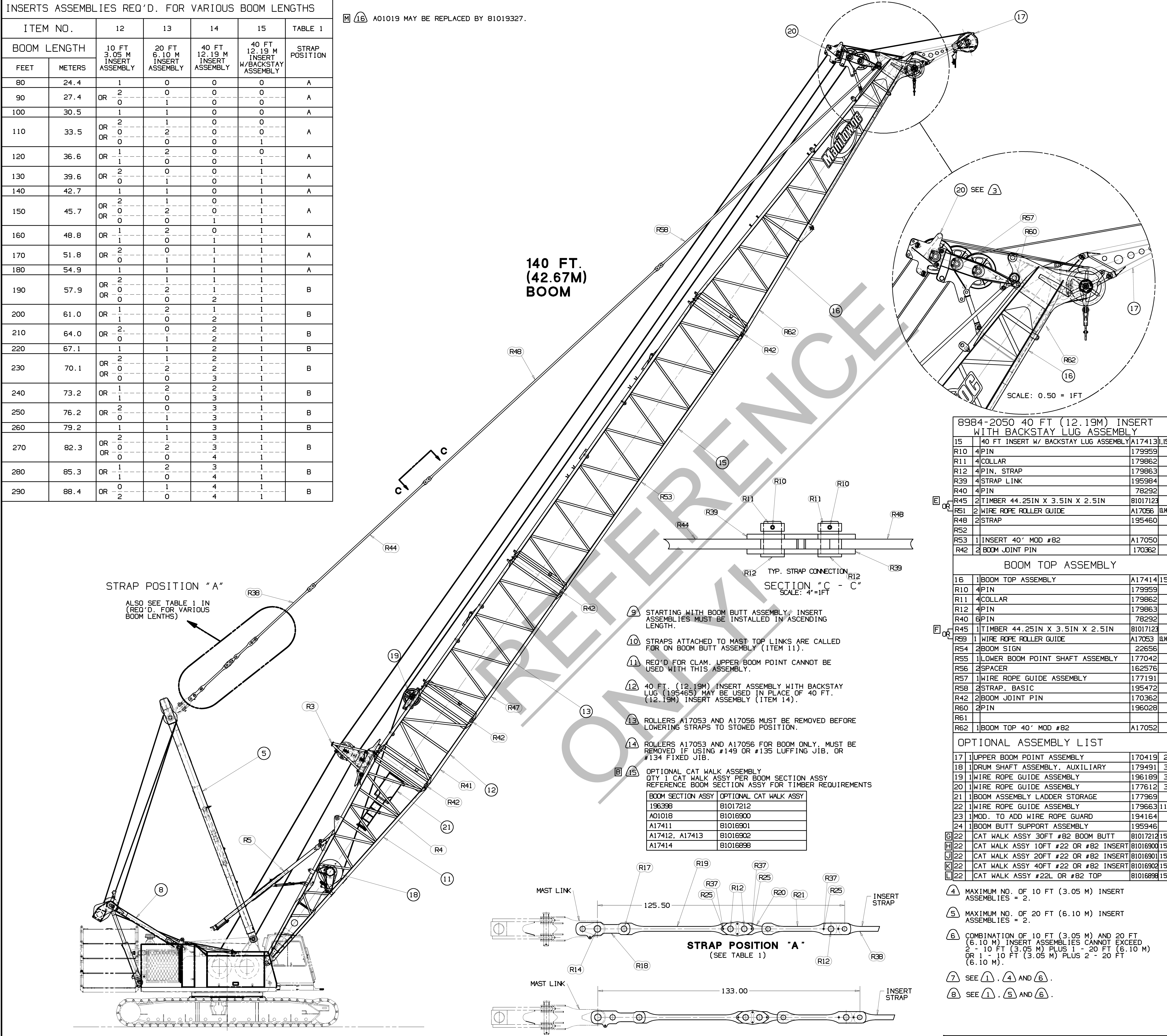


INSERTS ASSEMBLIES REQ'D. FOR VARIOUS BOOM LENGTHS

ITEM NO.		12	13	14	15	TABLE 1
BOOM LENGTH		10 FT 3.05 M INSERT ASSEMBLY	20 FT 6.10 M INSERT ASSEMBLY	40 FT 12.19 M INSERT ASSEMBLY	40 FT 12.19 M INSERT W/BACKSTAY ASSEMBLY	STRAP POSITION
FEET	METERS					
80	24.4	1	0	0	0	A
90	27.4	OR 2 0	0	0	0	A
100	30.5	1	1	0	0	A
110	33.5	OR 2 0 OR 0	1 0 0	0 0 0	0 0 1	A
120	36.6	OR 1 1	2 0	0 0	0 1	A
130	39.6	OR 2 0	0 1	0 0	1 1	A
140	42.7	1	1	0	1	A
150	45.7	OR 2 0 OR 0	1 0 0	0 0 1	1 1 1	A
160	48.8	OR 1 1	2 0	0 1	1 1	A
170	51.8	OR 2 0	0 1	1 1	1 1	A
180	54.9	1	1	1	1	A
190	57.9	OR 2 0 OR 0	1 0 0	1 2 2	1 1 1	B
200	61.0	OR 1 1	2 0	1 2	1 1	B
210	64.0	OR 2 0	0 1	2 2	1 1	B
220	67.1	1	1	2	1	B
230	70.1	OR 2 0 OR 0	1 2 0	2 2 3	1 1 1	B
240	73.2	OR 1 1	2 0	2 3	1 1	B
250	76.2	OR 2 0	0 1	3 3	1 1	B
260	79.2	1	1	3	1	B
270	82.3	OR 2 0 OR 0	1 2 0	3 3 4	1 1 1	B
280	85.3	OR 1 1	2 0	3 4	1 1	B
290	88.4	OR 0 2	1 0	4 4	1 1	B

A01019 MAY BE REPLACED BY 81019327.



8984-2050 40 FT (12.19M) INSERT WITH BACKSTAY LUG ASSEMBLY

15	40 FT INSERT W/ BACKSTAY LUG ASSEMBLY	A17413	15
R10	4PIN	179959	
R11	4COLLAR	179862	
R12	4PIN, STRAP	179863	
R39	4STRAP LINK	195984	
R40	4PIN	78292	
R45	2TIMBER 44.25IN X 3.5IN X 2.5IN	81017123	
R51	2 WIRE ROPE ROLLER GUIDE	A17056	BM
R48	2STRAP	195460	
R52			
R53	1 INSERT 40' MOD #82	A17050	
R42	2 BOOM JOINT PIN	170362	

BOOM TOP ASSEMBLY

16	1BOOM TOP ASSEMBLY	A17414	15
R10	4PIN	179959	
R11	4COLLAR	179862	
R12	4PIN	179863	
R40	6PIN	78292	
R45	1TIMBER 44.25IN X 3.5IN X 2.5IN	81017123	
R59	1 WIRE ROPE ROLLER GUIDE	A17053	BM
R54	2BOOM SIGN	22656	
R55	1LOWER BOOM POINT SHAFT ASSEMBLY	177042	
R56	2SPACER	162576	
R57	1WIRE ROPE GUIDE ASSEMBLY	177191	
R58	2STRAP, BASIC	195472	
R42	2BOOM JOINT PIN	170362	
R60	2PIN	196028	
R61			
R62	1BOOM TOP 40' MOD #82	A17052	

