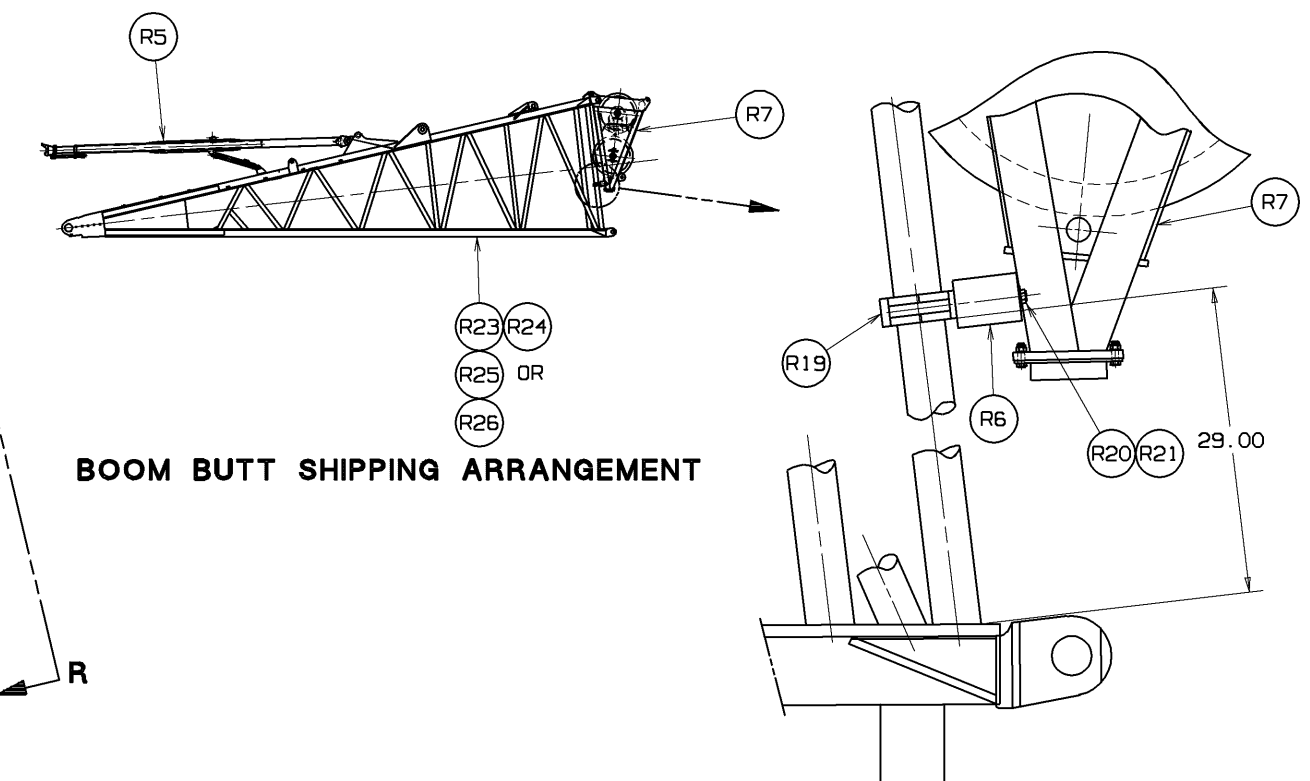
6. REMOVE LOWER AND THEN UPPER BOOM BUTT CONNECTOR TO BOOM INSERT CONNECTOR PINS.

WARNING:

BOOM MUST BE PROPERLY BLOCKED TO PREVENT SHIFTING DURING PIN REMOVAL.

7. SLOWLY BOOM UP TO SUPPORT BOOM BUTT WITH MAST PENDANT AND BACK AWAY FROM BOOM.
8. REMOVE BOOM BUTT FROM ROTATING BED WITH MAST.
9. DISASSEMBLE BOOM WITH MAST.

