

DRILL WATER RE-CIRCULATION
EQUIPMENT

30.7.60

cw/s/19

THE 'WHITFIELD' BOREHOLE CONTROL EQUIPMENT

The purpose of the equipment is to

- (i) Implement the provisions of the Methane Drainage Regulations regarding borehole control during drilling operations.
- (ii) Systematically drain gas from the borehole during drilling to avoid pollution of ventilation.
- (iii) Re-circulate drill water to avoid contributing to roadway deterioration.
- (iv) Improve working conditions

The 'Whitfield' Drill Water Re-circulation System employs the use of standpipes sealed in the borehole; a drill box; gas separator and a water re-circulation tank.

STANDPIPES

Five feet lengths of screwed 3" steam tube are inserted into a 115 mm borehole, the length is determined by the seam thickness being worked and the 'broken' hole observed during drilling: normally 35 to 40 feet is required. The last two lengths are shorter to allow for removal should ripping operations be necessary.

The standpipes are grouted into position to give an effective seal before the main hole is drilled.

The last standpipe fitted is provided with a 1" steam socket - plugged off at this stage - (see Diag. No. 6) to allow for pressure relief during drill box dismantling and gas main connection. This connection may be used to seal off the borehole when necessary.

DRILL BOX

Drawing Nos. 1, 2 and 3 show the Whitfield Drill Box in its stages of development. The MK I Box can be speedily constructed from equipment readily available in a Colliery Stores: and is composed of stuffing gland and control valves so arranged as to allow the free passage of return water whilst providing adequate borehole control in the event of emergency. The Mk. II Box was developed to protect the borehole seal from drill rod vibration and reduction in overall length (Mk. III) to allow for its application in more confined space.

GAS SEPARATOR

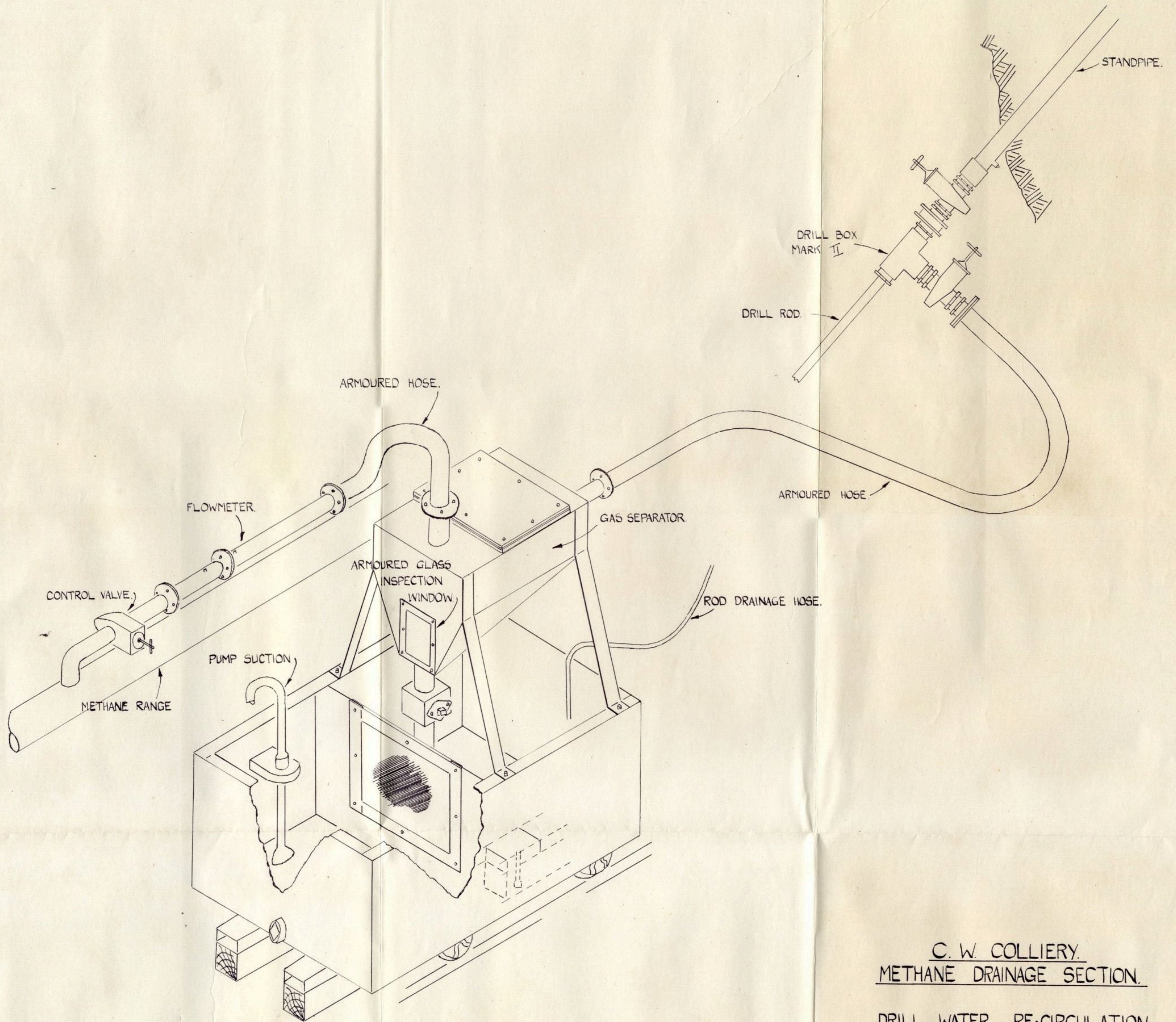
Drawing No. 4 shows the 'Whitfield' gas separator, which permits gas to be drained during boring operations and rod withdrawal. An Inspection Window is provided to give visual indication of the return of drill water. The return water outlet is submerged in the re-circulation tank to allow drainage under suction. The outlet valve is fitted to give adequate control in the event of abnormal pressures.

RE-CIRCULATION TANK

Drawing No. 5 shows the re-circulation tank, partitioned for filtering and settling: mounted on a trolley chassis for transportation. The tank capacity is adequate for the drilling of holes 400 feet long with the 'Forschritt' P1V/6 Drilling machine.

DRILL WATER RE-CIRCULATION SYSTEM

Drawing No. 6 is an isometric representation of the equipment set up for drilling, showing standpipes, with drill box, gas separator and water re-circulation tank.