OPTIONAL ASSEMBLY LIST

17	1UPPER BOOM POINT ASSEMBLY	170419	2
18	1DRUM SHAFT ASSEMBLY, AUXILIARY	179491	3
19	1WIRE ROPE GUIDE ASSEMBLY	196189	3
20	1WIRE ROPE GUIDE ASSEMBLY	177612	3
21	1BOOM ASSEMBLY LADDER STORAGE	177969	
22	1WIRE ROPE GUIDE ASSEMBLY	179663	11
23	1MOD. TO ADD WIRE ROPE GUARD	194164	
24	1BOOM BUTT SUPPORT ASSEMBLY	195946	
G 22	CAT WALK ASSY 30FT #82 BOOM BUTT	81017212	15
H 22	CAT WALK ASSY 10FT #22 OR #82 INSERT	81016901	15
J 22	CAT WALK ASSY 20FT #22 OR #82 INSERT	81016901	15
K 22	CAT WALK ASSY 40FT #22 OR #82 INSERT	81016902	15
L 22	CAT WALK ASSY #22L OR #82 TOP	81016898	15

- MAXIMUM NO. OF 10 FT (3.05 M) INSERT ASSEMBLIES = 2.
- MAXIMUM NO. OF 20 FT (6.10 M) INSERT ASSEMBLIES = 2.
- COMBINATION OF 10 FT (3.05 M) AND 20 FT (6.10 M) INSERT ASSEMBLIES CANNOT EXCEED 2 - 10 FT (3.05 M) PLUS 1 - 20 FT (6.10 M) OR 10 FT (3.05 M) PLUS 2 - 20 FT (6.10 M).
- SEE 1 . 4 AND 6 .
- SEE 1 . 5 AND 6 .

BILL OF MATERIAL				ASSEMBLIES USED ON			
ITEM NO.	SEC. NO. (P&ID)	DESCRIPTION	QUANTITY REQ.		MATERIAL	CODE NO. OR QTY. NO.	☐
BOOM RIGGING ASSEMBLY							
1							
2							
3							
4							
5	1	MAST ASSEMBLY		196381	10		
6							
7							
8	1	GANTRY ASSEMBLY		195845	8		
9							
10							

REVISONS
3-19-07 JLG
A) WAS SPECIAL
FOR S/N
09-24-11 JMS
B)
ADDED NOTE
C) 1E
WAS 13940
REV 1001

BOOM BUTT ASSEMBLY

11	1BOOM BUTT ASSEMBLY	196398	15
R1	1BOOM ANGLE INDICATOR	168779	
R2	1TIMBER	176831	
R3	1WIRE ROPE GUIDE ASSEMBLY	196383	
R4	1BOOM BUTT	195453	
R5	1BOOM STOP ASSEMBLY	195467	
R6	6CLAMP	345678	
R7	4SCREW CAP .50-13UNC X 5.50 LG	612583	
R8			
R9			
R10	8PIN	179959	
R11	8COLLAR	179862	
R12	6PIN	179863	
R13			
R14	2PIN	196066	
R15	2COLLAR	196067	
R16	2PIN	196068	
R17	2PIN	196069	
R18	4LINK	196384	
R19	2STRAP	196385	
R20	2STRAP	196386	
R21	4LINK	196387	
R22	4LINK	196388	
R23	1SUPPORT R.H.	196389	
R24	1	196390	
R25	6PIN	196392	
R26	4PIN	196399	
R27	4LINK	196505	
R28	1PLATFORM	196580	
R29	6NUT HEX .50-13UNC	546056	
R30	16WASHER FLAT .50	709460	
R31	2NUT ELAS. STOP .75-10UNC	548346	
R32	8PIN-SNAP	563823	
R33	14SCREW CAP .50-13UNC X 2.00 LG	612561	
R34	2SCREW CAP .75-10UNC X 5.50 LG	612741	
R35	8WASHER SAE FLAT .50	709702	
R36	14WASHER LOCK .50	710306	
R37	6SNAP PIN	563823	

10 FT (3.05M) INSERT ASSEMBLY

12	10 FT INSERT ASSEMBLY	A01018	15
R10	4PIN	179959	
R11	4COLLAR	179862	
R12	4PIN, STRAP	179863	
R38	2STRAP	192293	
R39	4STRAP LINK	195984	
R40	4PIN	78292	
R41	110 FT INSERT FOR #82 BOOM	A01019	16
R42	2BOOM JOINT PIN	170362	

20 FT (6.10M) INSERT ASSEMBLY

13	20 FT INSERT ASSEMBLY	A17411	15
R10	4PIN	179959	
R11	4COLLAR	179862	
R12	4PIN, STRAP	179863	
R39	4STRAP LINK	195984	
R40	4PIN	78292	
R44	2STRAP	192294	
R45	1TIMBER 44.25IN X 3.5IN X 2.5IN	81017123	
R51	1 WIRE ROPE GUIDE ROLLER	A17056	BM
R46			
R47	1INSERT 20' MOD #82	A17049	
R42	2 BOOM JOINT PIN	170362	

40 FT (12.19M) INSERT ASSEMBLY

14	40 FT INSERT ASSEMBLY	A17412	15
R10	4PIN	179959	
R11	4COLLAR	179862	
R12	4PIN, STRAP	179863	
R39	4STRAP LINK	195984	
R40	4PIN	78292	
R45	2TIMBER 44.25IN X 3.5IN X 2.5IN	81017123	
R51	2 WIRE ROPE GUIDE ROLLER	A17056	BM
R48	2STRAP	195460	
R49			
R50	1 INSERT 40' MOD #82	A17051	
R42	2 BOOM JOINT PIN	170362	

- SEE CHART FOR NO. REQ'D.
- JIB CANNOT BE USED WITH THIS ASSEMBLY.
- WHEN AUXILIARY DRUM SHAFT ASSEMBLY (ITEM 18) IS USED, THE BOOM BUTT ASSEMBLY (ITEM 11) WIRE ROPE GUIDE ASSEMBLY (ITEM 19) AND 10 FT (3.05M) INSERT ASSEMBLY (ITEM 12) ARE REQUIRED. THE 10 FT. (3.05M) INSERT ASSEMBLY (ITEM 12) MUST BE ADJACENT TO THE BOOM BUTT AT ALL TIMES. MINIMUM BOOM LENGTH USING THESE COMPONENTS IS 80 FT. (24.2M).

FIRST ON S/N 9991174

FIRST ON S/N 9991174				BOOM ASSEMBLY
DR BDR	12511	12511	12511	
DR TSC	MODEL 999			#82 BOOM
APP TSC				WITH BOOM ROLLERS

PRIVATE LABELING REQUIREMENT TO CONFORM TO SPECIFICATION 6829103794 FOR COMPONENTS LISTED IN 6829103794

DATE 08-28-06

PATTERN NO.

ASSEMBLY NO.

