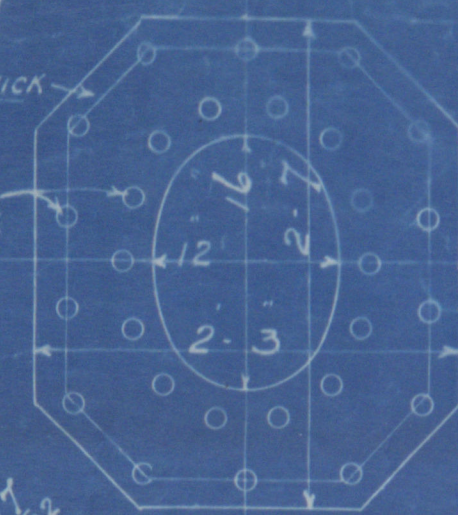


MESSRS RICHARDSON, DUCK & CO. S.S. N<sup>o</sup> 639

TOP MANHOLE STIFFENING PLATE 1/2" THICK

ALERT HOLES 1 1/4" DIA.



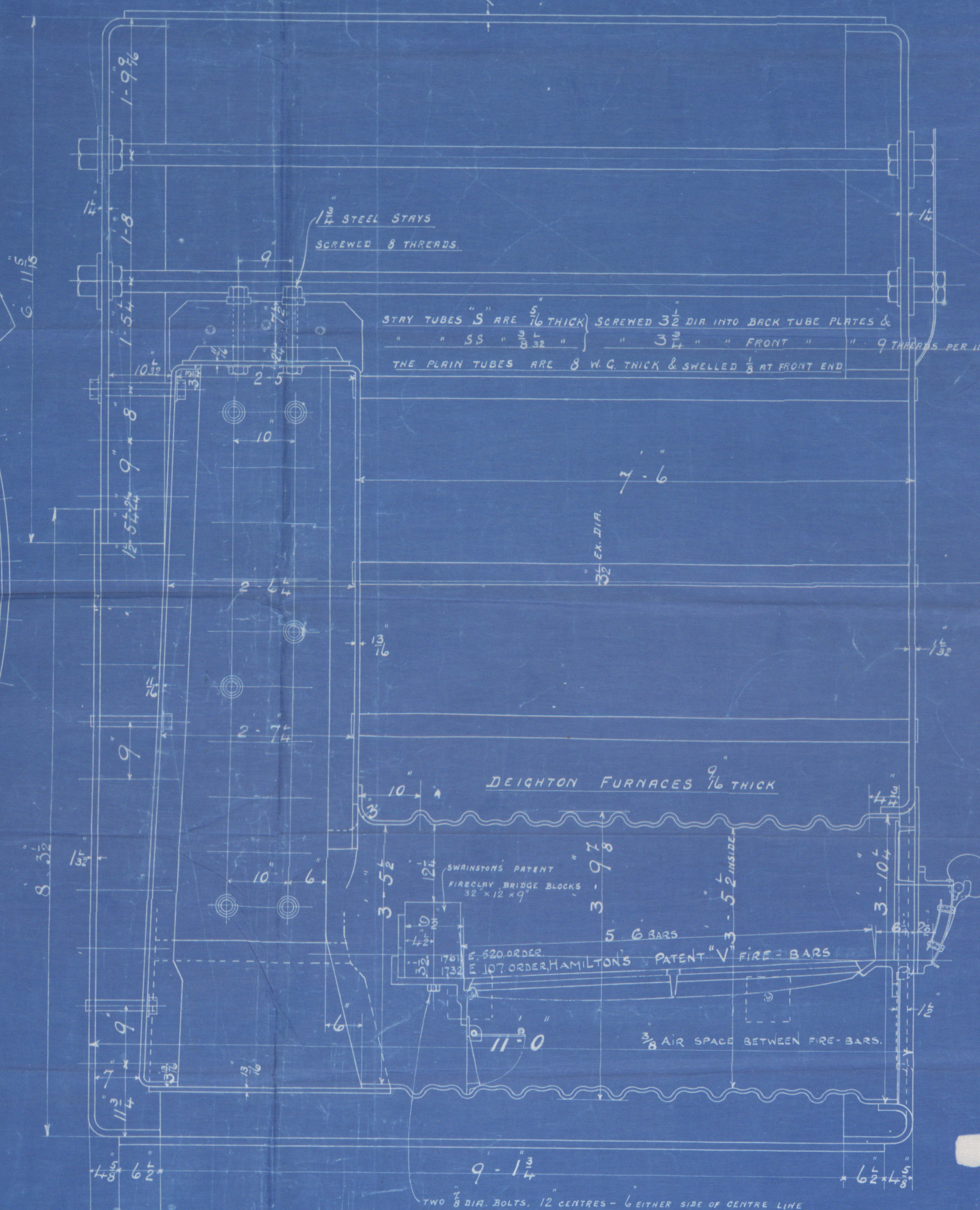
STEEL STAYS 3 1/4" EX. DIA. SCREWED 6 THREADS



STEEL SCREW STAYS MARKED "A" ARE 2 5/8" EX. DIA. BUTTED

OTHER " " ARE 1 3/4" EX. DIA.

