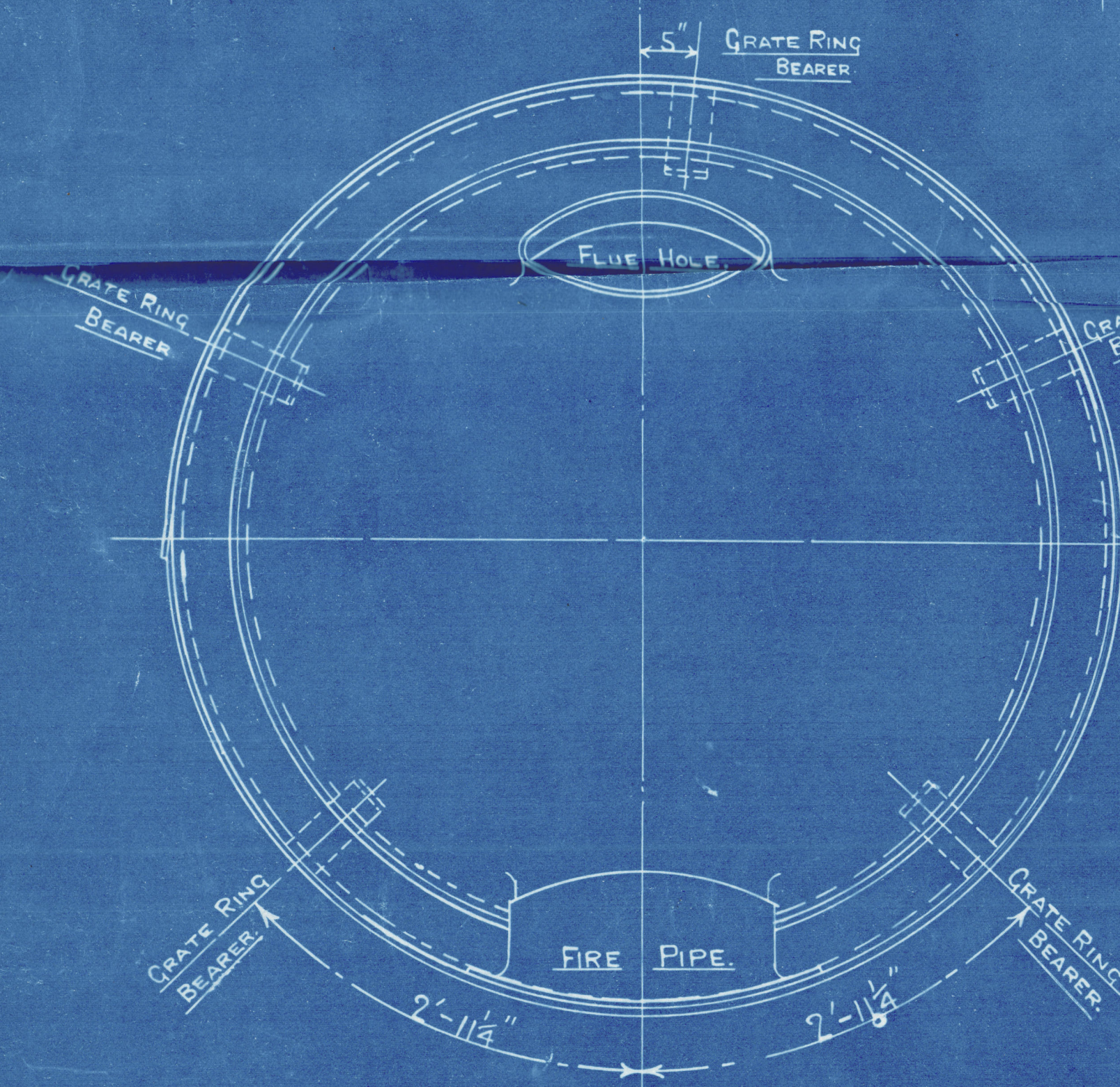
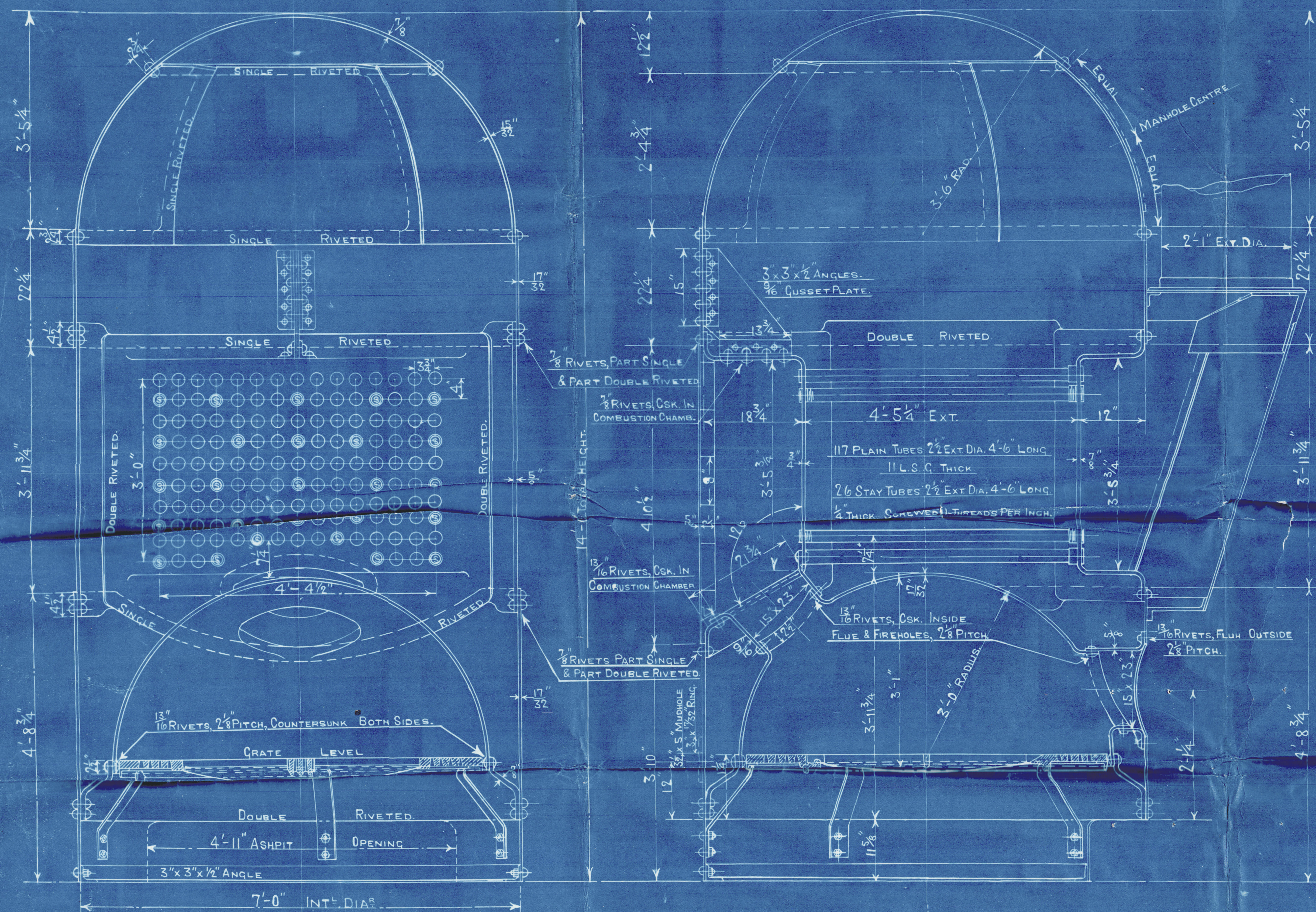