A17399

SHT 1 OF 3

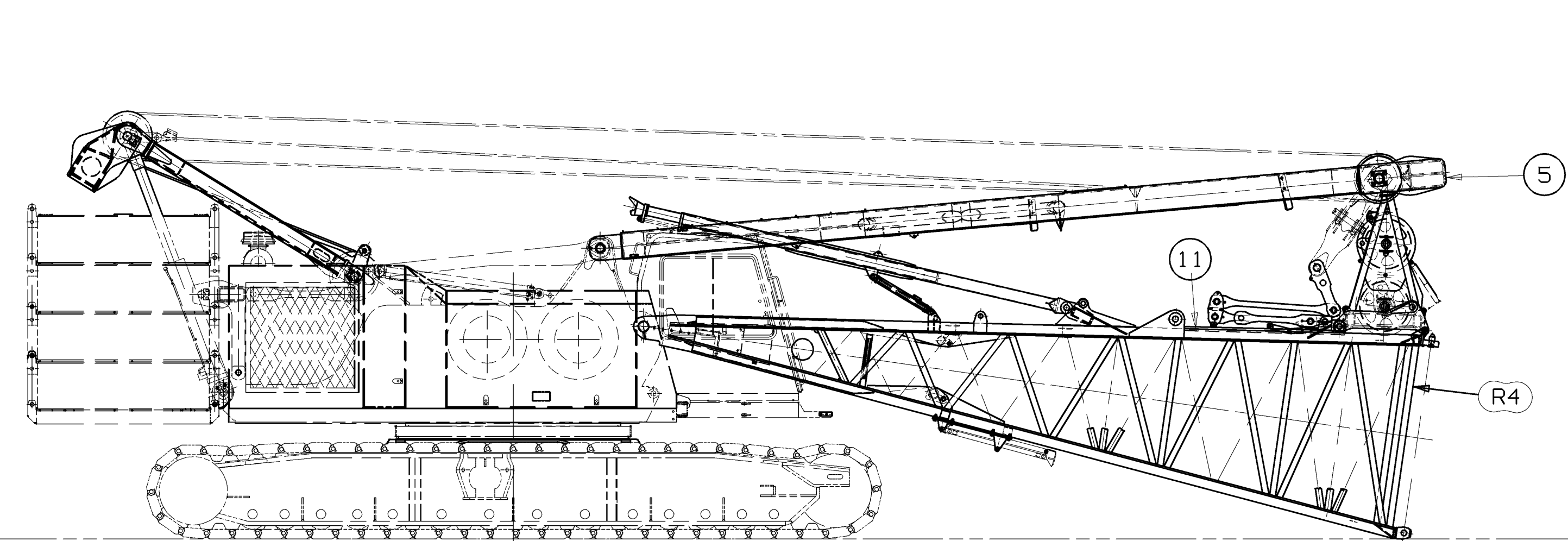
BOOM ASSEMBLY PROCEDURE

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

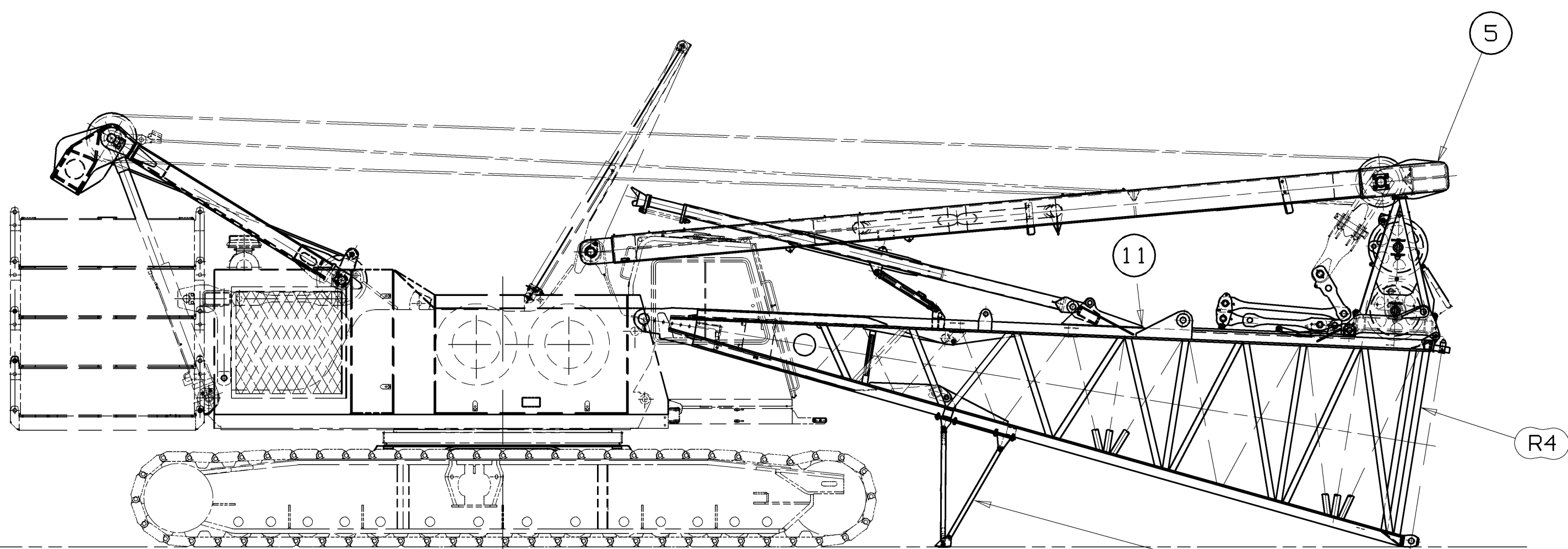
1. ASSEMBLE BOOM COMPLETE, WITHOUT BUTT.
2. ATTACH ROPE GUIDES, STRAPS, LINKS AND PINS AS REQ'D.
3. IF BUTT IS TO BE INSTALLED WITH AUXILIARY BLOCK, DO THAT NEXT. IF NOT PROCEED TO STEP 4.
4. ATTACH BOOM BUTT STRAPS TO MAST LINKS. SEE APPROPRIATE VIEWS AT LEFT. ALSO SEE CHART AND VIEWS ON SHEET 1 FOR PROPER PIN/LINK POSITION. LINKS MAY BE PINNED IN POSITION "A" OR "B" FOR BOOM ASSEMBLY OR HANDLING.
 - WITH BUTT PINNED TO ROTATING BED, LOWER MAST TO ROPE GUIDE ON BUTT.
 - OR
 - WITH BUTT SUPPORTED BY BUTT ATTACHING ASSEMBLY, LOWER MAST DOWN TO; BUT NOT SUPPORTED BY WIRE ROPE GUIDE ON BUTT.
 - REMOVE STOWAGE LINKS, ATTACH BUTT LINKS TO MAST LINKS AND REMOVE SMALL STOWAGE PINS.
 - BOOM UP SLOWLY TO RAISE STRAPS FROM STOWED POSITION. (DO NOT PUT STRAPS IN TENSION) REMOVE STOWAGE PIN BETWEEN LINKS AND SUPPORTS ON BUTT. WITH STRAPS HANGING VERTICAL, INSERT LOCKING PINS AS SHOWN IN VIEW "C"- "C" & "E"- "E".
5. IF BOOM BUTT WAS NOT INSTALLED IN STEP 3, INSTALL IT NOW USING THE OPTIONAL BOOM BUTT SUPPORT. ATTACH THE BUTT STRAPS TO THE HANDLING LINK ON THE ROPE GUIDE (AS SHOWN IN VIEW C-C) AND INSTALL THE BOOM BUTT WITH THE ROPE GUIDE AND BOOM STOPS TO THE ROTATING BED. (BOOM STOPS MUST BE IN THE SHIPPING/LOWER POSITION).
6. ATTACH BOOM STOP HANDLING PENDANTS TO BOOM STOP TUBES, RAISE AND PIN BOOM STOPS IN WORKING POSITION AND STOW HANDLING PENDANTS ON MAST.
7. WITH BUTT STRAPS ATTACHED TO BOOM HANDLING LINK ON ROPE GUIDE. (SEE VIEW "C"- "C") BOOM UP TO CLEAR GROUND WITH BUTT.
8. POSITION MACHINE TO ALIGN UPPER PIN CONNECTOR PINS ON BOOM BUTT WITH UPPER PIN CONNECTOR HOLES ON FIRST BOOM INSERT AND ENGAGE PINS.
9. 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.
10. BOOM DOWN TO DISCONNECT MAST STRAPS FROM ROPE GUIDE LINKS.
11. ATTACH BOOM BUTT STRAPS TO INSERT STRAPS. (SEE VIEW "D" ON SHT 3)
12. BOOM UP TO DESIRED BOOM ANGLE.