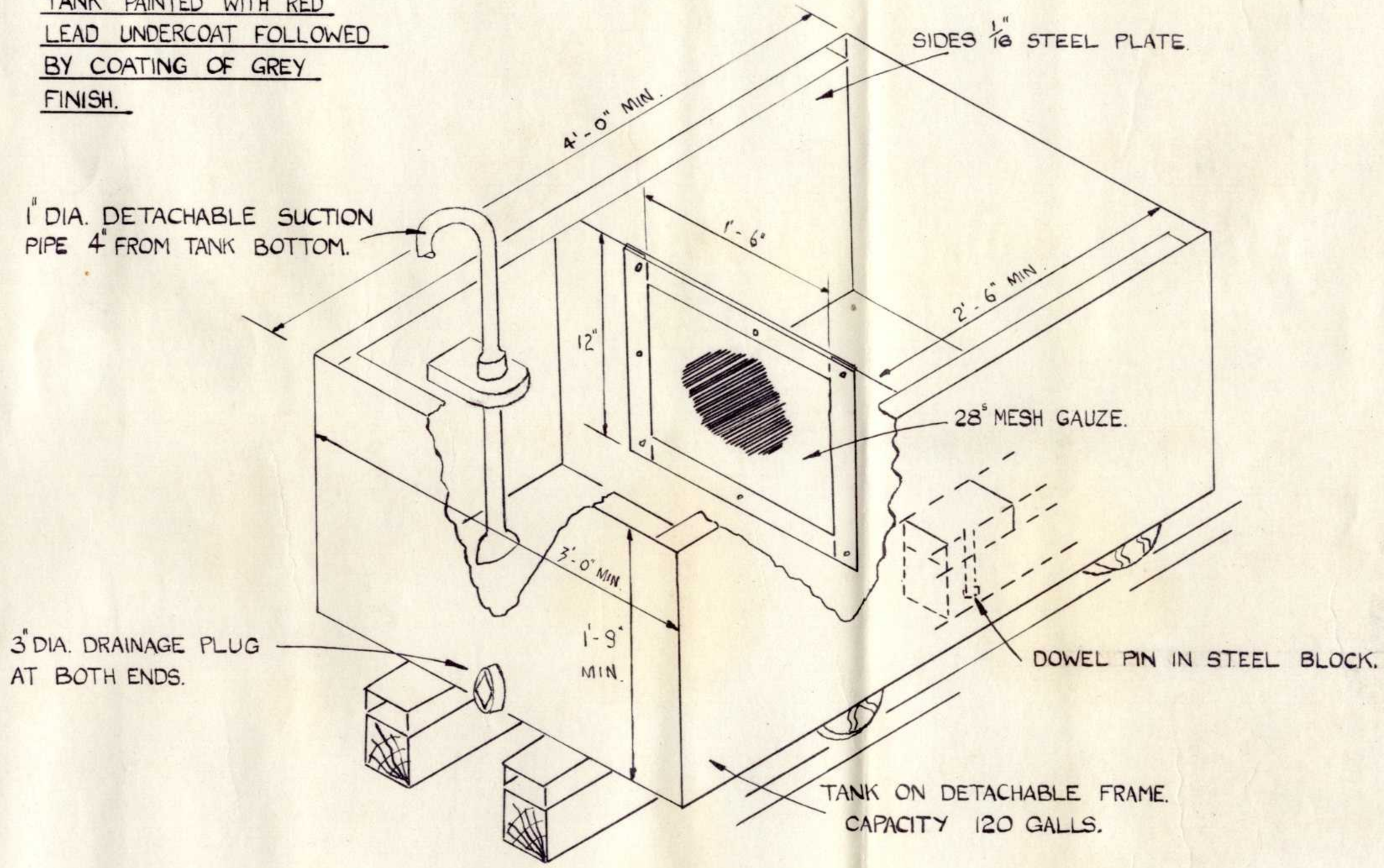


C. W. COLLIERY.
METHANE DRAINAGE SECTION.

DRILL WATER RE-CIRCULATION
SYSTEM EMPLOYING DRILL BOX,
GAS SEPARATOR AND
RE-CIRCULATION TANK.

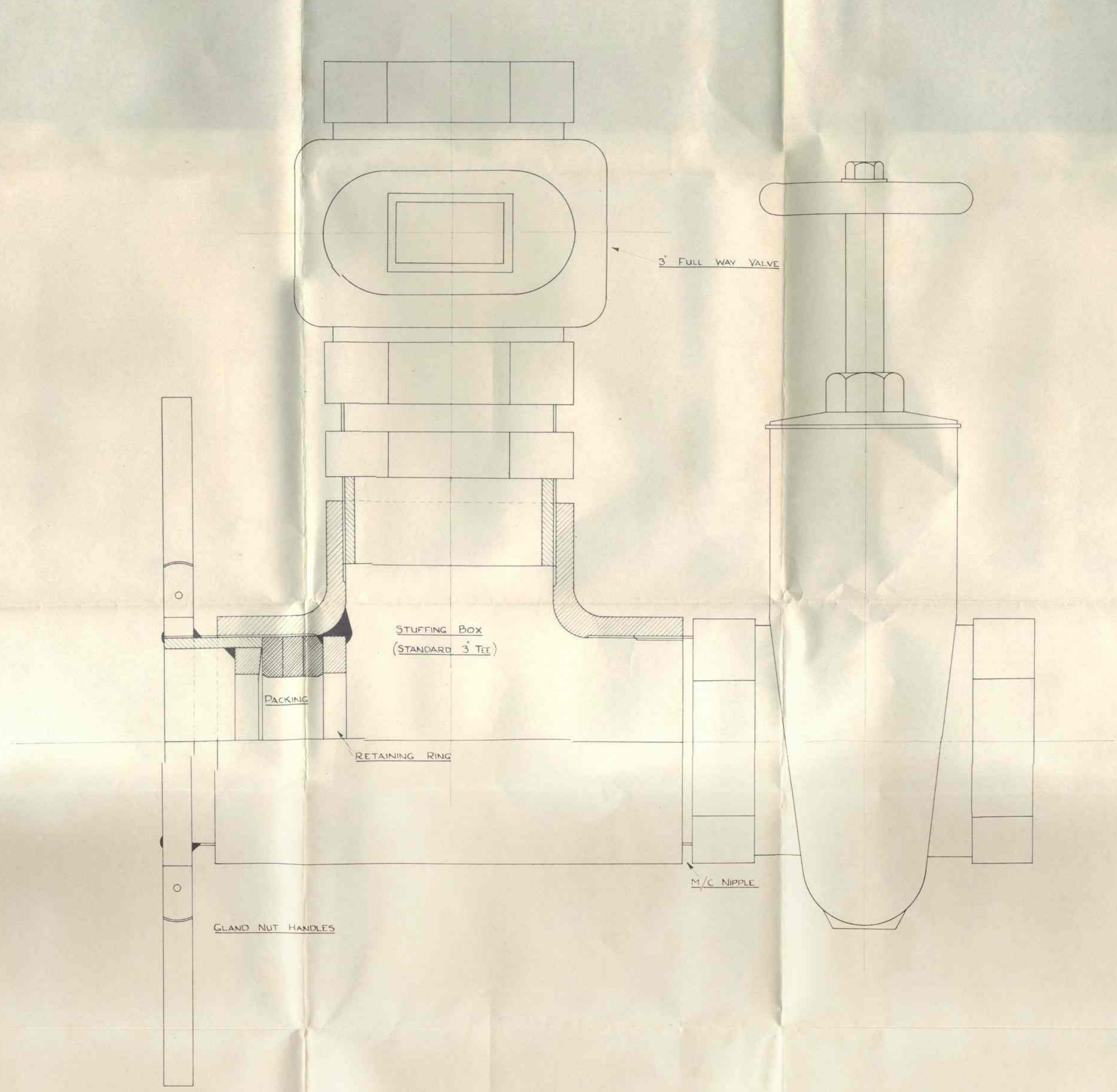
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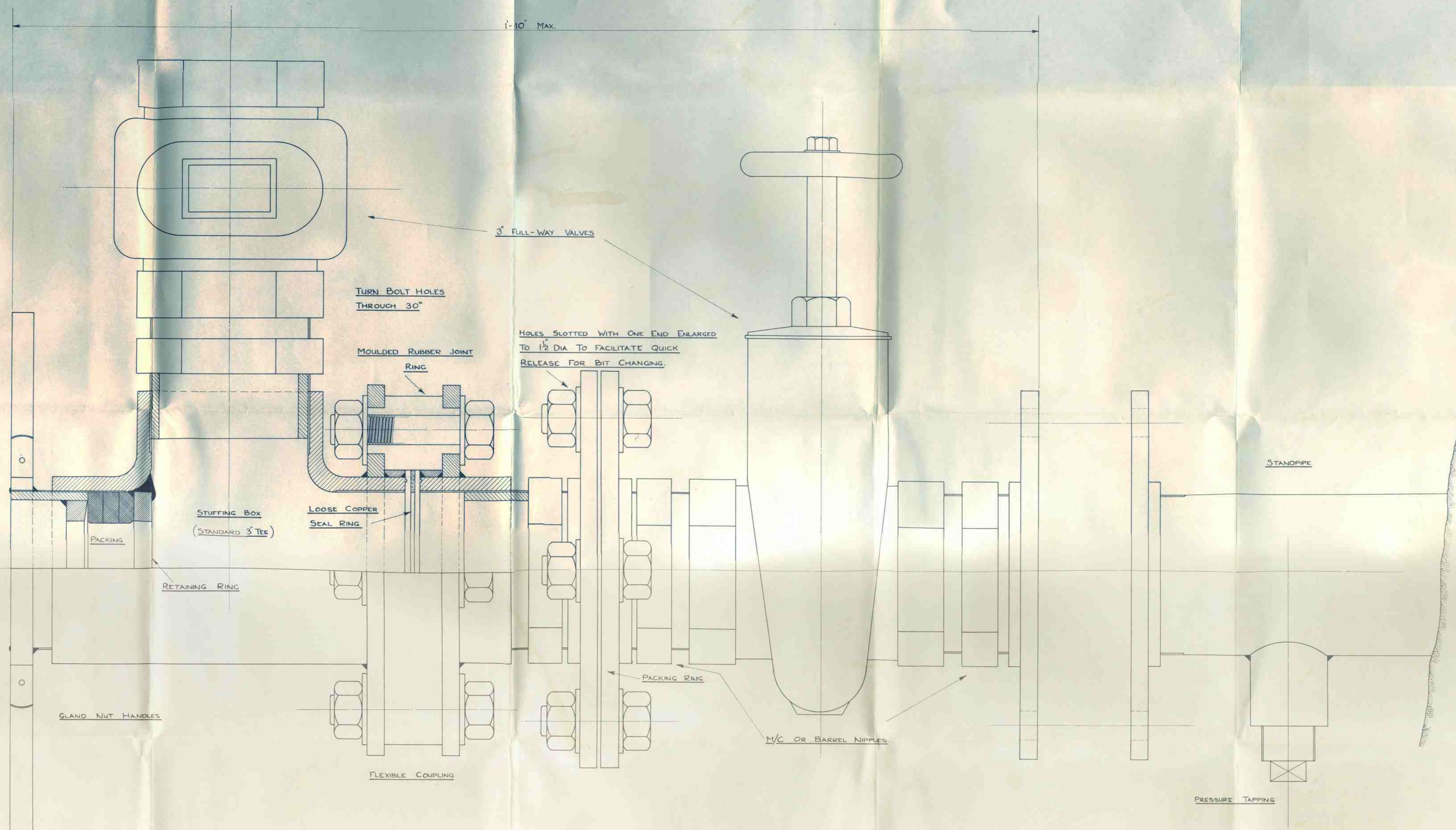
TANK PAINTED WITH RED
LEAD UNDERCOAT FOLLOWED
BY COATING OF GREY
FINISH.