BOOM HANDLING WITH MAST			
WITH MAST PENDANTS PINNED TO ROPE GUIDE LINKS: MAXIMUM BOOM THAT CAN BE CANTILEVERED IS AS FOLLOWS:			
LENGTH	10 FT. (3.05 M) INSERT	20 FT. (6.10 M) INSERT	40 FT. (12.2 M) INSERT
40 FT. (12.2 M)	2	1	0
50 FT. (15.2 M)	1	2	0
60 FT. (18.3 M)	2	0	1
60 FT. (18.3 M)	0	1	1
80 FT. (24.4 M)	0	0	2

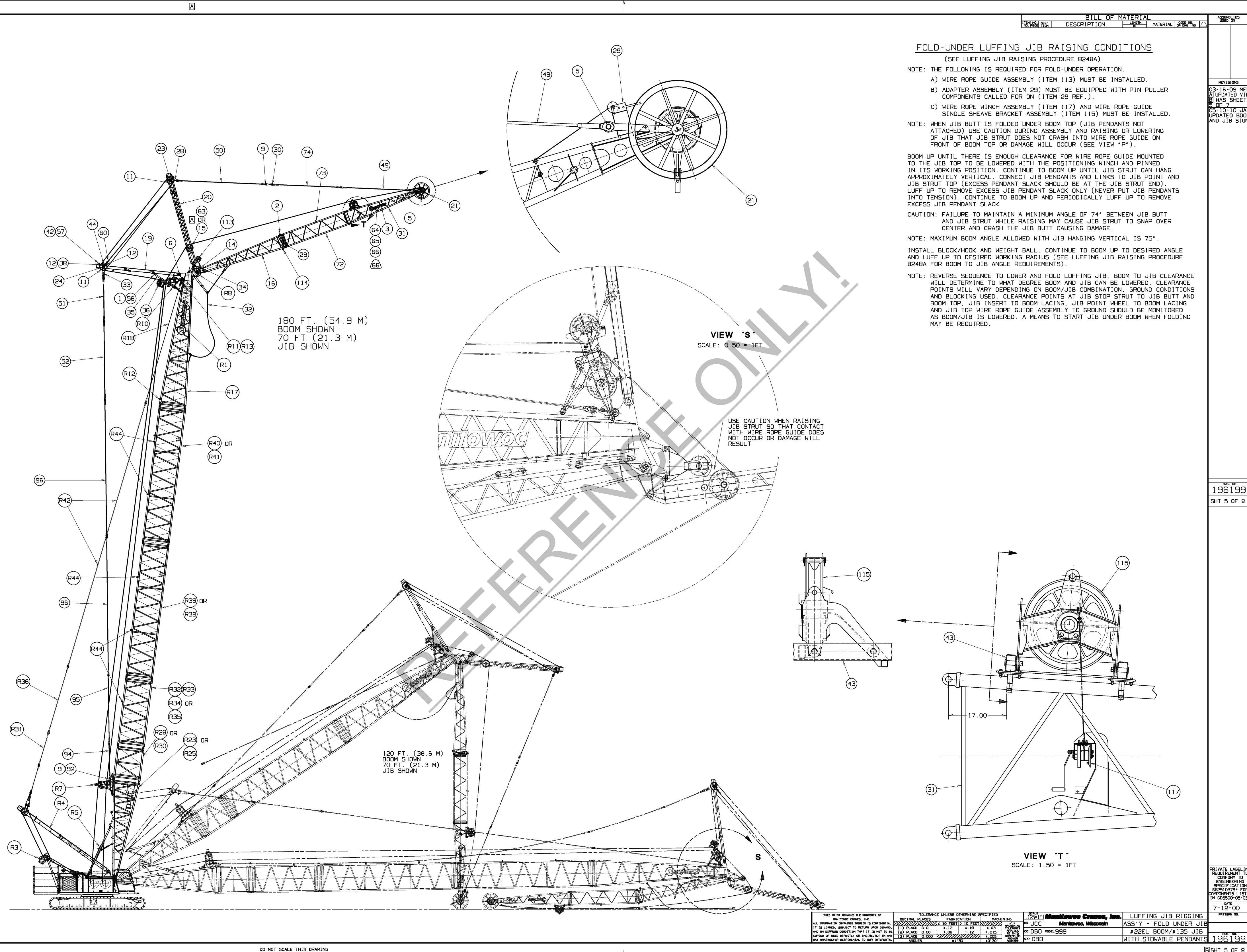


BOOM BUTT SHIPPING ARRANGEMENT

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	(1) PLACE 0.0 ± .12 ± .18 ± .03			DR JCC			
	(2) PLACE 0.0 ± .06 ± .12 ± .015			DR DBO			
	(3) PLACE 0.000 ± .003 ± .005 ± .001			DR DBO			
	(4) PLACE 0.000 ± .001 ± .002 ± .0005			DR DBO			
	MODEL 999			1981	1981	1981	

SHT 4 OF 8



FOLD-UNDER LUFFING JIB RAISING CONDITIONS

(SEE LUFFING JIB RAISING PROCEDURE 8248A)

NOTE: THE FOLLOWING IS REQUIRED FOR FOLD-UNDER OPERATION.

A) WIRE ROPE GUIDE ASSEMBLY (ITEM 113) MUST BE INSTALLED.