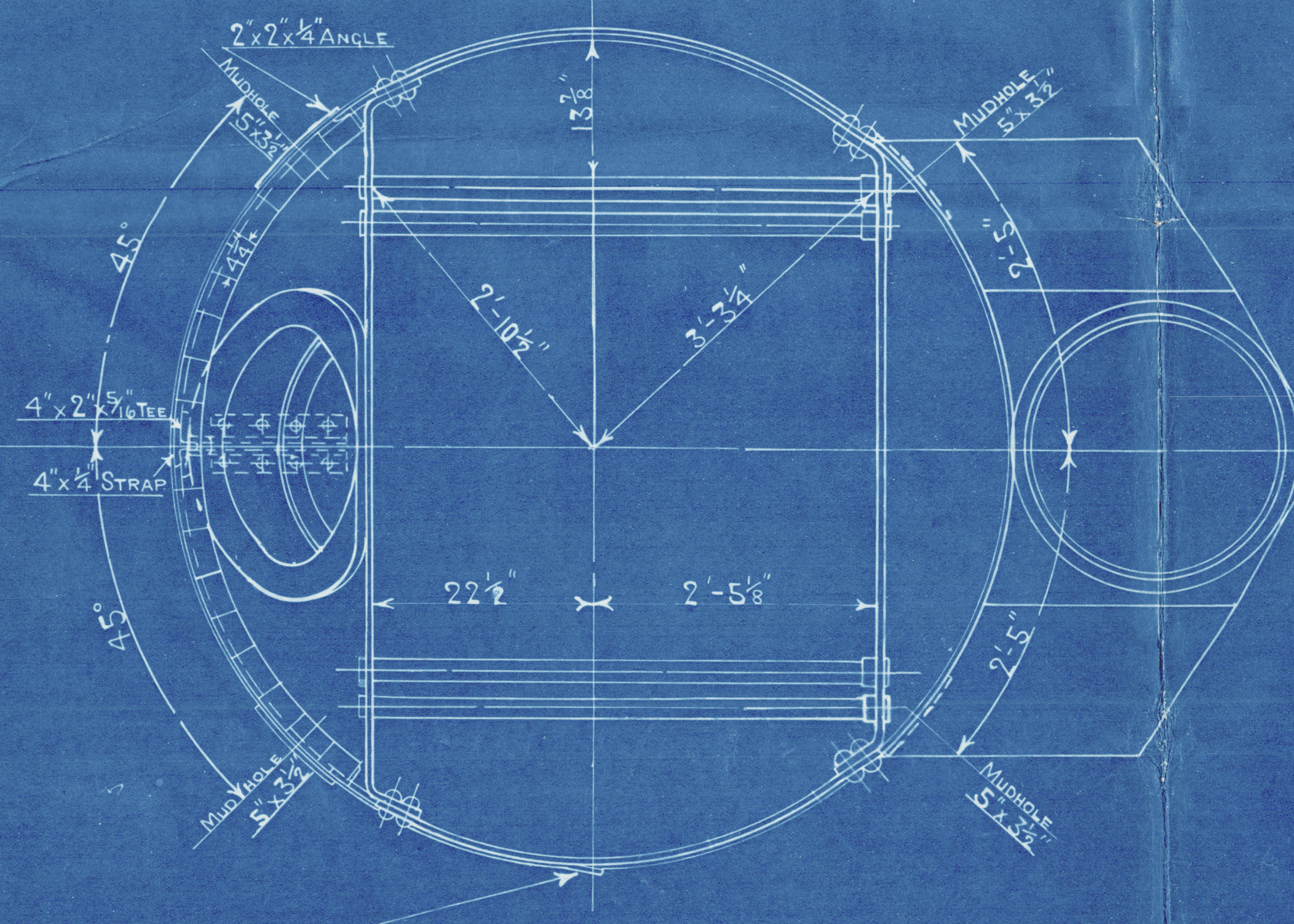