TO DISASSEMBLE BOOM

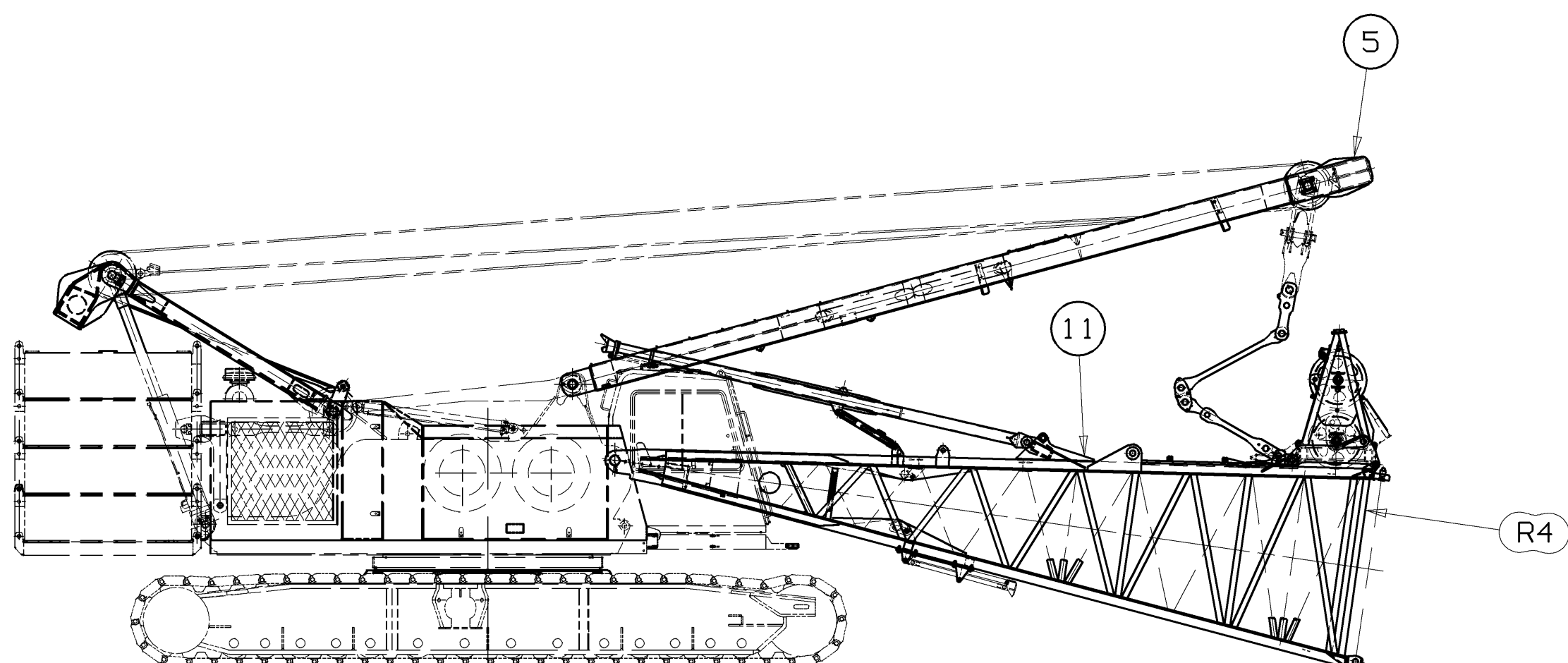
1. BOOM DOWN AND SUPPORT BOOM ON BLOCKING.
2. DISCONNECT BUTT STRAPS FROM BOOM INSERT STRAPS.
3. CONNECT MAST STRAPS TO HANDLING LINK ON ROPE GUIDE (SEE VIEW "C"- "C")
4. BOOM UP TO REMOVE SLACK FROM BUTT STRAPS.
 - WARNING:
 - DO NOT BOOM UP TO PUT TENSION INTO BUTT STRAPS. (REMOVE SLACK ONLY) TENSION IN BUTT STRAPS WILL DAMAGE ROPE GUIDE AND BOOM BUTT.
5. REMOVE LOWER BUTT TO INSERT PINS AND BOOM DOWN TO DISENGAGE UPPER BOOM BUTT TO INSERT PINS.
 - WARNING:
 - BOOM MUST BE PROPERLY BLOCKED TO PREVENT SHIFTING DURING PIN REMOVAL.
6. SLOWLY BACK AWAY FROM BOOM.
7. LOWER BOOM STOPS TO SHIPPING POSITION.
8. REMOVE BOOM BUTT FROM ROTATING BED AND STOW BUTT STRAPS.
9. DISASSEMBLE BOOM WITH MAST.



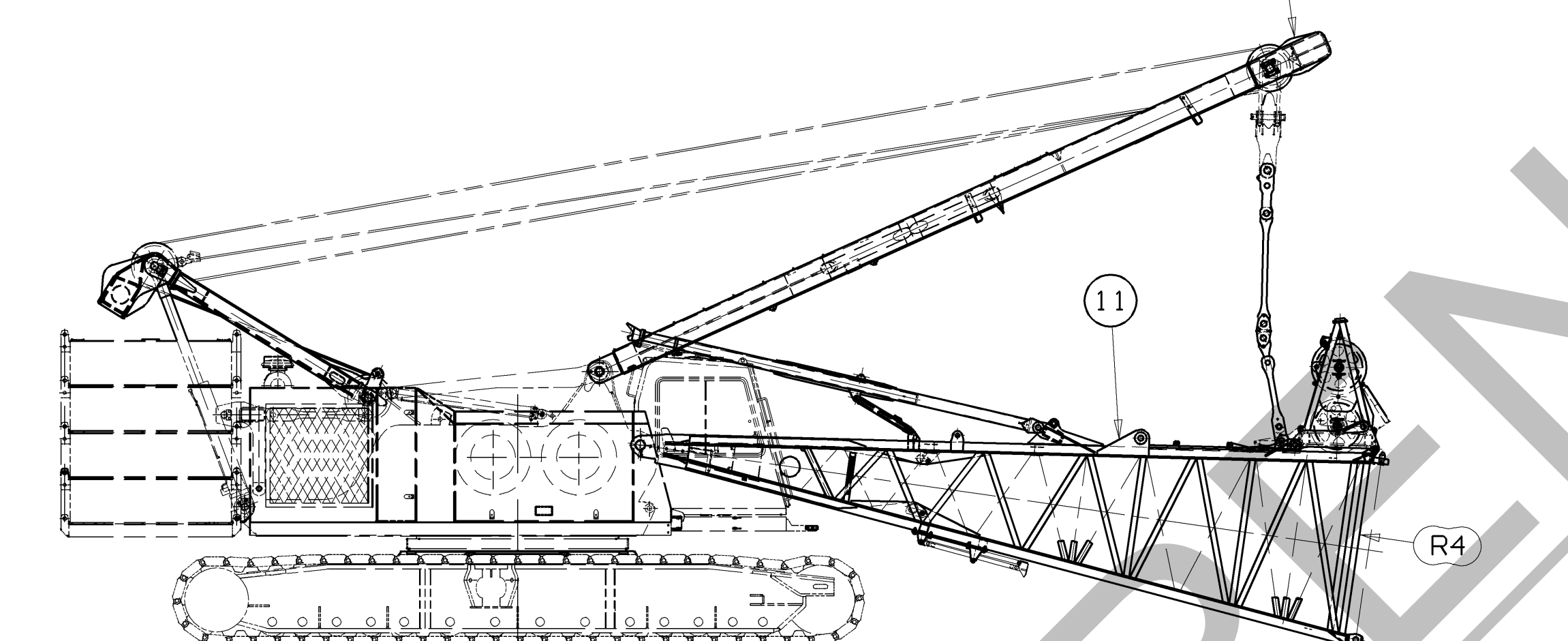
BOOM BUTT PINNED TO ROTATING BED.
MAST RESTING ON BOOM BUTT WIRE ROPE GUIDE.
ATTACH OR DISCONNECT BOOM BUTT STRAPS FROM MAST LINKS.