B) ADAPTER ASSEMBLY (ITEM 29) MUST BE EQUIPPED WITH PIN PULLER COMPONENTS CALLED FOR ON (ITEM 29 REF.).

C) WIRE ROPE WINCH ASSEMBLY (ITEM 117) AND WIRE ROPE GUIDE SINGLE SHEAVE BRACKET ASSEMBLY (ITEM 115) MUST BE INSTALLED.

NOTE: WHEN JIB BUTT IS FOLDED UNDER BOOM TOP (JIB PENDANTS NOT ATTACHED) USE CAUTION DURING ASSEMBLY AND RAISING OR LOWERING OF JIB THAT JIB STRUT DOES NOT CRASH INTO WIRE ROPE GUIDE ON FRONT OF BOOM TOP OR DAMAGE WILL OCCUR (SEE VIEW "P").

BOOM UP UNTIL THERE IS ENOUGH CLEARANCE FOR WIRE ROPE GUIDE MOUNTED TO THE JIB TOP TO BE LOWERED WITH THE POSITIONING WINCH AND PINNED IN ITS WORKING POSITION. CONTINUE TO BOOM UP UNTIL JIB STRUT CAN HANG APPROXIMATELY VERTICAL. CONNECT JIB PENDANTS AND LINKS TO JIB POINT AND JIB STRUT TOP (EXCESS PENDANT SLACK SHOULD BE AT THE JIB STRUT END). LUFF UP TO REMOVE EXCESS JIB PENDANT SLACK ONLY (NEVER PUT JIB PENDANTS INTO TENSION). CONTINUE TO BOOM UP AND PERIODICALLY LUFF UP TO REMOVE EXCESS JIB PENDANT SLACK.