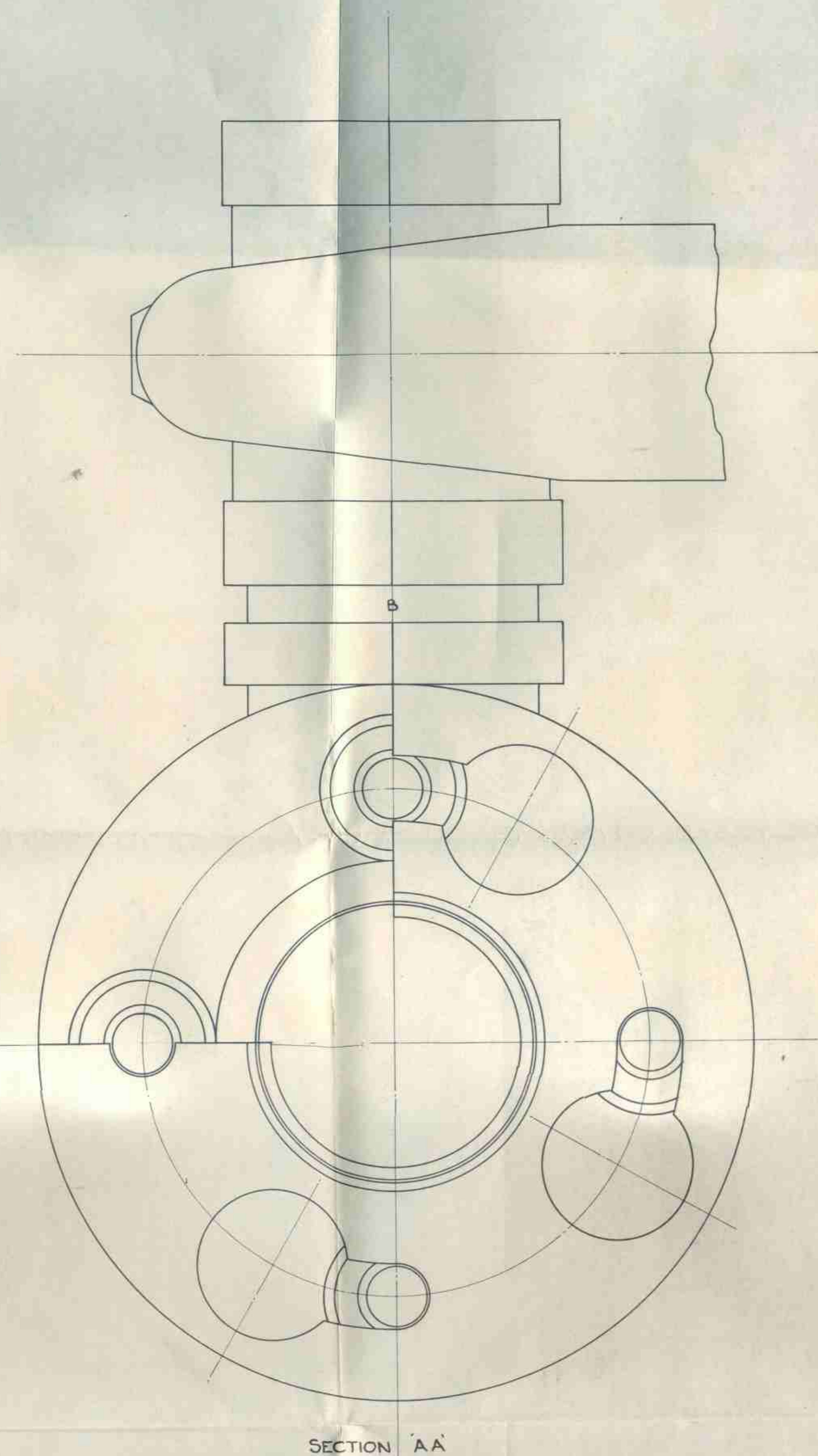
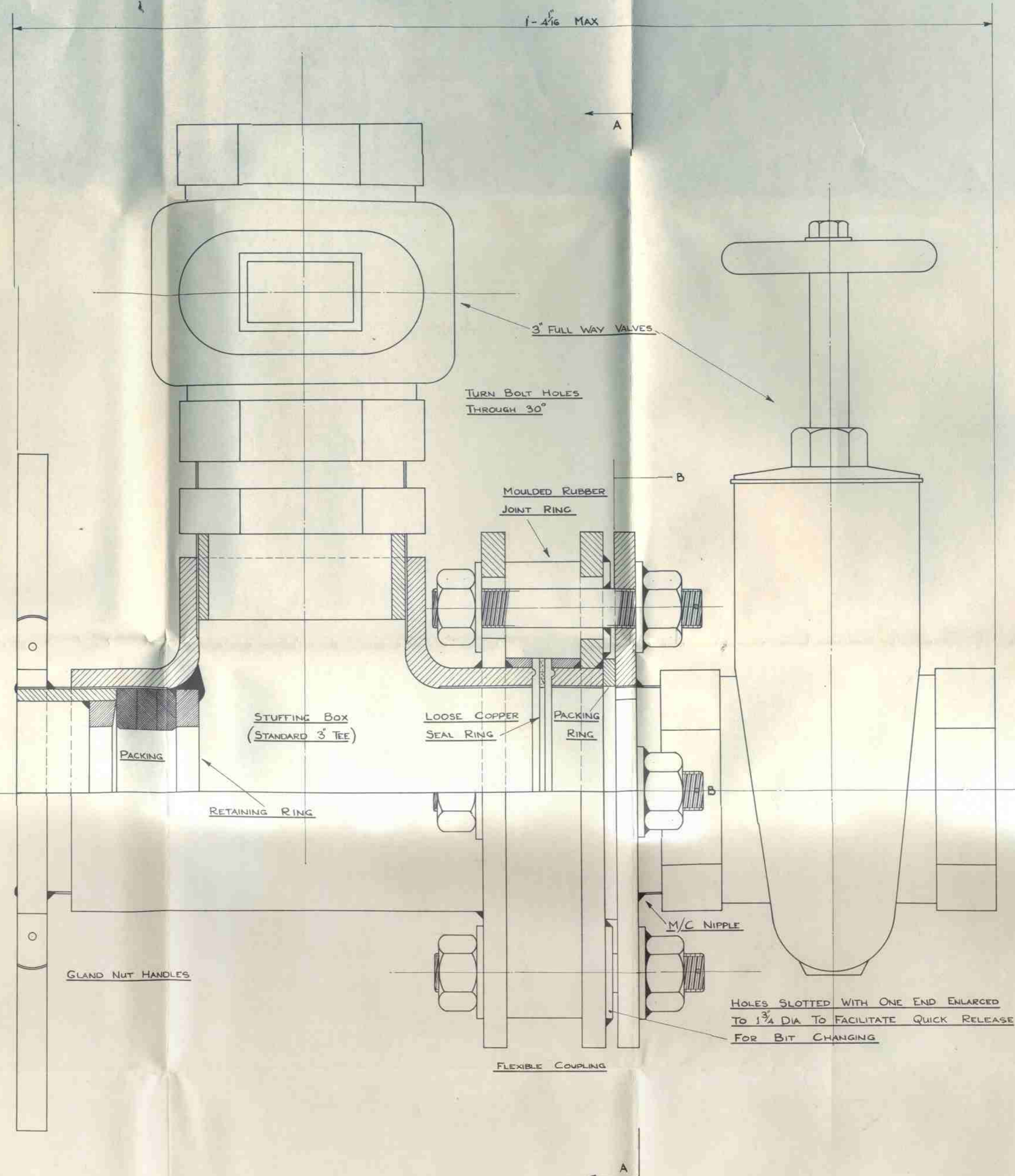