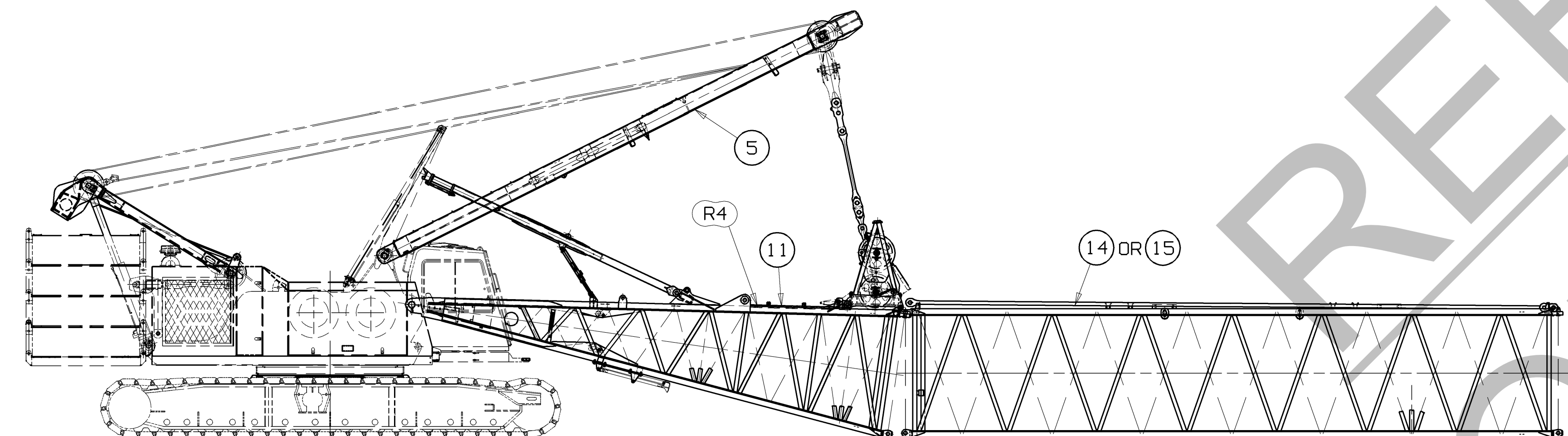
BOOM BUTT SUPPORTED BY OPTIONAL BUTT ATTACHING ASSEMBLY.
MAST LOWERED TO, BUT NOT SUPPORTED BY, ROPE GUIDE.
ATTACH OR DISCONNECT BOOM BUTT STRAPS FROM MAST LINKS.