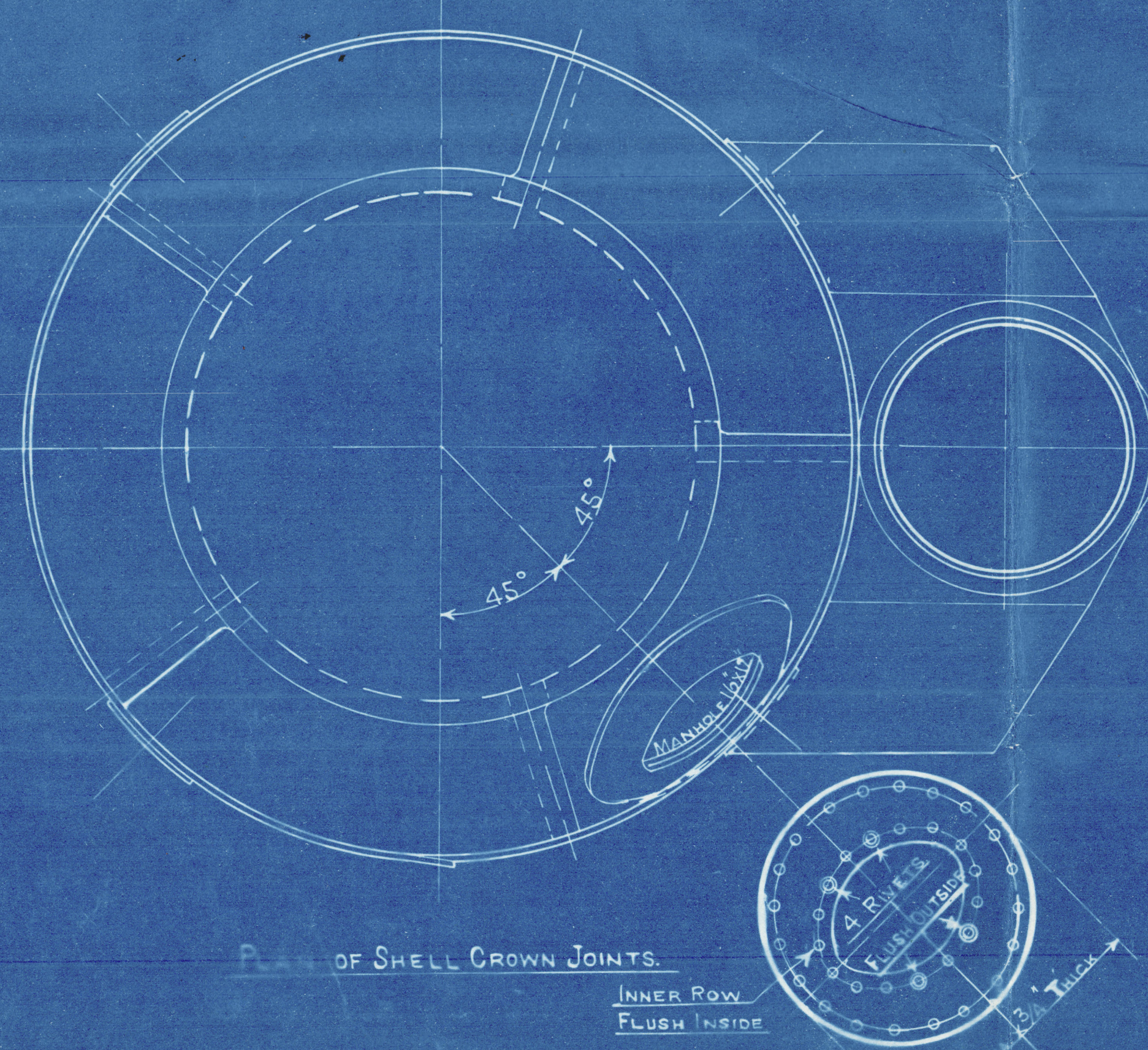
# COCHRAN PATENT VERTICAL MULTITUBULAR BOILER