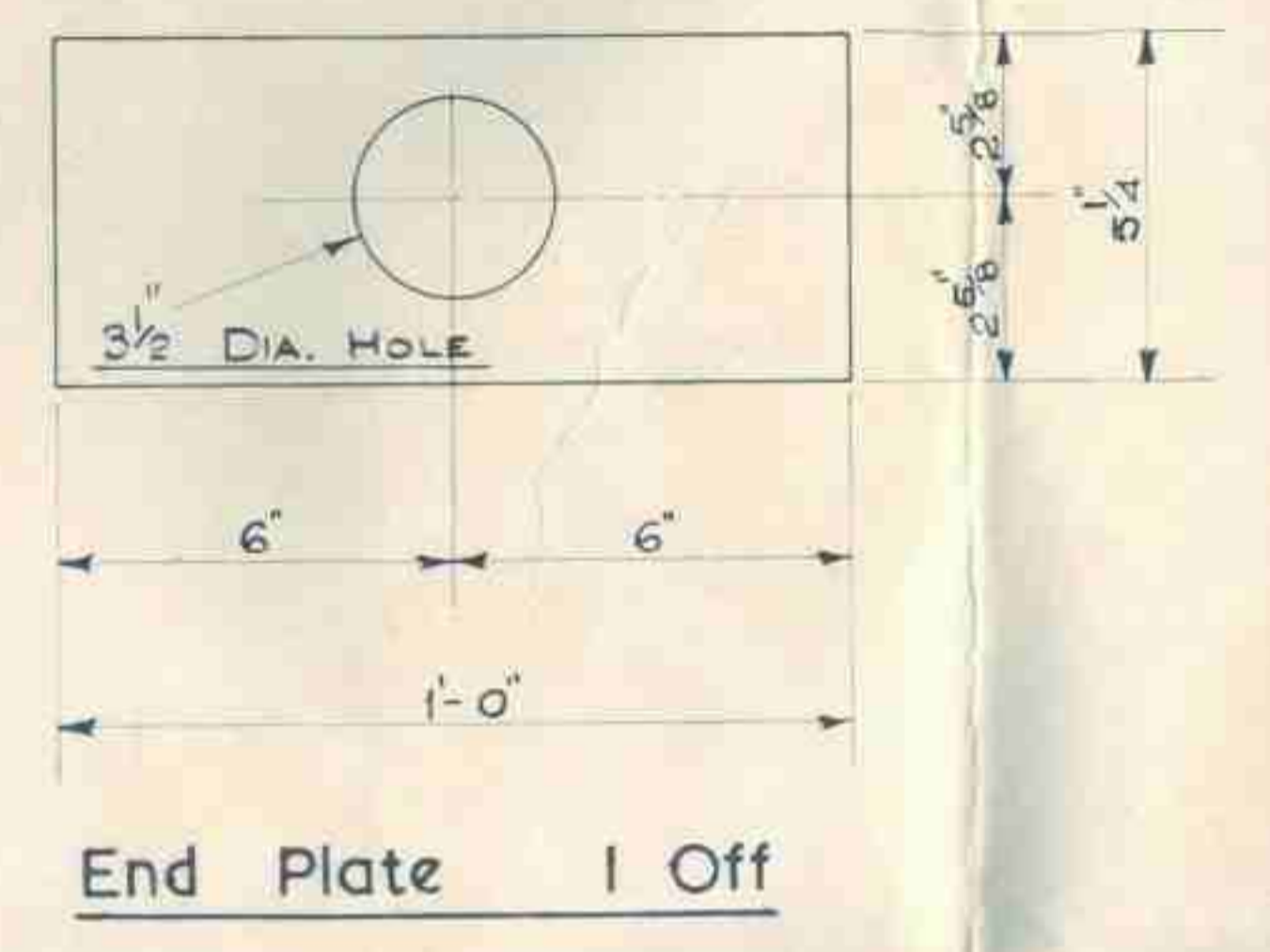
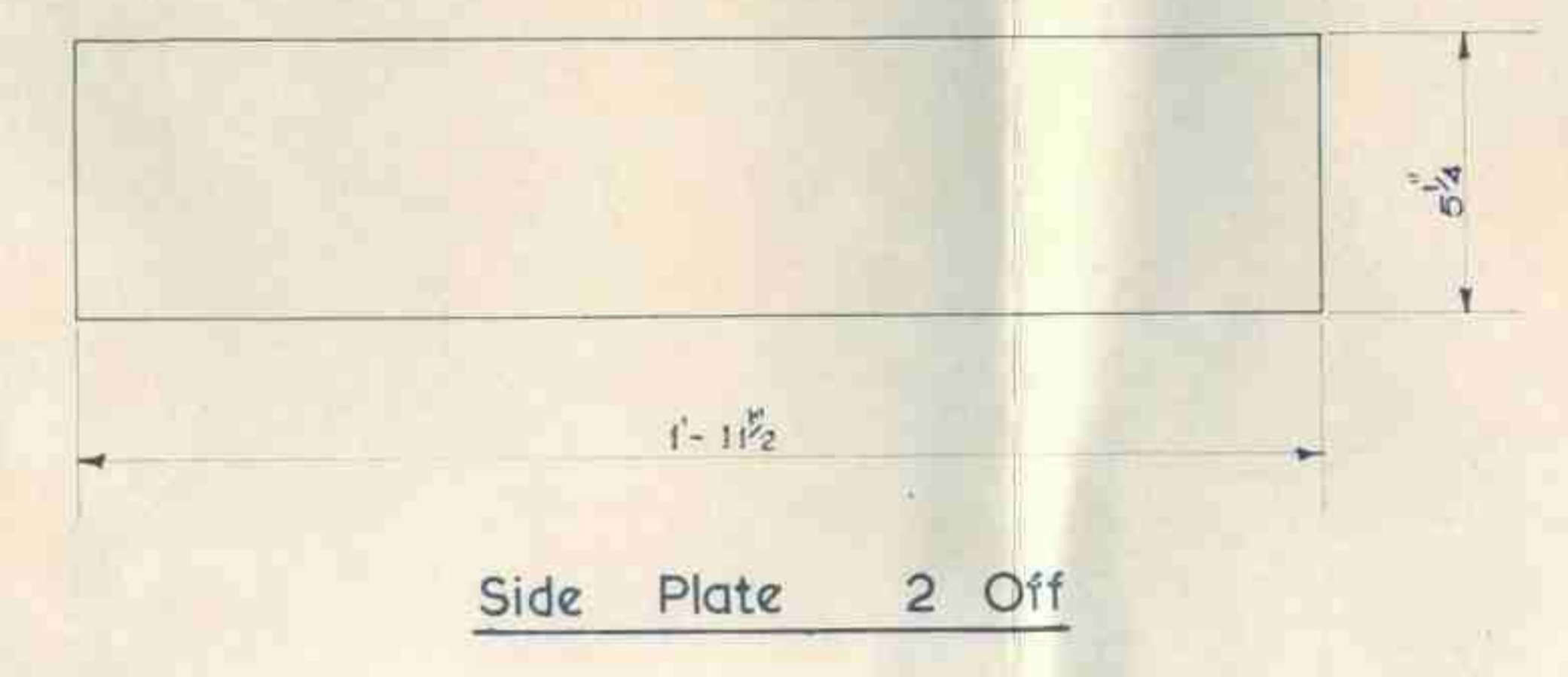
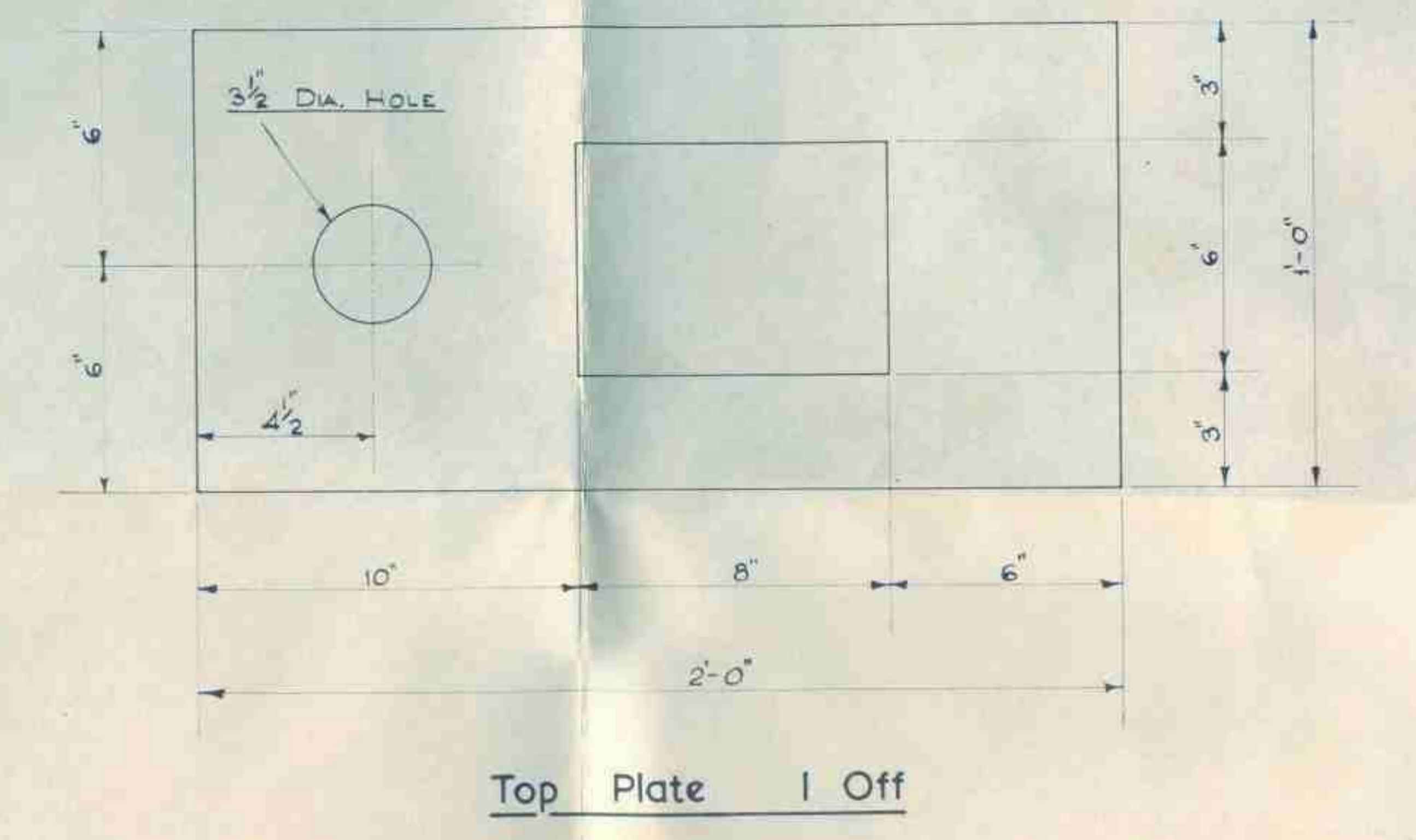