SCREWED 8 THREADS



STAY TUBES "S" ARE 5/16" THICK SCREWED 3/8" DIA. INTO BACK TUBE PLATES &  
 "SS" " 3/8" " " " 3/4" " " " FRONT " " 9 THREADS PER INCH  
 THE PLAIN TUBES ARE 8 W.G. THICK & SHELLLED 3/4" AT FRONT END

DEIGHTON FURNACES 9/16" THICK

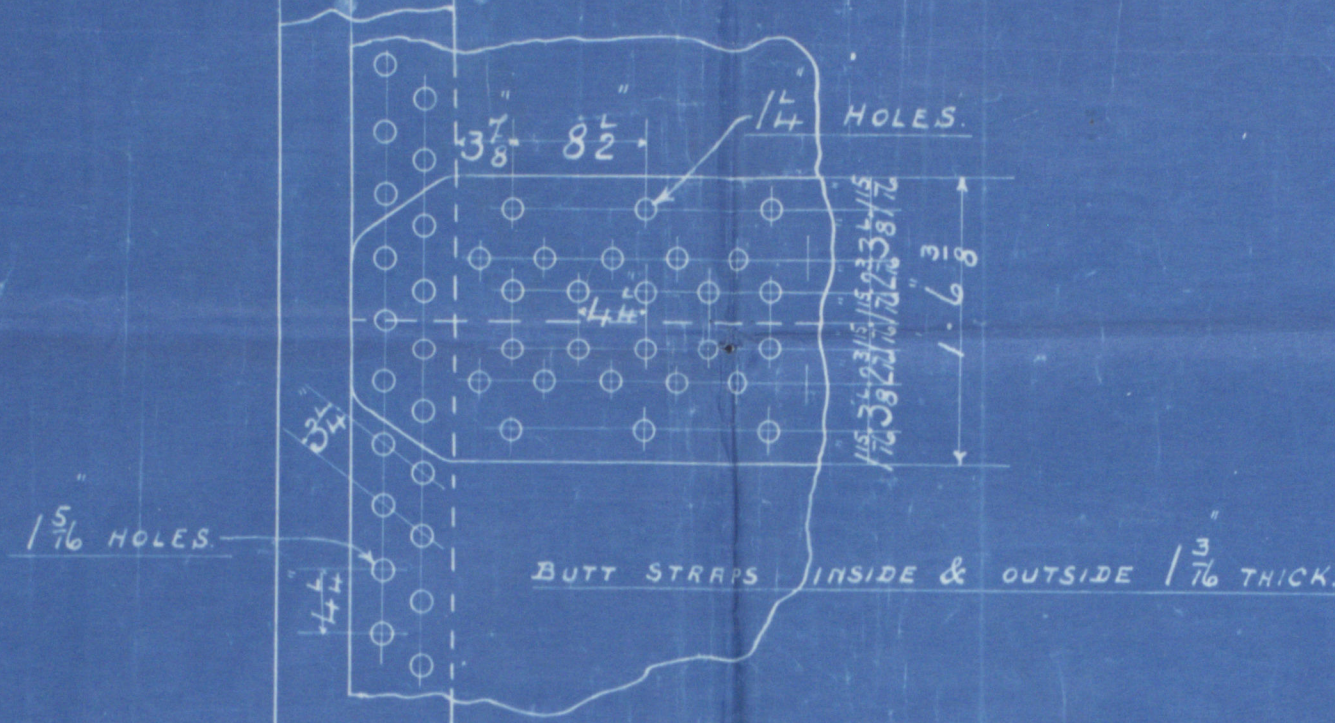
SWANSTON'S PATENT  
 FIRECLAY BRIDGE BLOCKS  
 12" x 12" x 9"

HAMILTON'S PATENT "V" FIRE-BARS

3/8" AIR SPACE BETWEEN FIRE-BARS

9-1 1/4"

TWO 3/8" DIA. BOLTS, 12 CENTRES - 6" EITHER SIDE OF CENTRE LINE



BUTT STRAPS INSIDE &amp; OUTSIDE 1 1/2" THICK

**BOILERS, 3-OFF**

SCALE 1 INCH TO A FOOT

180 LBS. WORKING PRESSURE.

TOTAL HEATING SURFACE IN THREE BOILERS = 6169 SQ. FEET.

GRATE " " " " = 173 " "

THE MINIMUM TENSILE STRENGTH OF SHELL &amp; GIRDER PLATES IS TAKEN AT 24 TONS PER SQ. INCH.



