

CENTRAL MARINE ENGINE WORKS  
WEST HARTLEPOOL

**BOILERS No 896.**

WORKING PRESSURE 180 LBS PER SQ. IN.

TO LLOYD'S SURVEY.

SCALES 1" = 12" = 1 FOOT.

3 BOILERS.

TO BE FITTED WITH HOWDEN'S SYSTEM OF FORCED DRAUGHT.

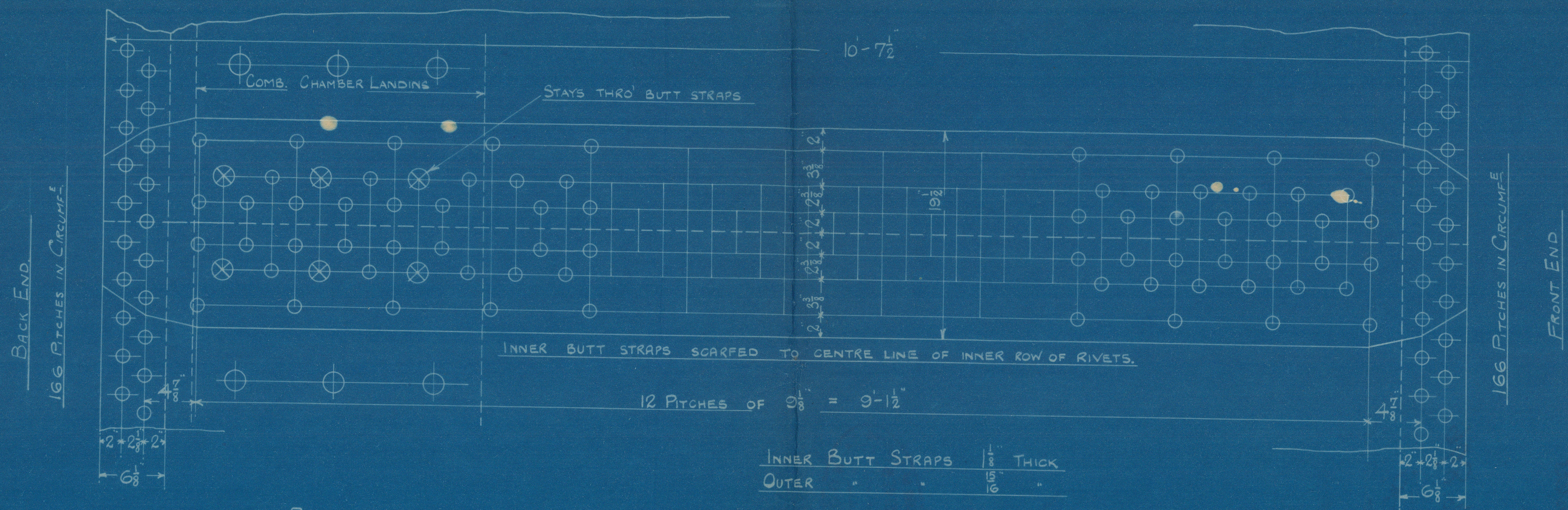
LIMITS OF TENSILE STRENGTH & MATERIAL.

SHELL PLATES, BUTT STRAPS & GIRDERS	28 TO 32 TONS	SIEMENS MARTIN MILD STEEL
OTHER PLATES	26 TO 30 "	
FURNACES	26 TO 30 "	
MAIN STAYS	28 TO 32 "	
SCREWED STAYS	26 TO 30 "	
RIVET BARS	26 TO 30 "	