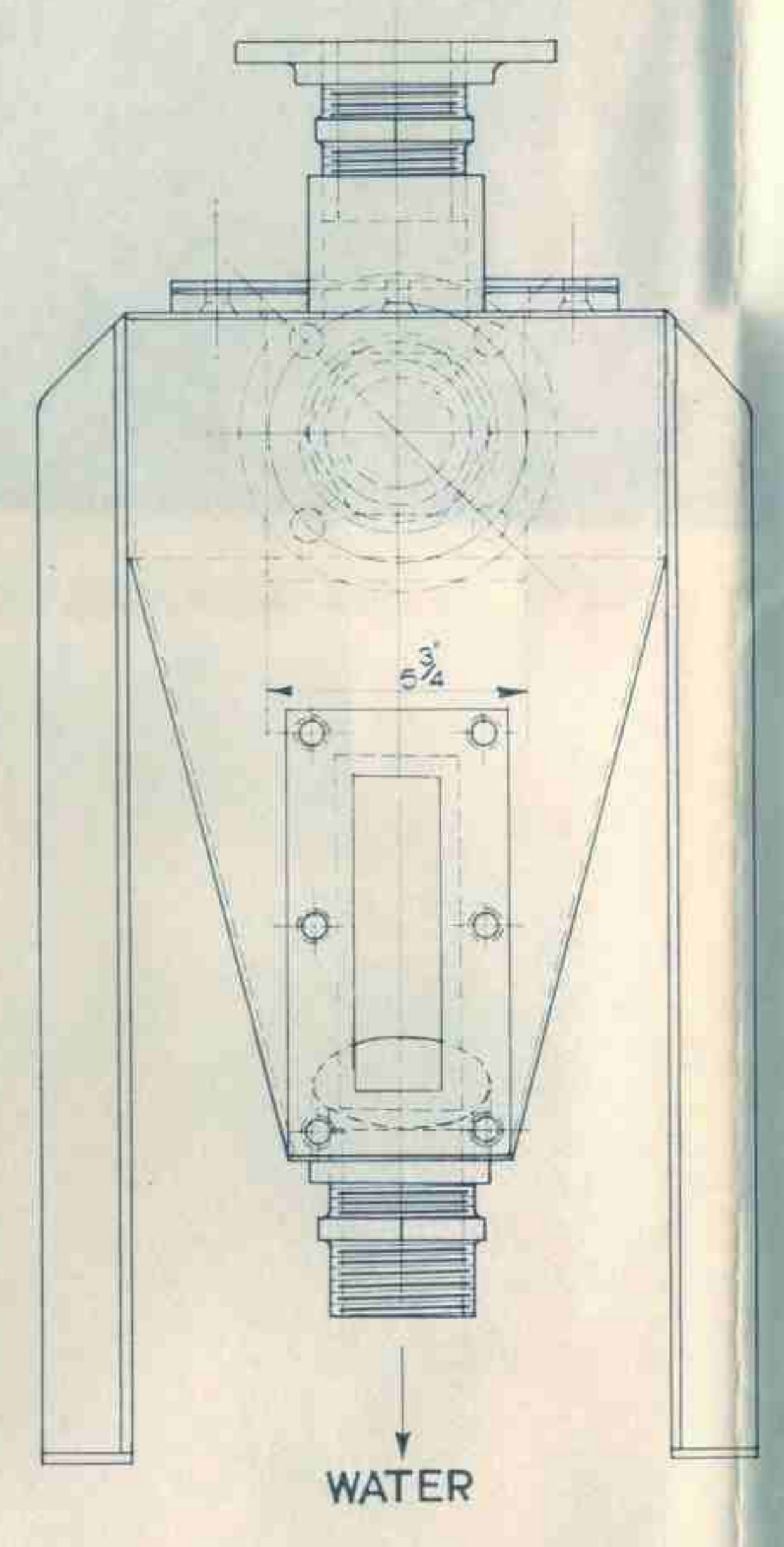
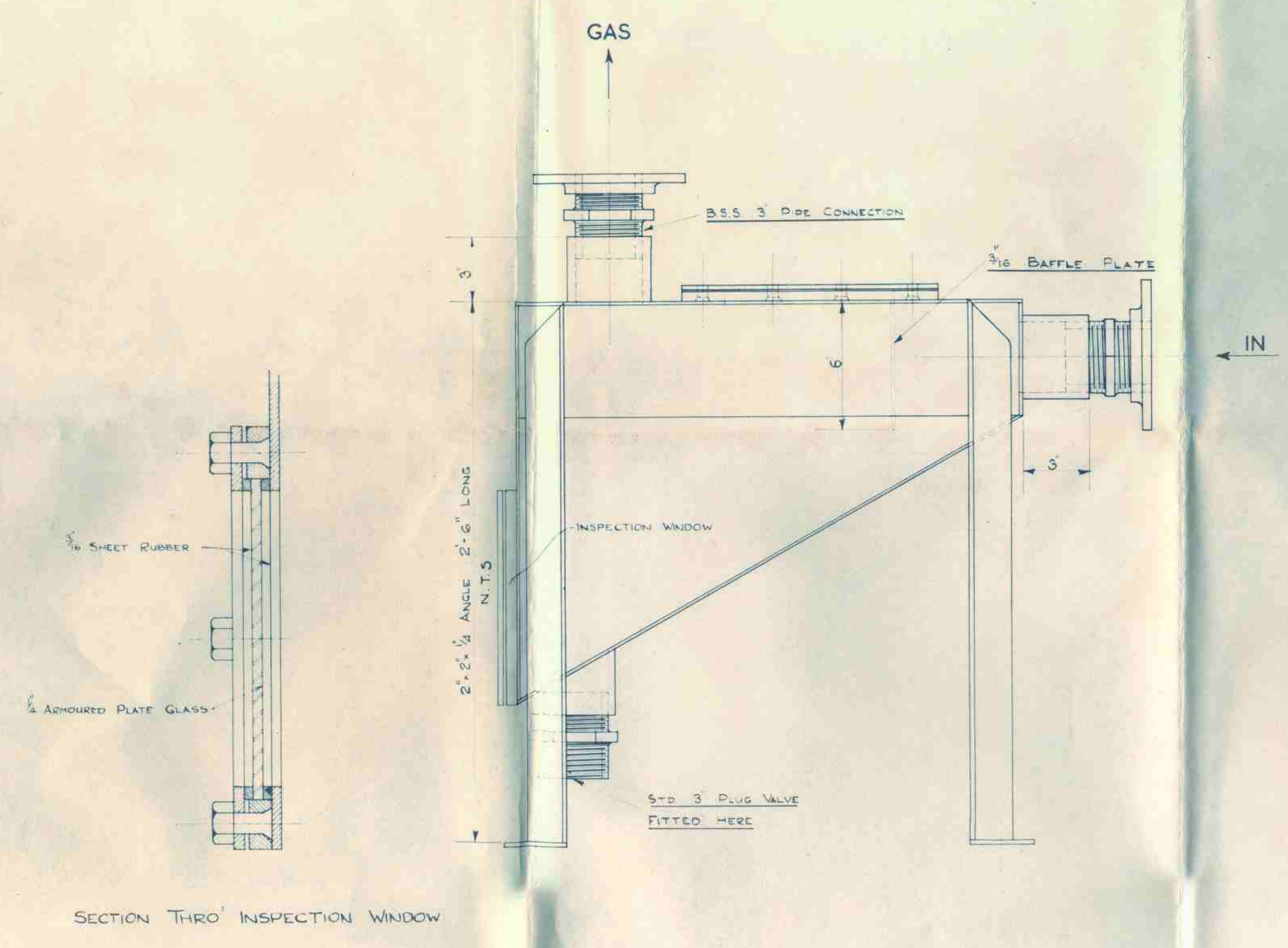
C.W. COLLIERY.
METHANE DRAINAGE SECTION.
DRILL WATER RE-CIRCULATING TANK.