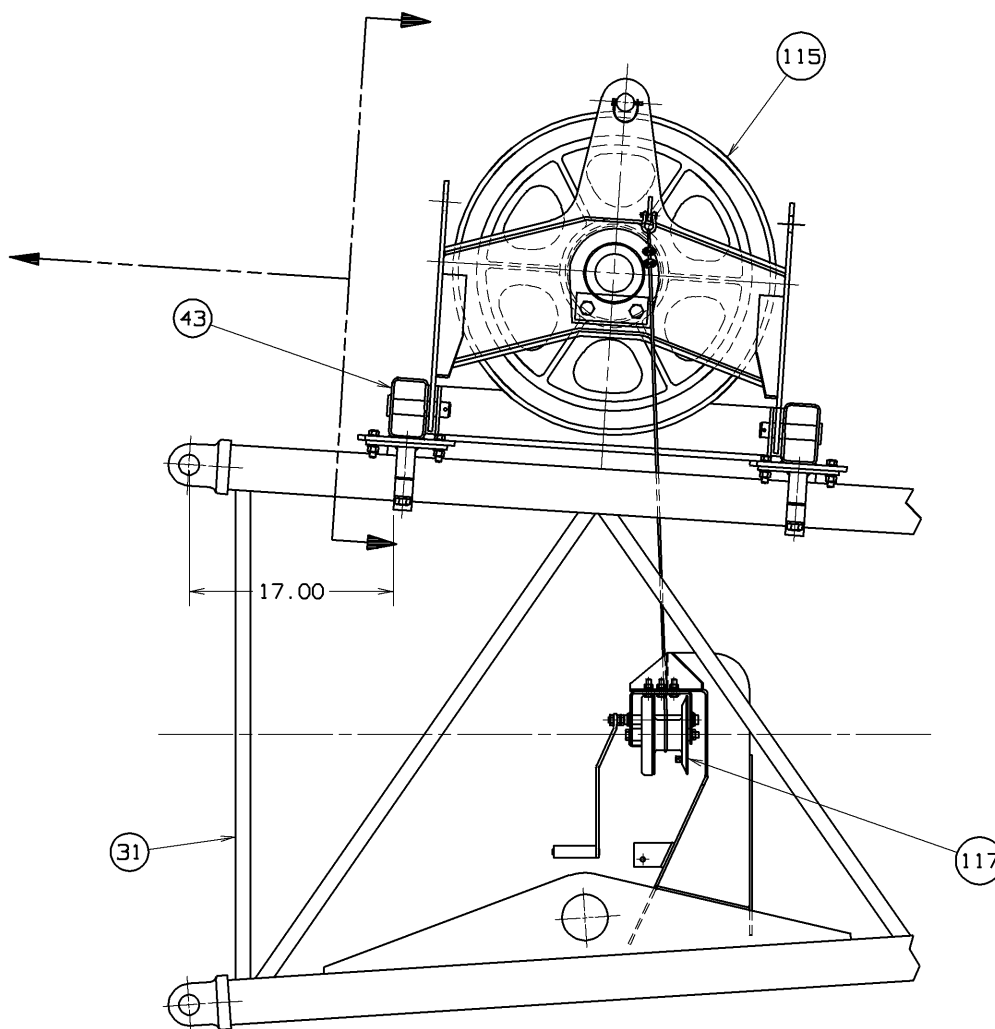
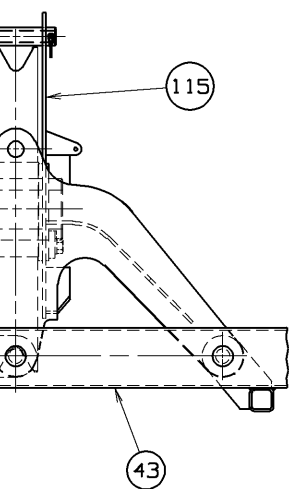
CAUTION: FAILURE TO MAINTAIN A MINIMUM ANGLE OF 74° BETWEEN JIB BUTT AND JIB STRUT WHILE RAISING MAY CAUSE JIB STRUT TO SNAP OVER CENTER AND CRASH THE JIB BUTT CAUSING DAMAGE.

NOTE: MAXIMUM BOOM ANGLE ALLOWED WITH JIB HANGING VERTICAL IS 75°.

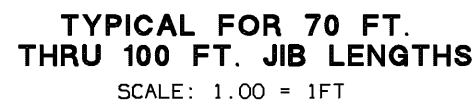
INSTALL BLOCK/HOOK AND WEIGHT BALL. CONTINUE TO BOOM UP TO DESIRED ANGLE AND LUFF UP TO DESIRED WORKING RADIUS (SEE LUFFING JIB RAISING PROCEDURE 8248A FOR BOOM TO JIB ANGLE REQUIREMENTS).

NOTE: REVERSE SEQUENCE TO LOWER AND FOLD LUFFING JIB. BOOM TO JIB CLEARANCE WILL DETERMINE TO WHAT DEGREE BOOM AND JIB CAN BE LOWERED. CLEARANCE POINTS WILL VARY DEPENDING ON BOOM/JIB COMBINATION, GROUND CONDITIONS AND BLOCKING USED. CLEARANCE POINTS AT JIB STOP STRUT TO JIB BUTT AND BOOM TOP, JIB INSERT TO BOOM LACING, JIB POINT WHEEL TO BOOM LACING AND JIB TOP WIRE ROPE GUIDE ASSEMBLY TO GROUND SHOULD BE MONITORED AS BOOM/JIB IS LOWERED. A MEANS TO START JIB UNDER BOOM WHEN FOLDING MAY BE REQUIRED.