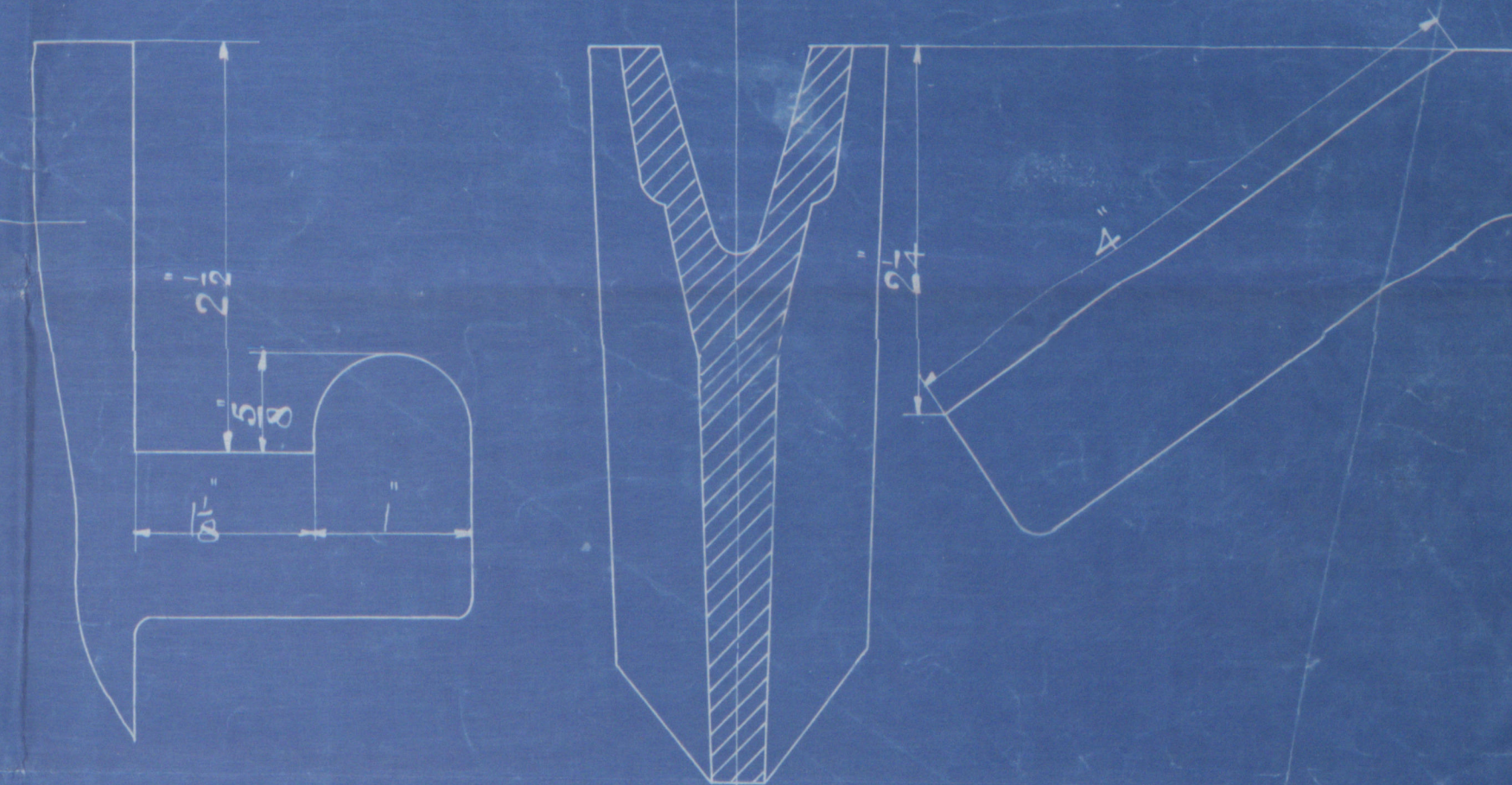
26.9.13

**FULL SIZE**

BACK BRIDGE.

SECTION OF FIRE-BAR.

FRONT BRIDGE.



BOILERS COVERED WITH HAARKE'S NON CONDUCTING COMPOSITION AND LAGGED  
 WITH SHEET IRON ON CURVED PARTS AND ON BACK OF BOILERS.

UNDERSIDE OF MAIN BOILERS TO BE COVERED WITH HAARKE'S NON  
 CONDUCTING COMPOSITION AND SECURED WITH SHEET IRON.

SHEET IRON SCREEN BETWEEN ENGINE AND BOILER ROOM  
 TO BE CARRIED DOWN TO TANK TOP AND SECURED TO ANGLE BAR FITTED  
 ON SAME BY SHIPBUILDERS. THIS SCREEN TO ALSO FORM THE BOILER BACK  
 CLEADING PLATES.

SECTIONAL PLAN OF FURNACE SHOWING SIDE-BARS.





MESSRS RICHARDSON,

From BLAIR & CO., Ltd.,  
STOCKTON-on-TEES.

For Enclosure to

Messrs Lloyd's  
Engineer Surveyors  
Middlesbrough

W421-0252 42

### 3 Main Boilers

Messrs Blair & Co Ltd

No 1791

for

Messrs Richardson Duck & Co

S.S. No 639

Working Press 180 lbs



|              |
|--------------|
| No. 5289     |
| LLOYD'S TEST |
| 360 lbs      |
| 7.5.14 - WM  |



S.S. "Portwen"

Indb Report No 8476



Supplement of No 1761

S.S. Dartwin

Indb Report No 7841

W 421-0252 1/2



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Foundation