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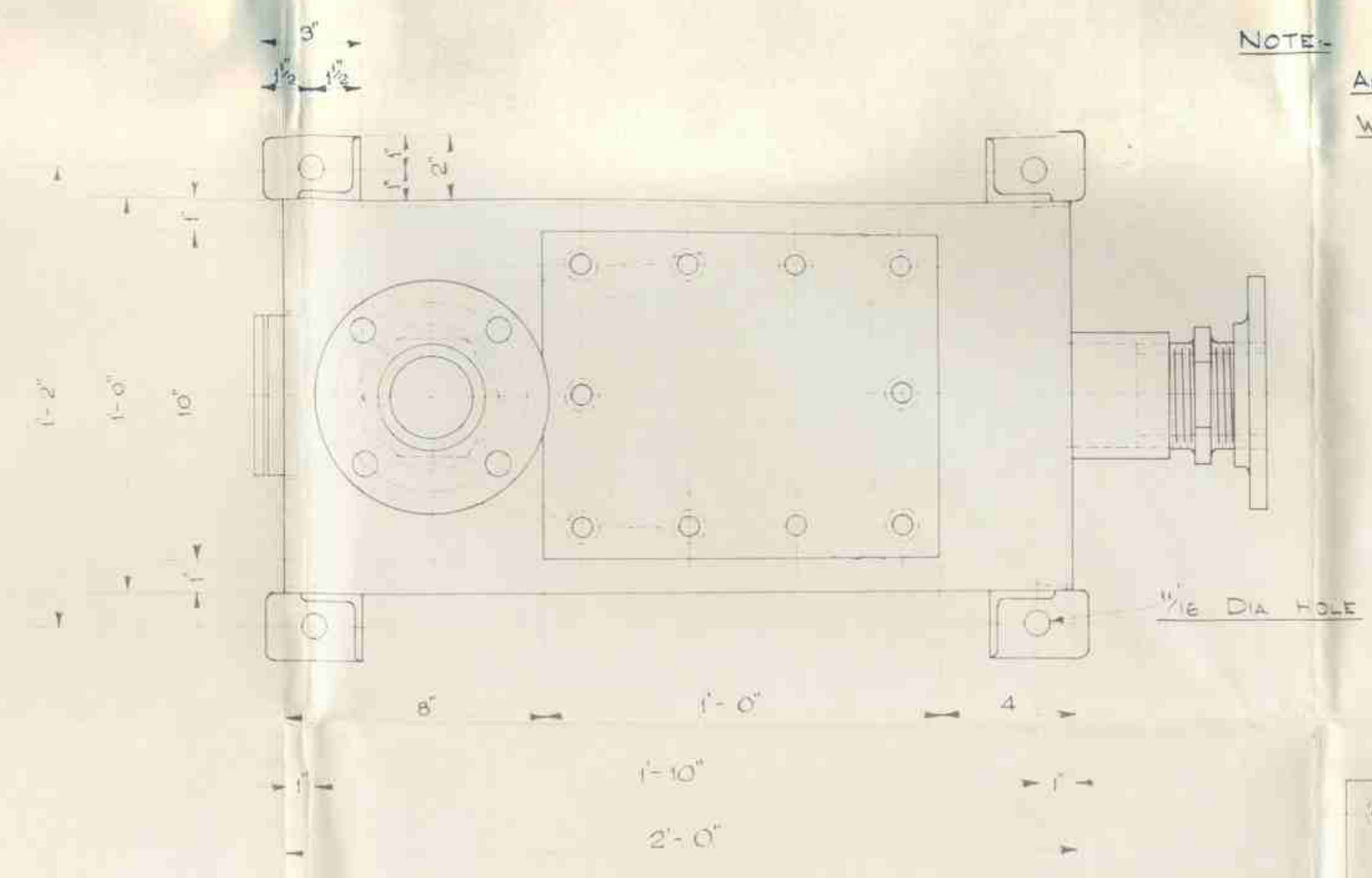