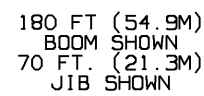
USE CAUTION WHEN RAISING JIB STRUT SO THAT CONTACT WITH WIRE ROPE GUIDE DOES NOT OCCUR OR DAMAGE WILL RESULT



TOLERANCE UNLESS OTHERWISE SPECIFIED				MANITOWOC CRANES, INC.		LUFFING JIB RIGGING	
DECIMAL PLACES	FRACTIONS	INCHES	FEET	DR: JCC	DATE: 03-16-09	ASS'Y - FOLD UNDER JIB	DATE: 03-16-09
(1) PLACE 0.0	1/16	1/16	1/16	CK: DBO	MODEL: 999	#22EL BOOM/#135 JIB	DATE: 05-10-10
(2) PLACE 0.00	1/32	1/32	1/32	APP: DBO		WITH STOWABLE PENDANTS	DATE: 05-10-10
(3) PLACE 0.000	1/64	1/64	1/64				DATE: 05-10-10
ANGLES	1/4	1/4	1/4				DATE: 05-10-10

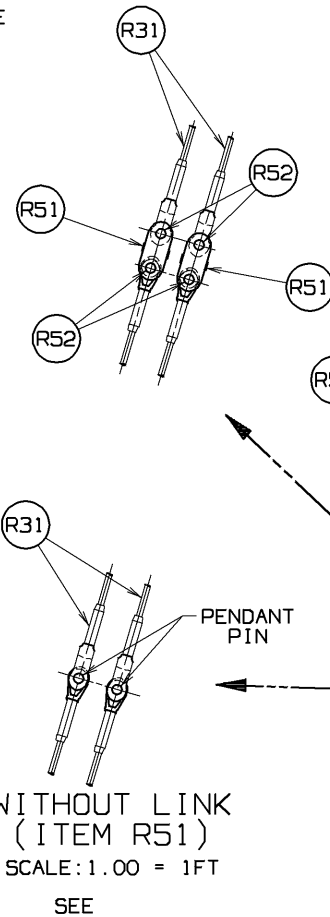


BILL OF MATERIAL						
ITEM NO.	QTY.	DESCRIPTION	UNIT	MATERIAL	CODE NO.	
0910-0150 INSERT 10 FT. (3.05M)						
WITH NON-STOWABLE PENDANTS						
121	4	BOOM JOINT PIN			70366	22
122	1	INSERT 10 FT. (3.05M)			180136	19
123	1	TIMBER			192022	23
124	2	PENDANT 10 FT. (3.05M)			276823	24
125						
0910-0160 INSERT 20 FT (6.10M)						



INSERTS, NON-STOWABLE PENDANTS, AND ROLLER GUIDES
REQUIRED FOR VARIOUS BOOM LENGTHS

JIB BACKSTAY PENDANTS, LINKS & PINS REQUIRED FOR VARIOUS BOOM LENGTHS



#22EL BOOM/#135 JIB ASSEMBLY WITH NON-STOWABLE PENDANTS

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AND ON EXPRESS CONDITION THAT IT IS NOT TO BE
COPIED OR USED DIRECTLY OR INDIRECTLY IN ANY
MAY WHATSOEVER DETRIMENTAL TO OUR INTERESTS

TOLERANCE UNLESS OTHERWISE SPECIFIED			
DECIMAL PLACES	FABRICATION		MACHINING
	≤ 10 FEET	> 10 FEET	
(1) PLACE 0.0	± .12	± .18	± .03
(2) PLACE 0.00	± .06	± .12	± .015
(3) PLACE 0.000			± .005
ANGLE			± 0.030°

SCALE	125=1F	Manitowoc Cranes, Inc. Manitowoc, Wisconsin	
DR.	JCC		
CK.	DBO		MODEL 999
APP.	DBO		

LUFFING JIB
RIGGING ASSEMBLY
#22EL BOOM/#135 JIB W/
NON-STOWABLE PENDANTS

PRIVATE LABELING
REQUIREMENT TO
CONFORM TO
ENGINEERING
SPECIFICATION
6829103794 FOR
COMPONENTS LISTED
IN GDS500-05-035

DATE
7-12-00

PATTERN NO.