PLAN OF FURNACE CROWN.



JOINT IN TOP & BOTTOM STRAKES OF SHELL

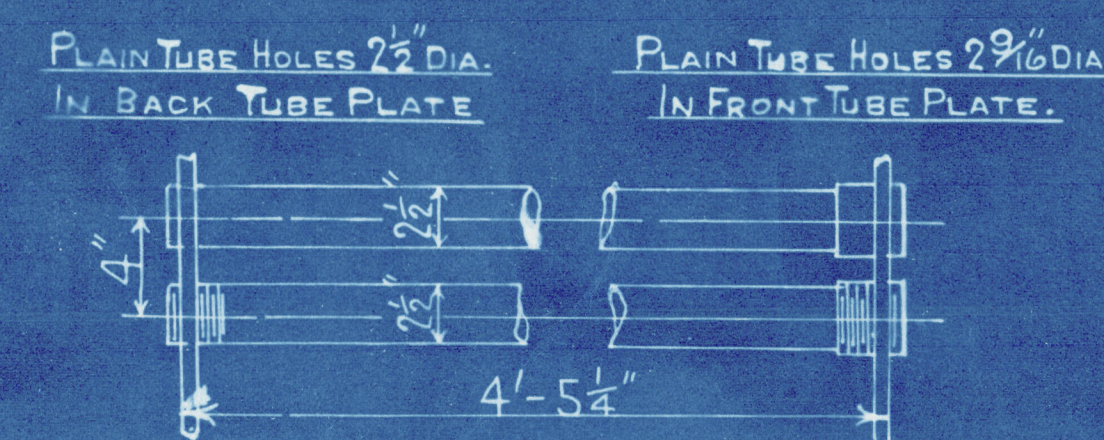


## OF SHELL CROWN JOINTS

INNER ROW  
FLUSH INSIDE



## HORIZONTAL FLUE TUBES



STAY TUBE HOLES SCREWED 2 1/2" DIA. 11-THREADS PER INCH IN BACK TUBE PLATE	STAY TUBE HOLES SCREWED 2 5/8" DIA. 11-THREADS PER INCH IN FRONT TUBE PLATE
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SCALE  $1\frac{1}{2}'' = 1$  FOOT.