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WEST HARTLEPOOL

29/3/17

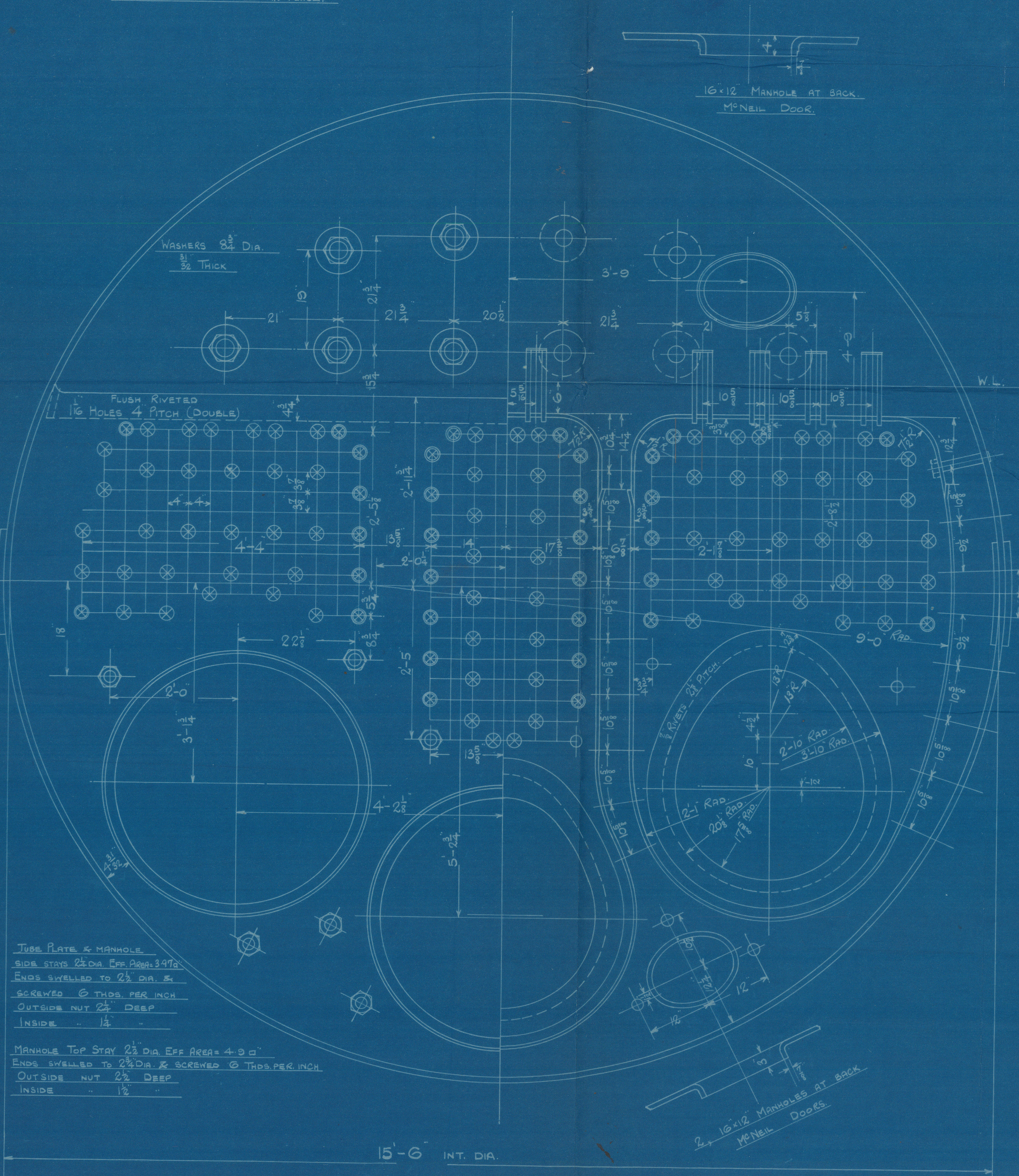
PARTICULARS	1 BOILER	3 BOILERS
TUBES	2100 #	6300 #
COMB. CHAMBER TOP & SIDES	158 "	474 "
" " BACK	82 "	246 "
" " TUBE PLATE	55 "	165 "
FURNACES	161 "	483 "
TOTAL HEATING SURFACE	2556 #	7668 #
GRATE AREA (5'6" BARS)	68.3 #	190 #
TUBE AREA	1165 "	3495 "
WATER " "	160 "	480 "
STEAM SPACE	514 #	1542 #
GRATE AREA : HEATING SURFACE	1 : 40.4	
" " : TUBE	1 : 33.2	
" " : " AREA	5.43 : 1	
" " : WATER	1 : 2.52	
" " : STEAM SPACE	1 : 8.1	
% BOILER ABOVE COMB. CHAMBERS	32.2	
WEIGHT OF WATER	26 1/2 TONS	79 1/2 TONS