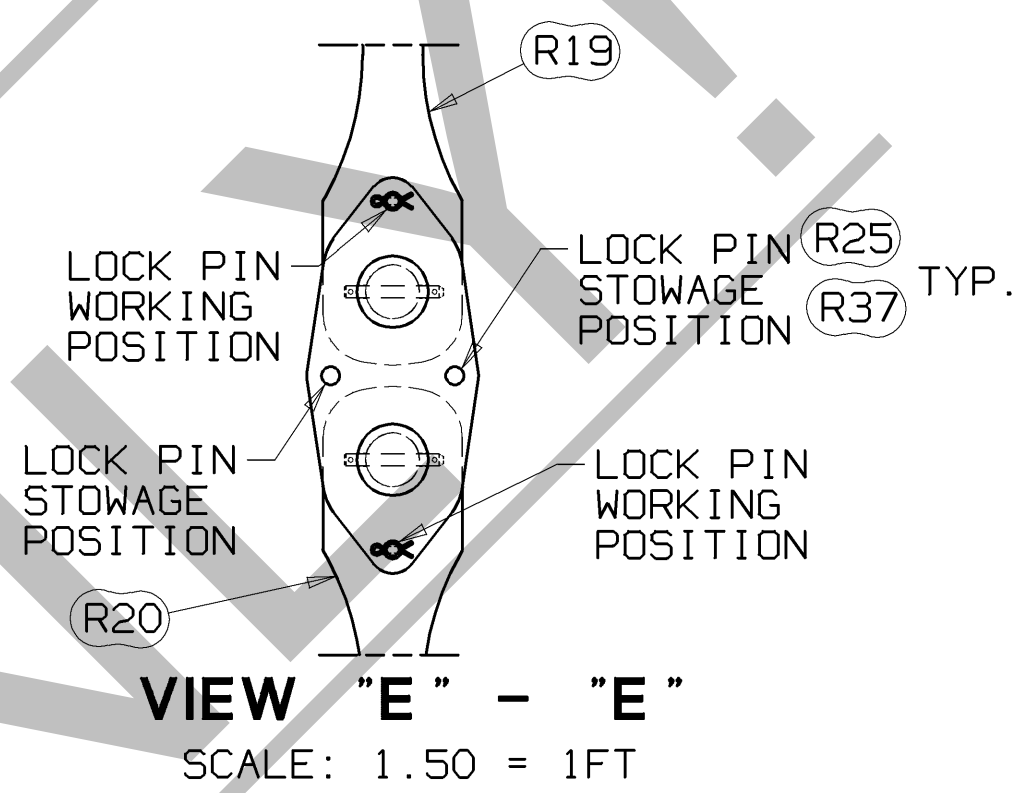
RAISE OR LOWER MAST WITH STRAPS



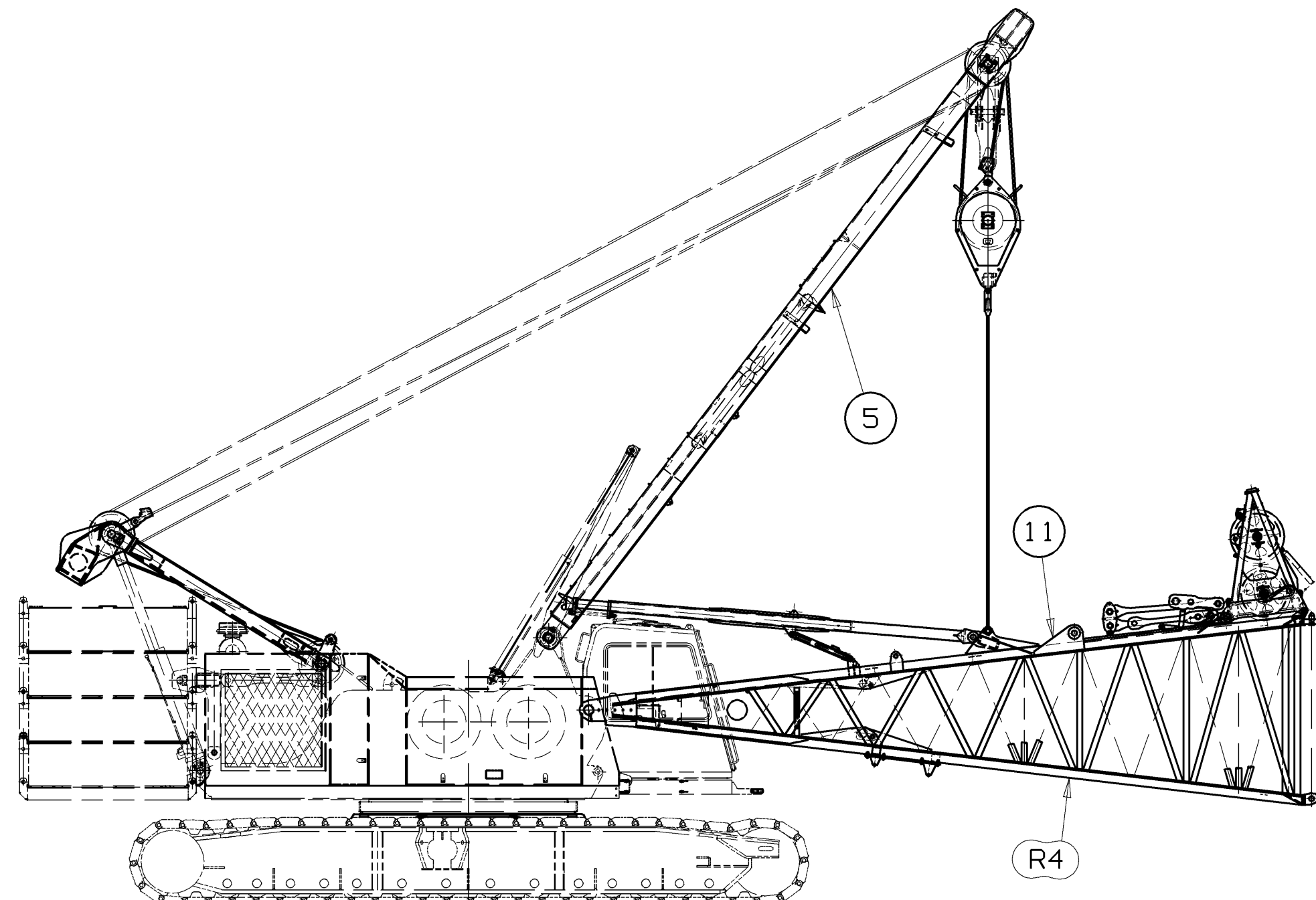
ATTACH OR DISCONNECT STRAPS FROM STOWAGE LUG ON BOOM BUTT



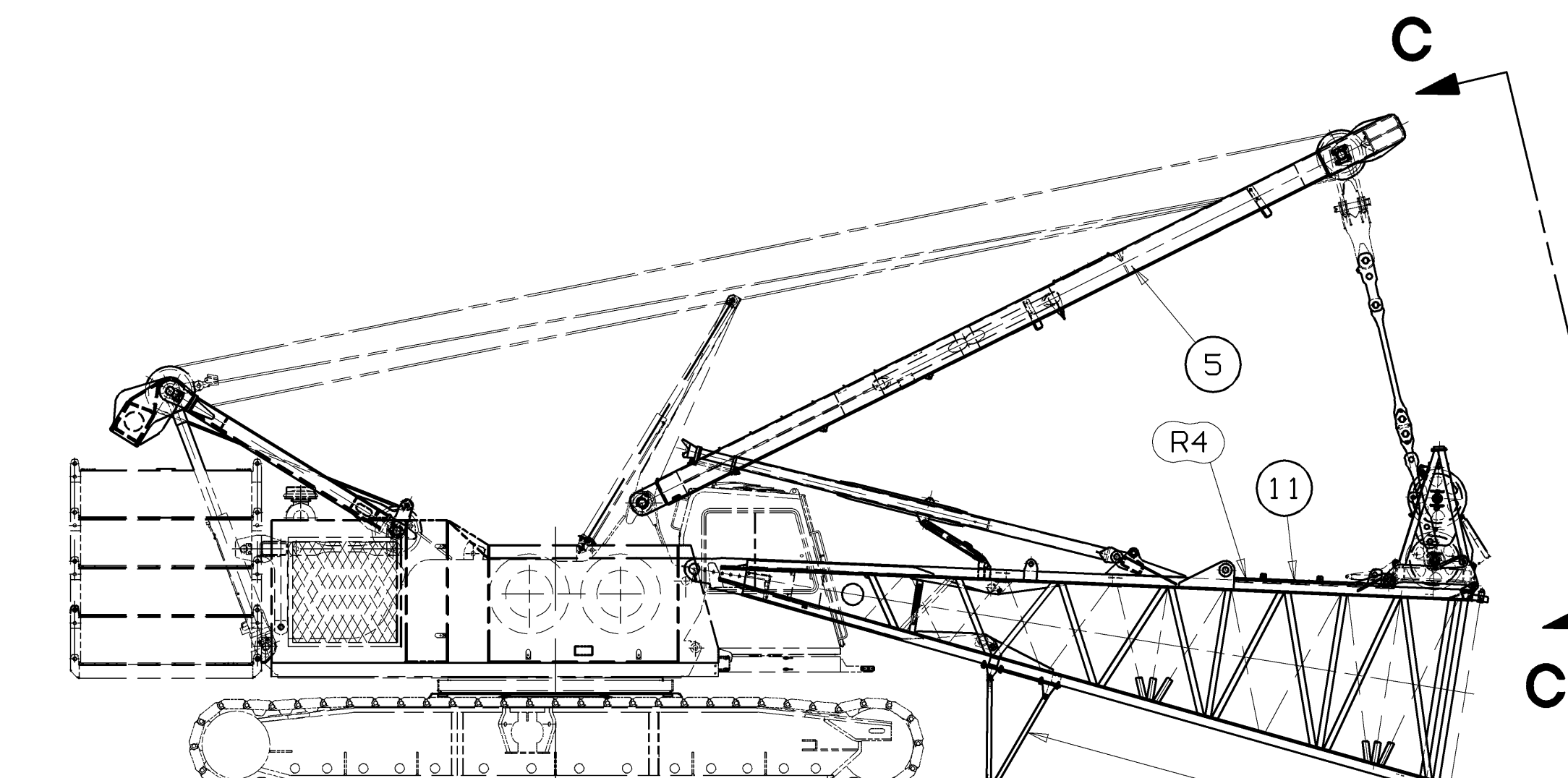
BOOM ASSEMBLY WITH MAST



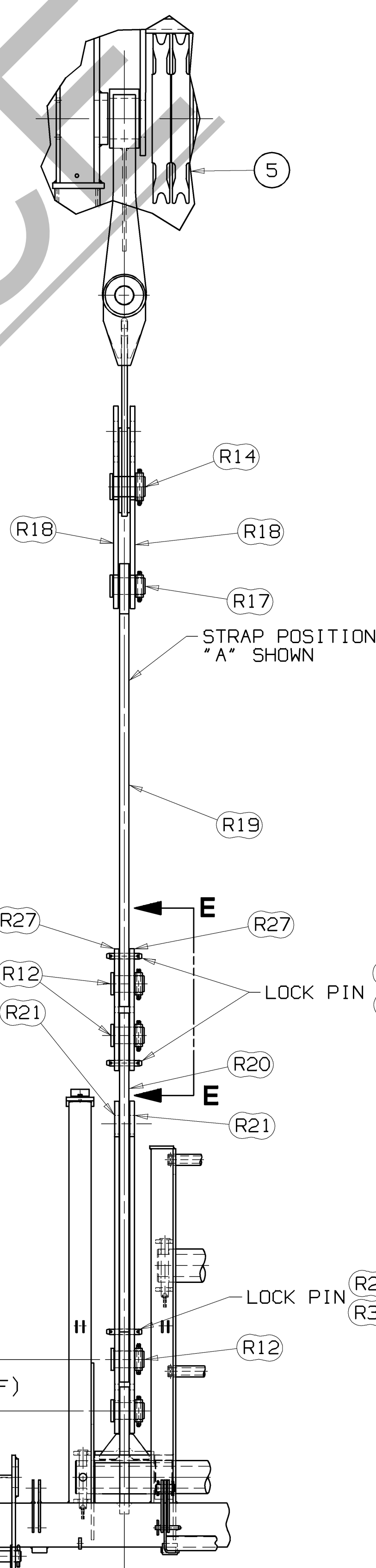