SECTION THRO' INSPECTION WINDOW

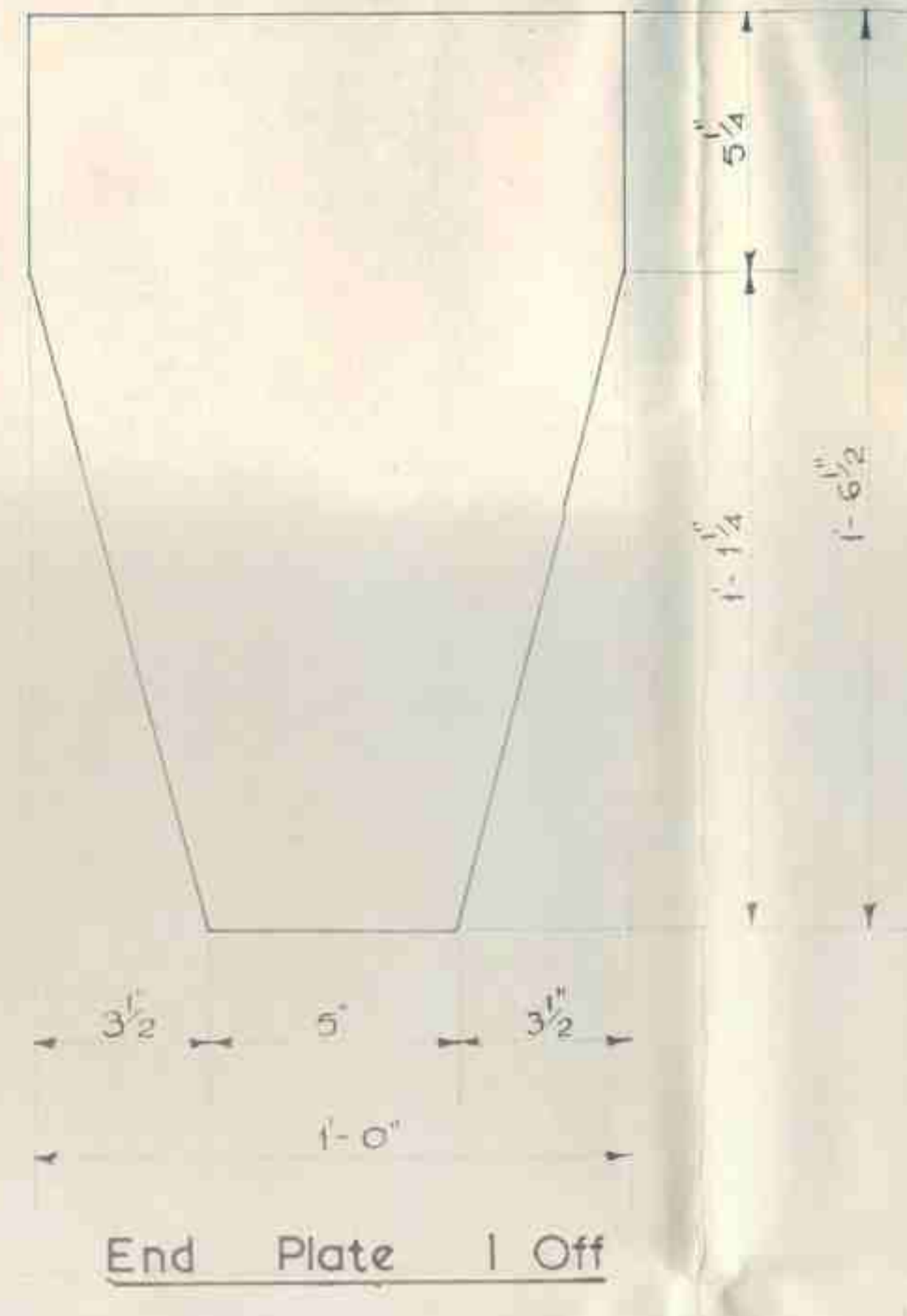
Top Plate 1 Off

Side Plate 2 Off

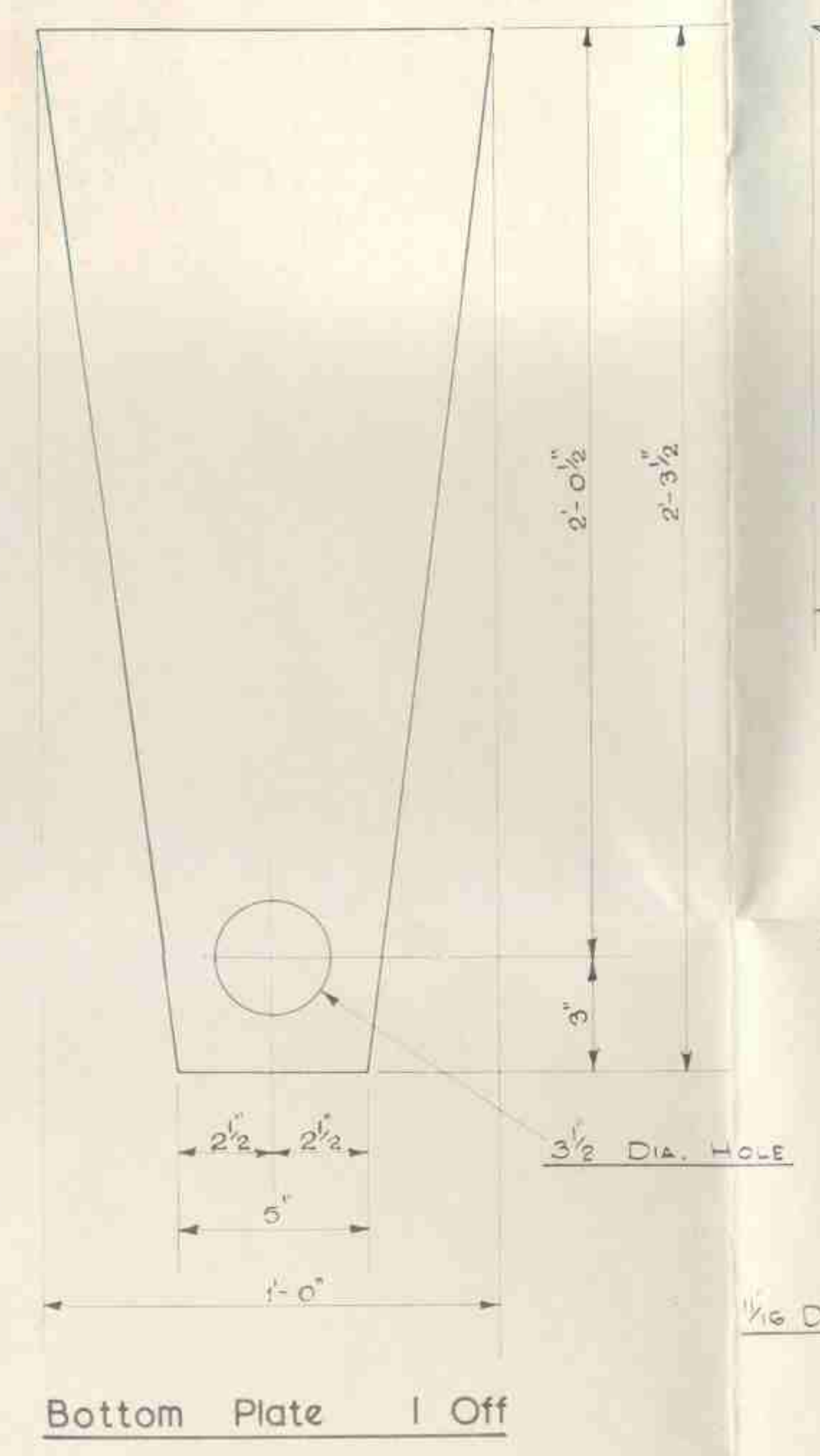
End Plate 1 Off



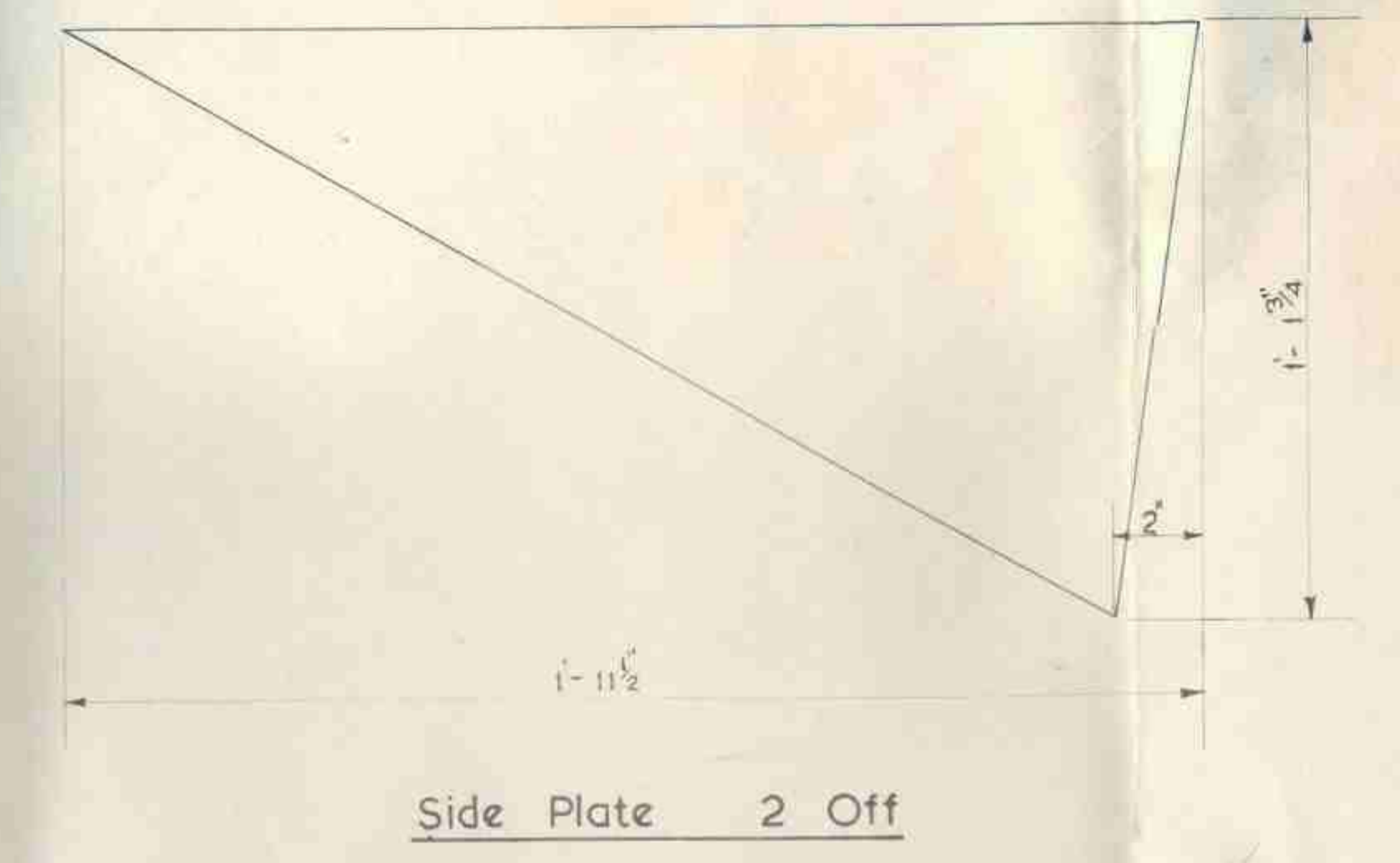
NOTE:- ALL PLATE 1/2 THK. WELDED CONSTRUCTION