RIVETING

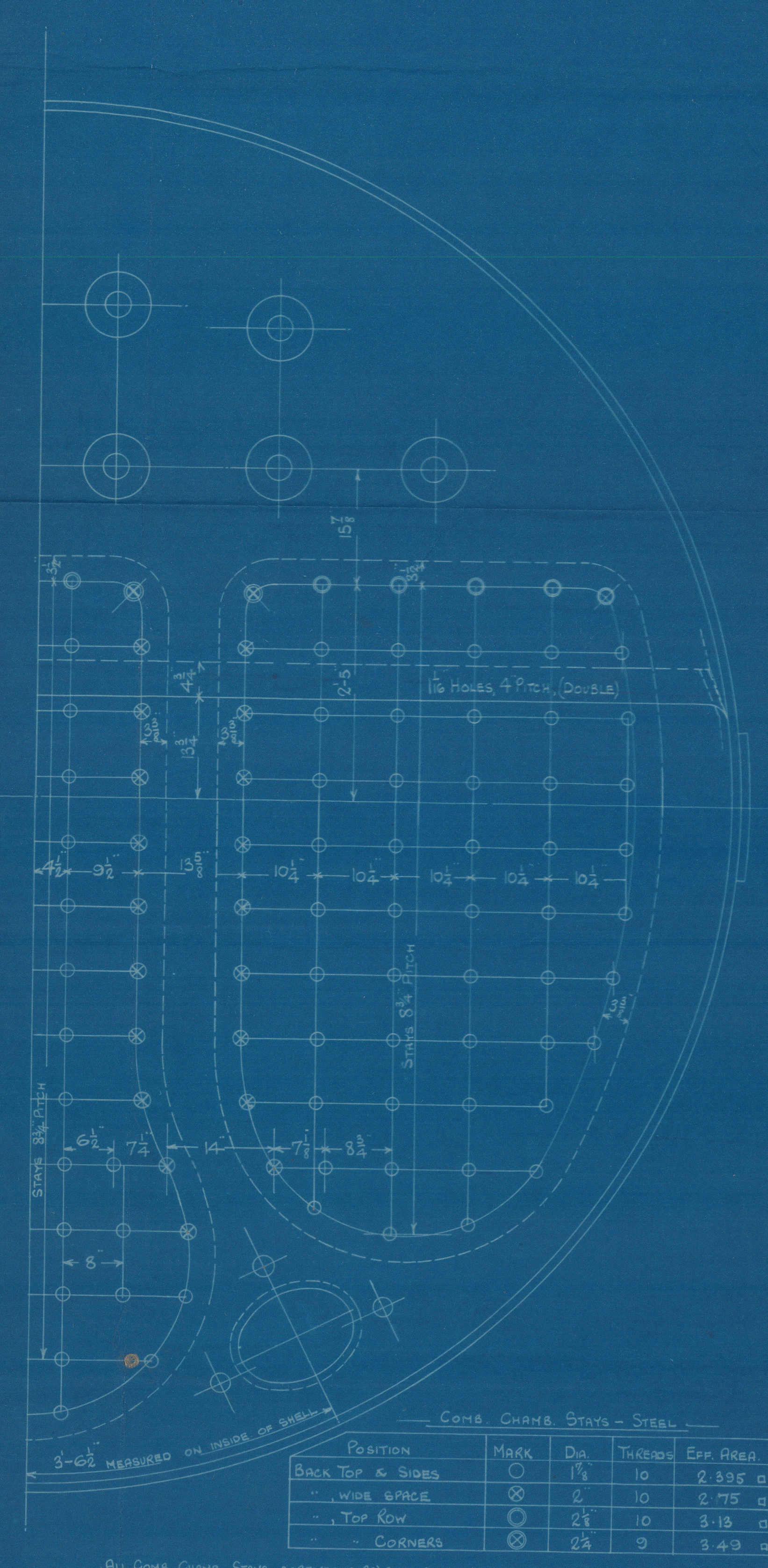
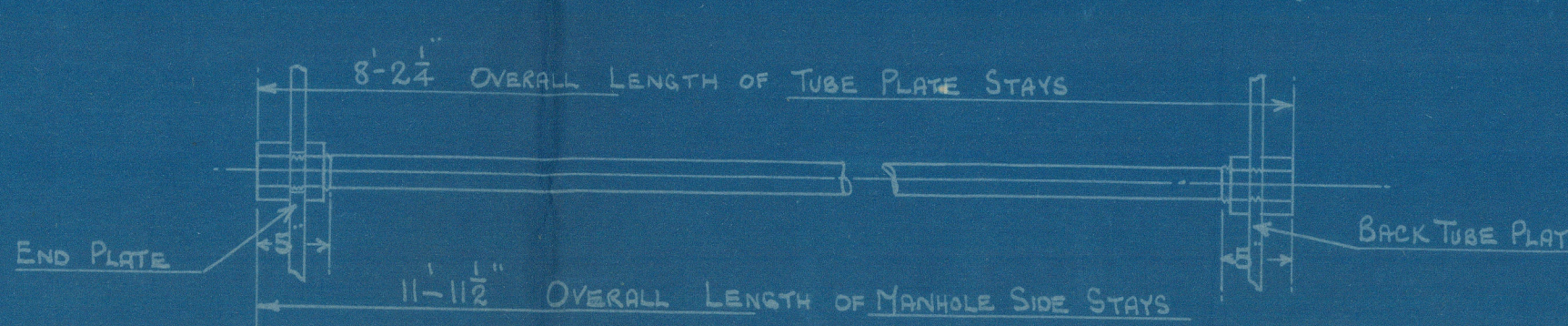
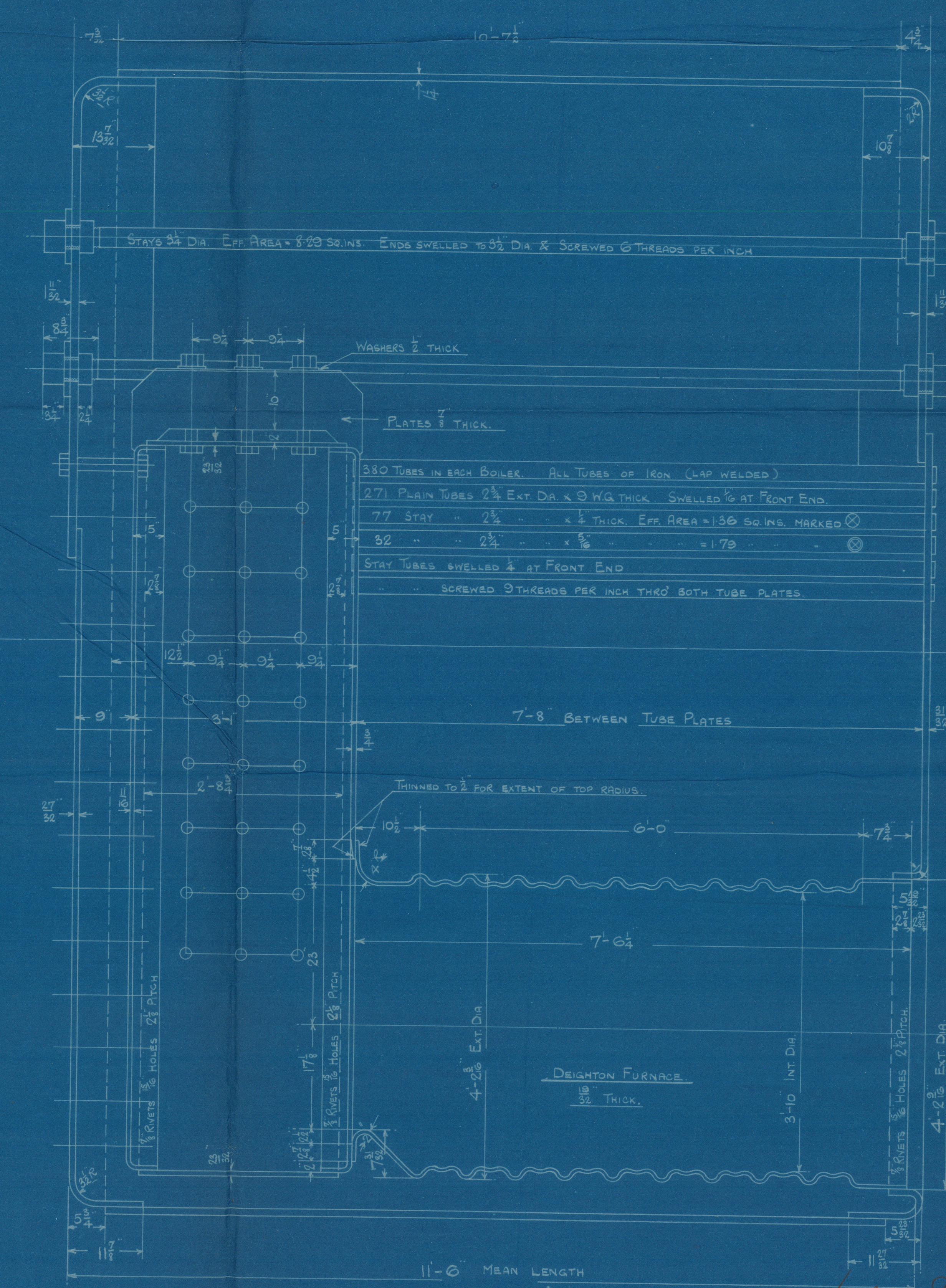
	LONG	FRONT END CIRC	BACK END CIRC
RIVET HOLE DIA.	1 1/8"	1 1/8"	1 1/8"
PITCH	9-1/2"	3-5/4"	3-5/4"
% PLATE	85.6	63	63
% RIVETS	88.5	51.9	51.9