HEATING SURFACE	
TUBES	403 SQ. FT.
PLATE	97 " "
TOTAL	500 " "
GRATE AREA	26.75 " "

LLOYDS		
PLATE	$2.92 \times .90 \times 2.5$ $2.92$	$\times 100 = 68.9\%$
RIVETS	$2.6 \times .625 \times 1.5$ $2.6 \times .82 \times 1.5$	$= 68.4\%$
FRONT TUBE PLATE	$4 \times 2.59 \times 100$ $4 \times 7.5$	$= 35.1\%$
BACK TUBE PLATE	$4 \times 100$ $4$	$= 37.5\%$
SHELL	$20.5 (8.5 - 2) \times 62.4$	$= 108 \text{ LBS.}$
FRONT TUBE PLATE	$20.5 (14.7) \times 3.51 \times 2.6$ $28.5$	$= 102.1$
BACK TUBE PLATE	$20.5 (14.7) \times 3.51 \times 2.8$ $69.9$	$= 105.4$
FURNACE	$125.0 (8.5 - 2)$	$= 112.8$
OGEE RING	$515 \times 14$ $84 \times (84 - 72)$	$= 110 \text{ LBS}$

BOARD OF TRADE		
PLATE	$292 - 90 \times 25 \times 100$ 7-92	= 68-9%
RIVETS	$23 \times 645 \times 2 \times 4.9$ $28 \times 303 \times 531 \times 25 \times 100$	= 71-5%
FRONT TUBE PLATE	$4 - 2.59 \times 100$	= 35-1%
BACK TUBE PLATE	$4 - 2.5 \times 100$	= 37-5%
SHELL	$28 - 224 \times 68.8 \times 2 \times 53.125$ $4.3 \times 94 \times 100$	= 111 LBS.
FRONT TUBE PLATE	$26 \times 2240 \times 35.1 \times 875$ $29.125 \times 4.5 \times 100$	= 130 LBS.
BACK TUBE PLATE	$26 \times 2240 \times 37.5 \times 75$ $22.5 \times 4.5 \times 100$	= 161 LBS.
FURNACE	$14000 \times 17$ $78 \times 37$	= 103 LBS.

BUREA VERITAS		
PLATE	$\frac{689 \times 2 \times 28 \times 22.76 \times (53.125 - .04)}{2 \times 28 \times 22.76}$	= 126 LBS
RIVETS	$\frac{2(2 \times .645) \times 24 \times 22.40}{24 \times 2.0 \times 3.5}$	= 10.9 LBS
FRONT TUBE PLATE	$\frac{10400 \times 8.75(4 - 2.5337)}{21.825 \times 4}$	= 123.9 LBS
BACK TUBE PLATE	$\frac{10400 \times .75(4 - 4.25)}{21.825 \times 4}$	= 113.3 LBS
FURNACE	$\frac{600 \times (8.5 - 2)}{36}$	= 108 LBS

SIEMENS MARTIN MILD STEEL PLATES.  
TENSILE TESTS:-

PLATES NOT EXPOSED TO FLAME OR FLANGED	28 TO 32 TONS
PLATES EXPOSED TO FLAME OR FLANGED EXCEPT FIRE, CROWN	26 TO 30 TONS
FURNACE CROWN	26 TO 28 TONS

**COCHRAN & CO ANNAN LD.**  
**ENGINEERS & BOILERMAKERS**  
**ANNAN, SCOTLAND.**

APPROVED 19-8-13

PATENT BOILER N<sup>o</sup> 6417  
7'-0" x 14'-0" x 500# x 100 LBS.

SCALE ONE INCH TO 1 FOOT.

**DRAWING N° 9695**



RETAIN

COCHRAN & CO., ANNAN, LD.

Boiler No. 6414

Drawing No. 9695

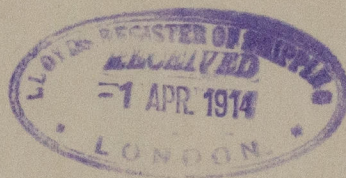
W. P. 100 LBS

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