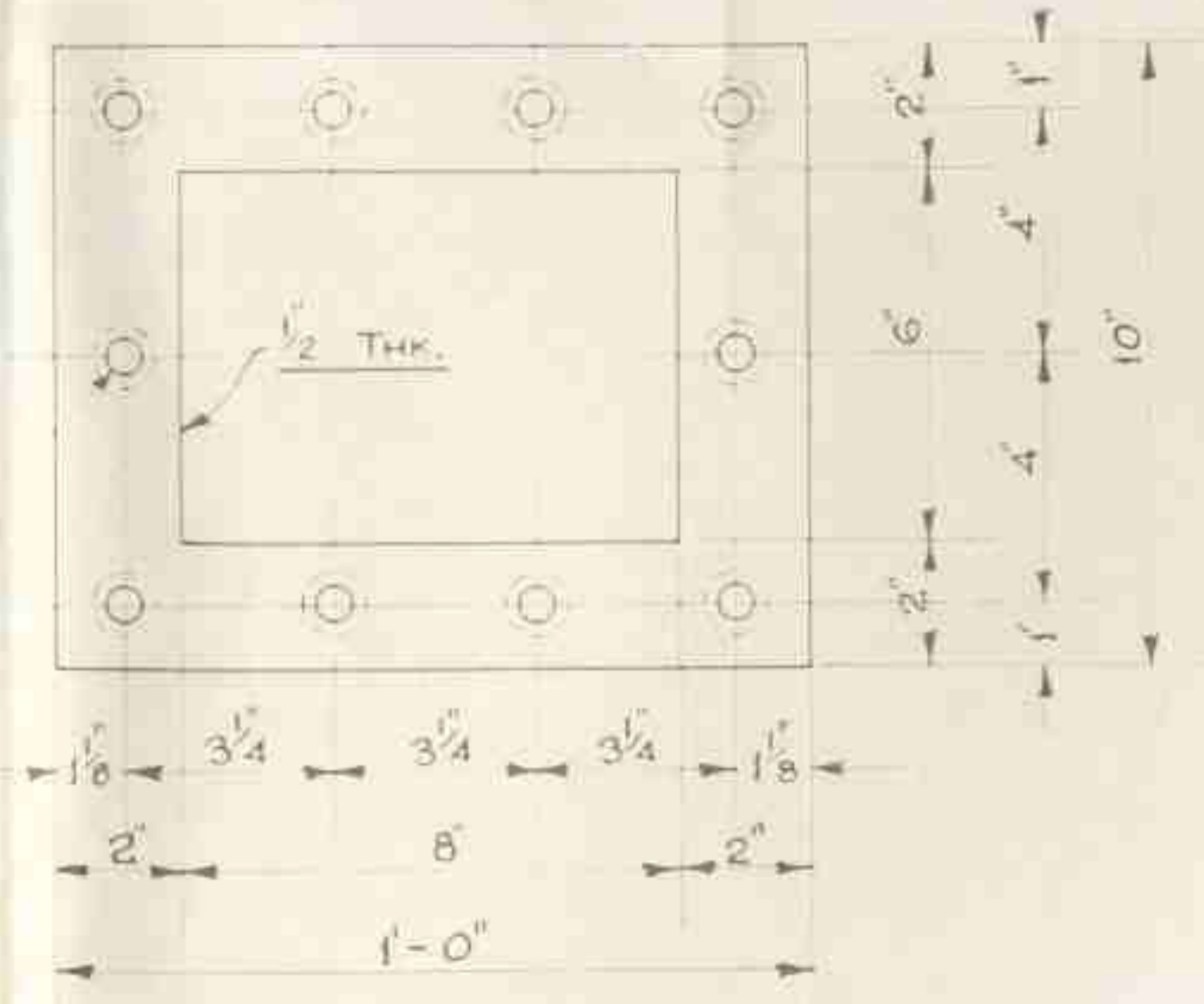
End Plate 1 Off



Bottom Plate 1 Off

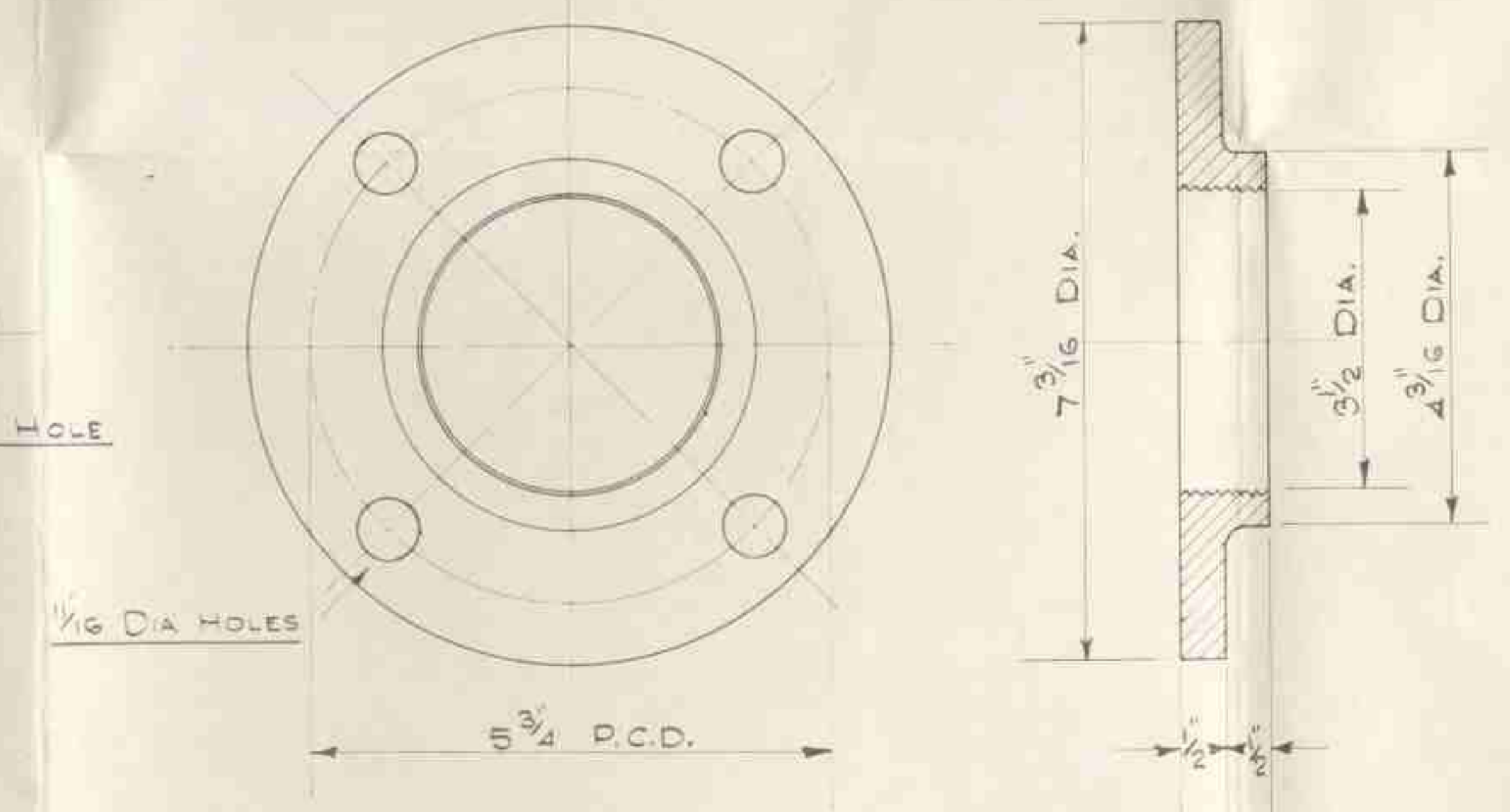
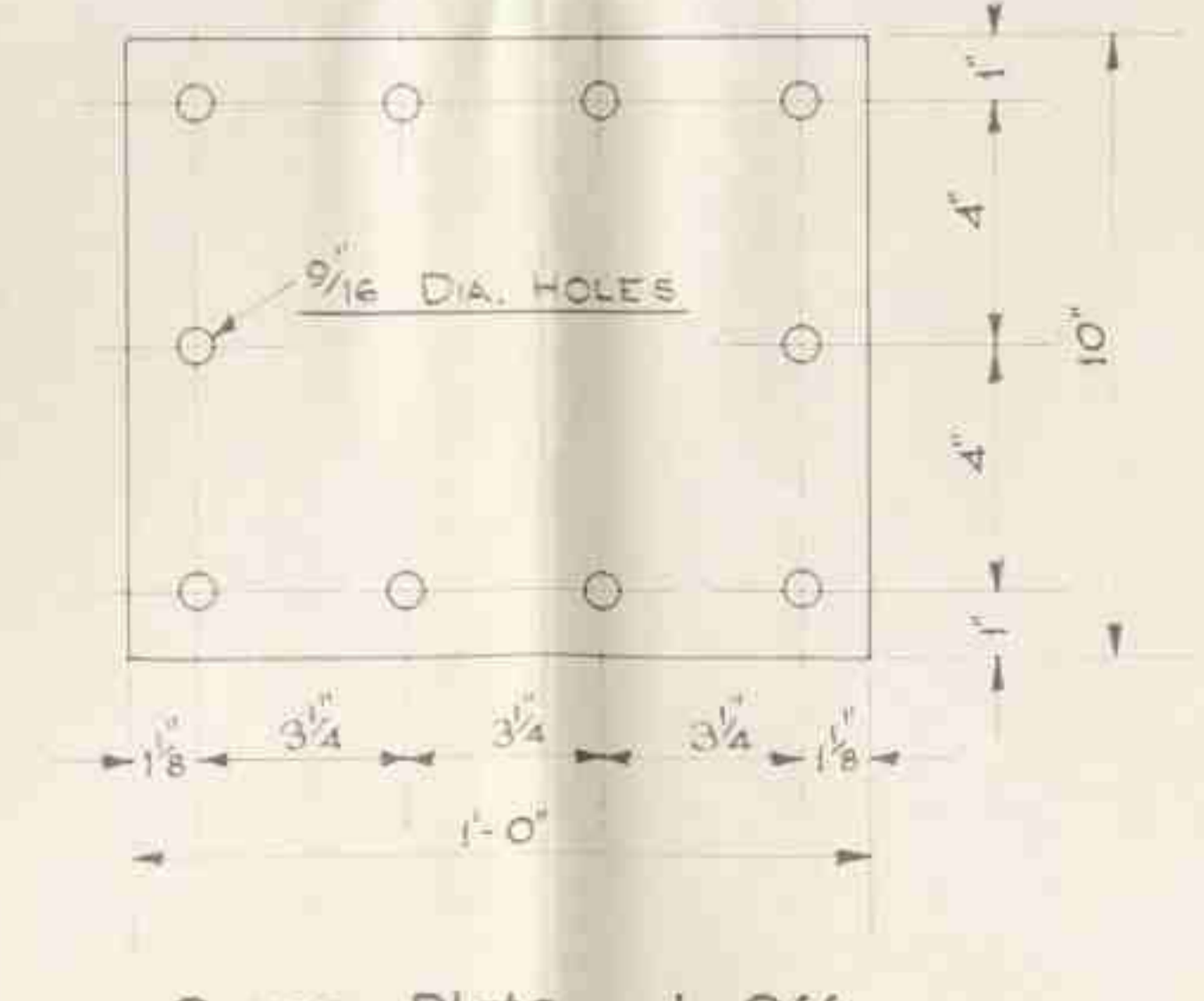


Side Plate 2 Off



Cover Plate 1 Off

HOLES CSK & TAPPED FOR 1/2 DIA BOLTS 1 1/4 LONG.



Detail Off Flange 2 Off