ALL RIVET HOLES DRILLED IN PLACE.



TUBE PLATE & MANHOLE  
SIDE STAY 2 1/2" DIA. EFF. AREA 4.90"  
ENDS SWELLED TO 2 1/2" DIA. &  
SCREWED 6 THDS. PER INCH  
OUTSIDE NUT 2 1/2" DEEP  
INSIDE " 1 1/2"

MANHOLE TOP STAY 2 1/2" DIA. EFF. AREA 4.90"  
ENDS SWELLED TO 2 1/2" DIA. & SCREWED 6 THDS. PER INCH  
OUTSIDE NUT 2 1/2" DEEP  
INSIDE " 1 1/2"



COMB. CHAM. STAYS - STEEL

POSITION	MARK	DI.	THREDS	EFF. AREA
BACK TOP & SIDES	○	1 1/2"	10	2.395 sq"
" " WIDE SPACE	○	2"	10	2.75 sq"
" " TOP ROW	○	2 1/2"	10	3.13 sq"
" " CORNERS	○	2 1/2"	9	3.43 sq"

ALL COMB. CHAM. STAYS SCREWED THRU BOTH PLATES & NUTTED AT EACH END EXCEPT STAYS FROM  
WING COMB. CHAM. TO SHELL WHICH PROTECT 1/2" FROM SHELL & ARE DRILLED  
ALL 1 1/2" NUTS 1 1/2" DEEP EXCEPT THOSE ON GIRDERS TOPS WHICH ARE 1 1/2" DEEP.  
ALL 2", 2 1/2", 2 3/4" NUTS 1 1/2" DEEP.

No 896.

CENTRAL MARINE  
ENGINE WORKS  
28 MAR 1917  
32156

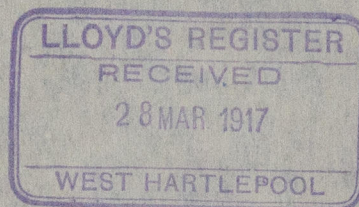
1263-0154



Three (3) Main Boilers  
Central No. 896  
for  
W. Gray & Co's S.S. No. 896.  
180 lbs. W.P.

W. H. & Co. No. 15445.

S. War Arabis.



RETAIN



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Foundation

W763-0159