QWS. NO.
196199

FOLD-UNDER LUFFING JIB RAISING CONDITIONS

(SEE LUFFING JIB RAISING PROCEDURE 8248A)

NOTE: THE FOLLOWING IS REQUIRED FOR FOLD-UNDER OPERATION.

- A) WIRE ROPE GUIDE ASSEMBLY (ITEM 113) MUST BE INSTALLED.
B) ADAPTER ASSEMBLY (ITEM 29) MUST BE EQUIPPED WITH PIN PULLER COMPONENTS CALLED FOR ON (ITEM 29 REF.).
C) WIRE ROPE WINCH ASSEMBLY (ITEM 117) AND WIRE ROPE GUIDE SINGLE SHEAVE BRACKET ASSEMBLY (ITEM 115) MUST BE INSTALLED.

NOTE: WHEN JIB BUTT IS FOLDED UNDER BOOM TOP (JIB PENDANTS NOT ATTACHED) USE CAUTION DURING ASSEMBLY AND RAISING OR LOWERING OF JIB THAT JIB STRUT DOES NOT CRASH INTO WIRE ROPE GUIDE ON FRONT OF BOOM TOP OR DAMAGE WILL OCCUR (SEE VIEW "P").

BOOM UP UNTIL THERE IS ENOUGH CLEARANCE FOR WIRE ROPE GUIDE MOUNTED TO THE JIB TOP TO BE LOWERED WITH THE POSITIONING WINCH AND PINNED IN ITS WORKING POSITION. CONTINUE TO BOOM UP UNTIL JIB STRUT CAN HANG APPROXIMATELY VERTICAL. CONNECT JIB PENDANTS AND LINKS TO JIB POINT AND JIB STRUT TOP (EXCESS PENDANT SLACK SHOULD BE AT THE JIB STRUT END). LUFF UP TO REMOVE EXCESS JIB PENDANT SLACK ONLY (NEVER PUT JIB PENDANTS INTO TENSION). CONTINUE TO BOOM UP AND PERIODICALLY LUFF UP TO REMOVE EXCESS JIB PENDANT SLACK.

CAUTION: FAILURE TO MAINTAIN A MINIMUM ANGLE OF 74° BETWEEN JIB BUTT AND JIB STRUT WHILE RAISING MAY CAUSE JIB STRUT TO SNAP OVER CENTER AND CRASH THE JIB BUTT CAUSING DAMAGE.

NOTE: MAXIMUM BOOM ANGLE ALLOWED WITH JIB HANGING VERTICAL IS 75°.