VIEW "E" - "E"
SCALE: 1.50 = 1FT



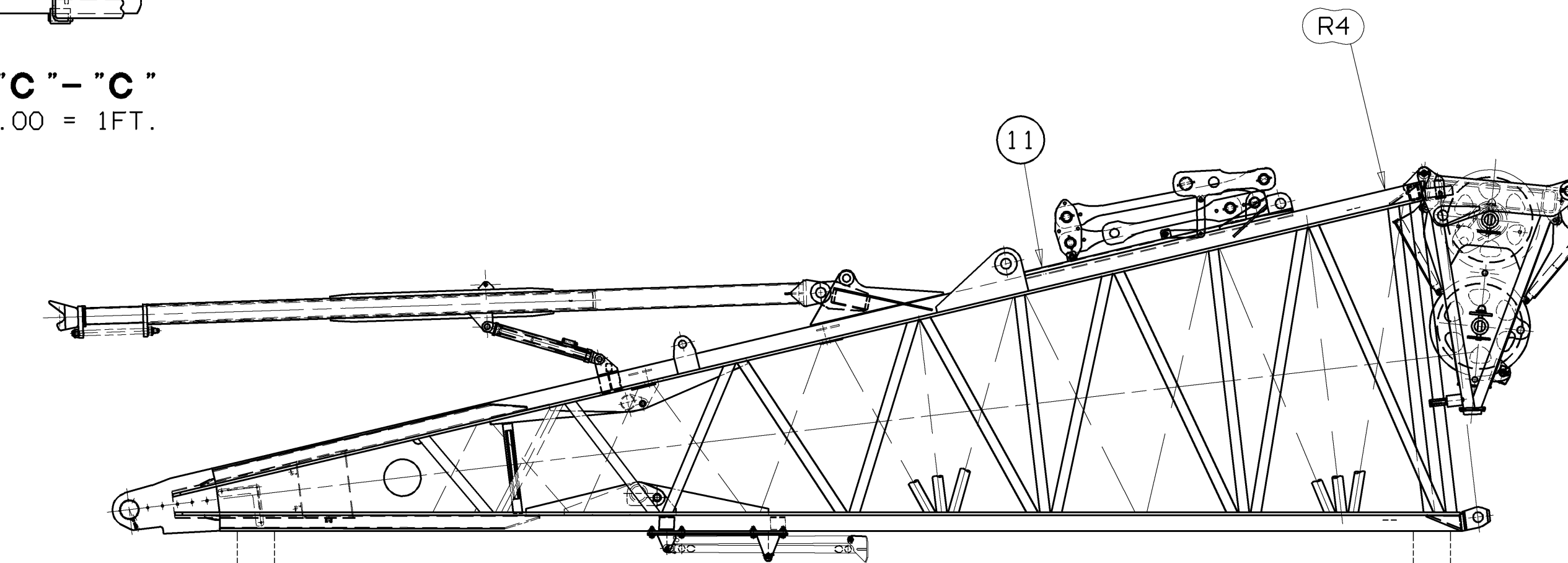
ATTACHING BOOM BUTT TO ROTATING BED
USING AUXILIARY BLOCK IN MAST.



ATTACHING BOOM BUTT TO ROTATING BED
USING OPTIONAL BUTT ATTACHING ASSEMBLY.



VIEW "C" - "C"
SCALE: 1.00 = 1FT.