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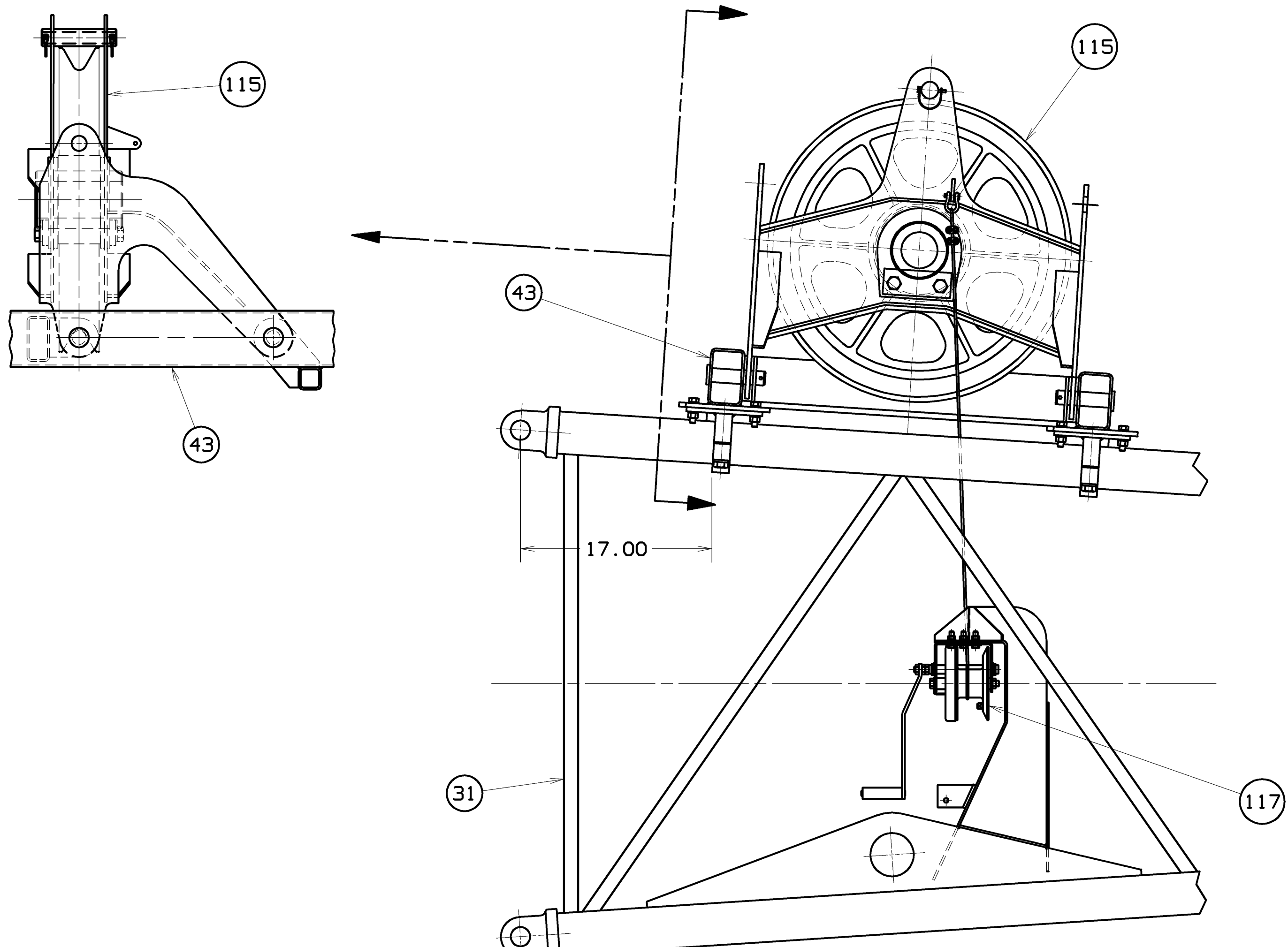
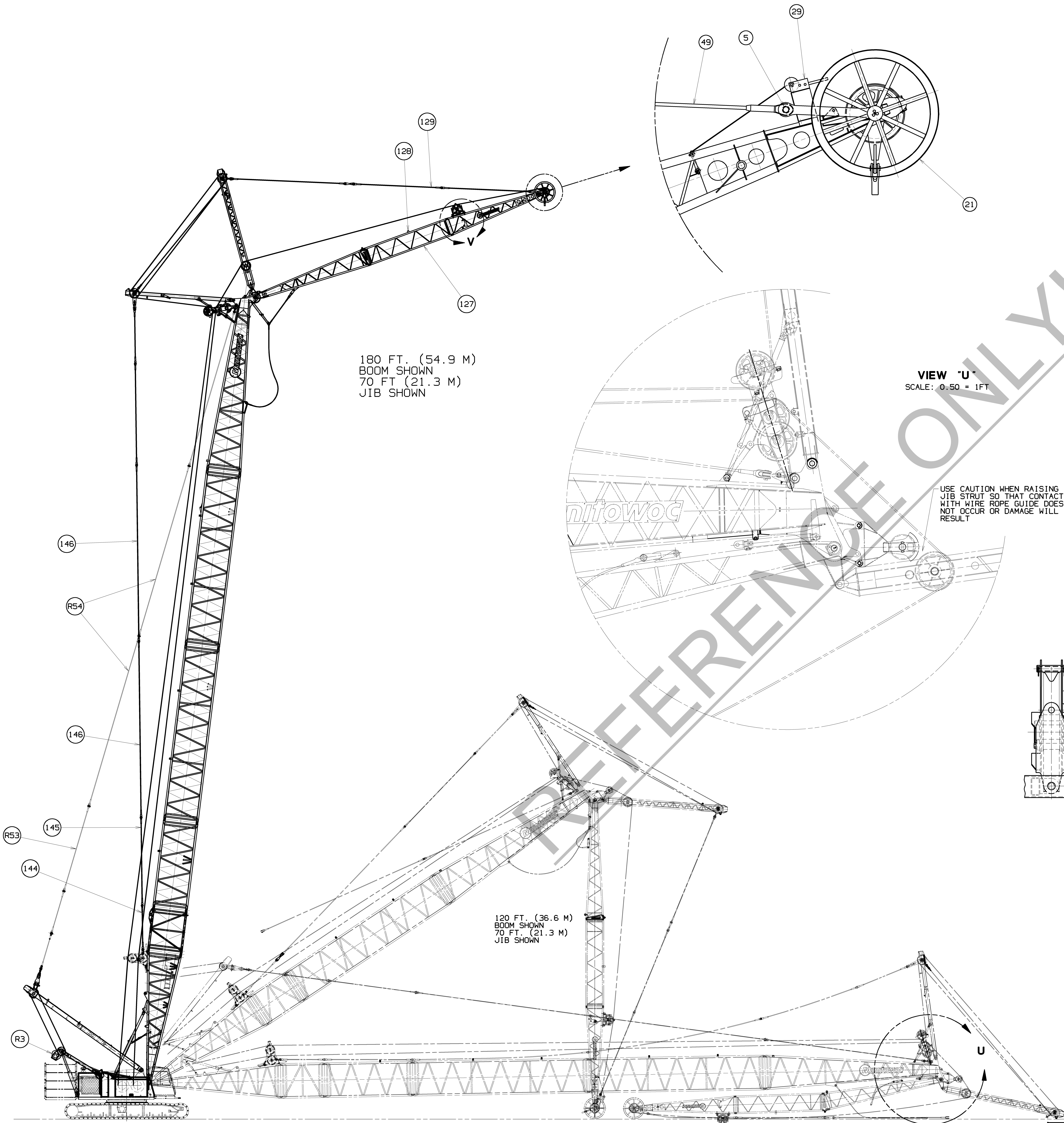
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REVISIONS
03-16-09 MER
A) WAS SHEET
7 OF 7
05-10-10 JAS
UPDATED BOOM
AND JIB SIGNS

ENG. NO.
196199
SHT 7 OF 8

PRIVATE LABELING
REQUIREMENT TO
CONFORM TO
ENGINEERING
SPECIFICATION
6829103794 FOR
COMPONENTS LISTED
IN 6829103794-005
DATE
7-12-00
PATTERN NO.

ENG. NO.
196199
SHT 7 OF 8



THIS PRINT NOTWITHSTANDING THE PROPERTY OF MANITOWOC CRANES, INC.				MANITOWOC CRANES, INC.		LUFFING JIB RIGGING	
TOLERANCE UNLESS OTHERWISE SPECIFIED:				FABRICATION		JCC	
DECIMAL PLACES				LESS THAN 10 FEET		10 FEET TO 30 FEET	
1) PLACE 0.0				0.12		0.12	
2) PLACE 0.00				0.06		0.06	
3) PLACE 0.000				0.03		0.03	
ANGLES				1/8"		1/8"	
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APP DBO				model: 999		NON-STOWABLE PENDANTS	