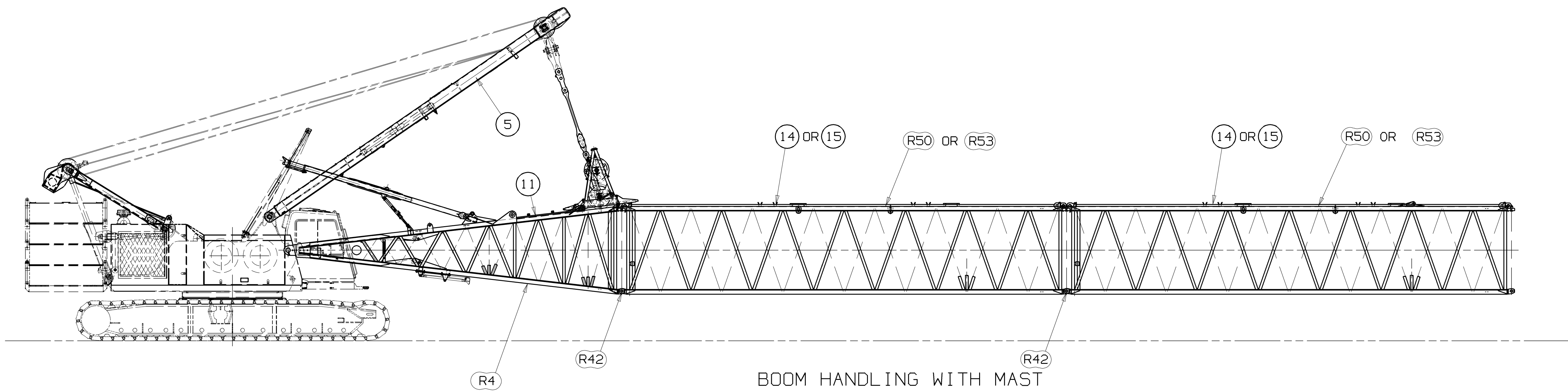


BOOM BUTT SHIPPING ARRANGEMENT

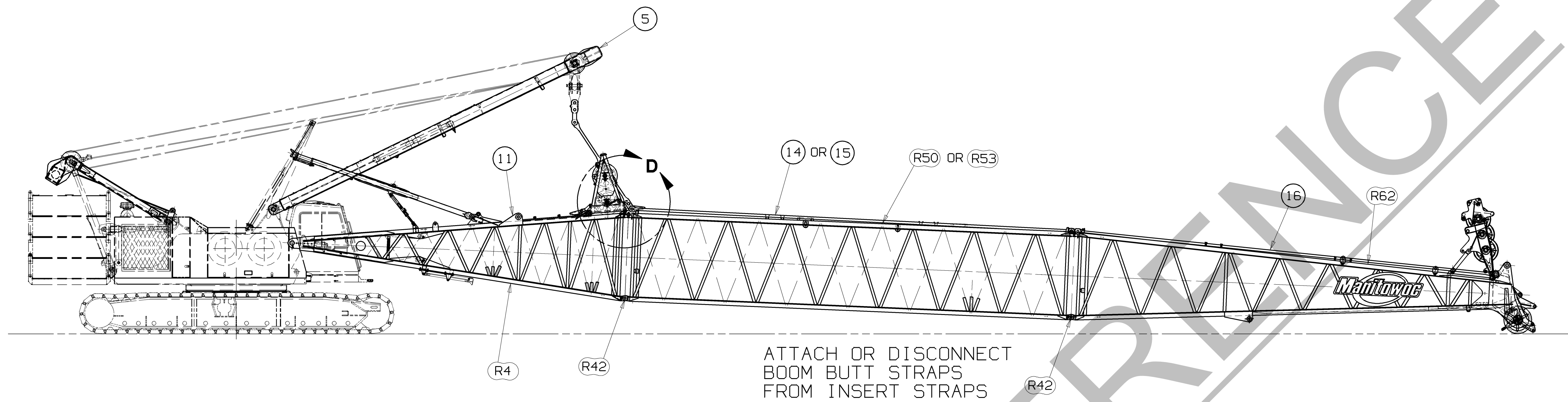
FIRST ON S/N 9991174

TOLERANCE UNLESS OTHERWISE SPECIFIED		SCALE		Manitowoc Cranes, Inc. BOOM ASSEMBLY	
DECIMAL PLACES	FABRICATION	1/8"	1/4"	3/8"	1/2"
(1) PLACE 0.0	± .12	± .18	± .05	± .05	± .05
(2) PLACE 0.00	± .06	± .12	± .015	± .015	± .015
(3) PLACE 0.000	± .005	± .010	± .005	± .005	± .005
ANGLES	± .20°	± .20°	± .20°	± .20°	± .20°

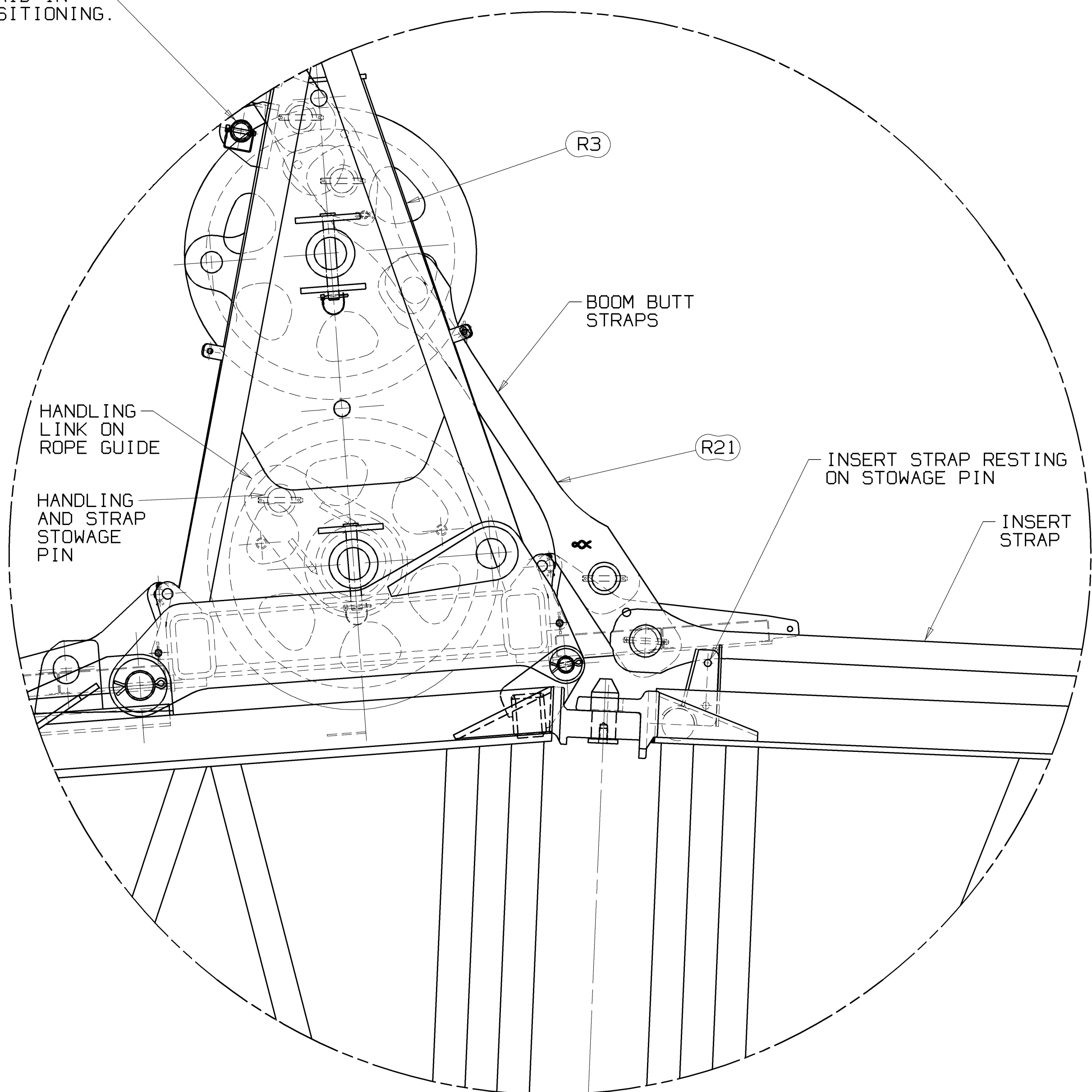
DR BDR	Manitowoc, Wisconsin	#82 BOOM
CK TSC	MODEL 999	WITH BOOM ROLLERS
APP TSC		



BOOM HANDLING WITH MAST WITH MAST STRAPS 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
70 FT. (21.3 M)	1	1	1
80 FT. (24.4 M)	0	0	2



THIS PIN CAN BE USED TO AID IN STRAP POSITIONING.



VIEW "D"
SCALE: 1.50 = 1FT

DO NOT SCALE THIS DRAWING

REFERENCE ONLY!

A FIRST ON S/N 9991174

TOLERANCE UNLESS OTHERWISE SPECIFIED				SCALE 19=1FT		Manitowoc Cranes, Inc. BOOM ASSEMBLY	
DECIMAL PLACES	FABRICATION	MACHINING	WELDING	DR. BDR	Manitowoc, Wisconsin	#82 BOOM	
(1) PLACE 0.0	± .12	± .18	± .05	OK TSC	MODEL 999	WITH BOOM ROLLERS	
(2) PLACE 0.00	± .06	± .12	± .015	APP TSC			
(3) PLACE 0.000	± .005	± .005	± .005				
ANGLES	± .20°	± .20°	± .20°				