

RESTRICTEDFOR OFFICIAL USE ONLY*Not to be communicated to anyone outside H.M. Service***ADMIRALTY FLEET ORDER****35-MM. CINEMA PROJECTION EQUIPMENT—FIRE
PRECAUTIONS REQUIRED AND RULES FOR
INSTALLATION**ADMIRALTY, S.W.1,
9th December, 1943.

The following Order having been approved by My Lords Commissioners of the Admiralty is hereby promulgated for information and guidance and necessary action.

By Command of their Lordships,

*J. V. Markham***Distribution Limited**

To Commanders-in-Chief (not C.-in-C.,
H.F.), Flag Officers, Senior Naval
Officers, Commanding Officers R.N.
Bases and Training Establishments,
Superintendents or Officers in Charge
of H.M. Dockyards, and Admiralty
Overseers concerned.

**Shore Establishments
Only.**

NOTE :—The scale of distribution is approximately half that shown in the Admiralty Fleet Order Volume, 1941, Instructions, paragraph 10.

5938.—35-mm. Cinema Projection Equipment—Fire Precautions Required
and Rules for Installation

Shore Establishments

(N.L. 15551/42.—9 Dec. 1943.)

Thirty-five millimetre cinema projection equipment must be installed in an operating room or box of fireproof construction. Minimum floor area permissible for a box designed for one projector is 6 ft. by 7 ft. and for two projectors 10 ft. by 7 ft. The minimum height is to be 7 ft. in all cases.

2. Operating boxes must be fitted with portholes on the side facing the screen, of a size and position indicated in A.F.O. Diagram 368/43 (C.E.-in-C. Drawing No. 5452/43). The size of viewing and projection ports must not exceed 9 in. by 9 in. and 10 in. by 7 in. high respectively. The number of ports should be reduced to a minimum and should not exceed one projection and one viewing port for each projector or slide lantern in use. Where one projector only is installed, viewing and projection ports for a second projector may be fitted in anticipation of its delivery. Portholes must be glazed with first quality $\frac{1}{4}$ -in. plate glass mounted in frames which are removable for cleaning purposes. They must also be fitted with an automatic fire shutter constructed of mild steel plate which can be operated from either inside or outside the box (*see* above-quoted drawing). Any reflecting surfaces around the projection ports (e.g. the thickness of the wall in which the ports are cut) should be painted a matt black.

3. A rewinding room of similar construction must be provided adjacent to and, if possible, adjoining the operating box. This must be of a minimum floor area of 7 ft. by 4 ft. and a minimum height of 7 ft.

4. Any communicating door between operating and rewind rooms must open outwards from the former into the latter.

5. Both operating and rewind rooms must have independent exits, each of a minimum size of 6 ft. 6 in. high by 2 ft. wide, opening outwards from these compartments. Where there is no door communicating with the rewind room, the operating room must have two such independent exits.

6. All doors in both operating and rewind rooms are to be self-closing and of fireproof construction.

7. The words "NO SMOKING" are to be painted in 5-in. block letters, in red on a white ground, in a prominent position on the walls of both operating and rewind rooms and, in a similar manner but in smaller letters, on the outside of the doors to these compartments.

8. All doors must have their purpose painted clearly on both sides, e.g. "WAY OUT", "TO REWIND ROOM", "TO PROJECTION ROOM" etc.

9. The rewind room is to be fitted with a rewinding bench of hard wood 2 in. thick, or of some other substance faced with fireproof material, of a minimum length of 3 ft. by 1 ft. 6 in. deep and at a height of 24-30 in. from the floor. An additional covering of corticene on the rewind bench is permitted and advisable.

10. Although not fireproof, corticene is sufficiently slow-burning to be permitted in commercial cinemas and the floors of the compartments are to be covered with this material. No adhesive substance is to be employed in laying any corticene in these compartments.

11. When not in use, cinema compartments are to be kept locked. Entry is to be forbidden to unauthorised persons. Spare keys for unlocking the compartments in case of emergency are to be kept outside and adjacent thereto in a glazed wooden box, the purpose of which is to be clearly marked.

12. (a) All rotary converters, rectifiers, transformers and fuses, and resistances for the projector lamp, whether arc or incandescent, must be installed outside the operating and rewinding rooms.

(b) Double pole ironclad switches are to be provided in the operating room for cutting off the supply to the projector and sound equipment. Where two arc lamp projectors are installed, a separate switch is to be provided for each

machine. Means must also be provided whereby the supply to the equipment may be cut off from a position outside the operating room. Switches controlling the input side of a converter, rectifier or transformer, if within reasonable access of the operating room, are considered suitable for this purpose.

(c) All switches are to be clearly marked to indicate the circuits or apparatus they control, so that current may be cut off in the event of fire to obviate the risk of shock.

(d) All fixed electrical wiring in operating and rewinding rooms must be enclosed in metal conduit, efficiently bonded and earthed. Flexible leads are to be restricted to those to and from the projector and amplifier and kept as short as possible, also enclosed in flexible metallic tubing or covered with asbestos.

(e) All lights in operating, rewinding and film storage rooms to be in bulkhead or well glass fittings.

(f) No electrical apparatus other than lighting, or approved means of heating, are to be permitted in the rewinding and film storage rooms.

13. The following fire-fighting equipment is to be supplied:—

(a) One asbestos blanket, Pattern 7584 (already supplied with each projector), which should be suspended from the ceiling adjacent thereto.

(b) *Projection Rooms*.—Two type C.D.12, Admiralty Pattern 4738, or three type C.D.7, Admiralty Pattern 4737, situated within the room, one being adjacent to each door.

(c) *Rewind Room*.—One type C.D.12, Admiralty Pattern 4738, or two type C.D.7, Admiralty Pattern 4737, situated within the room and adjacent to the exit.

(d) One additional extinguisher, Admiralty Pattern 4738, is to be held in each establishment as spare.

14. Purchase of the following carbon dioxide fire extinguishers for use on nitro cellulose film fires has been arranged under Subhead B.8.E from The Pyrene Co. Ltd., under contract dated 29th July, 1943, C.P.7B/88525/43, for distribution as follows:—

Pattern	Description	Rosyth	Mersey Area	Severn Area	Total
4737	Extinguishers, Pyrene, C.O. ₂ , Hand, Fire, Type C.D.7 ...	100	100	100	300
4738	Extinguishers, Pyrene, C.O. ₂ , Hand, Fire, Type C.D.12 ...	100	100	200	400

These extinguishers are being added to the authorised list of Naval Stores, page 286, lines 12 and 13 respectively, under the Pattern numbers and descriptions shown above. Empty cylinders should be returned to the nearest dockyard or R.N. store depot for recharging by either The Carbon Dioxide Co., Ltd., or The Pyrene Co., Ltd., as a local purchase arrangement.

15. The basis of 35-mm. film stock is nitro cellulose. This is highly inflammable, giving off an explosive vapour when heated, and is to be treated with due regard to these facts.

16. In handling 35-mm. film the following regulations are to be observed:—

(i) Not more than two reels of film are to be allowed in the projection room at any one time, and are only to be permitted therein during the projection of films.

(ii) Films are to be stowed in their cans and not on reels. Cabinets for film spool stowage, 12-way, Pattern 7564, are supplied only for use in the rewind room and for holding films which are required for immediate use prior to exhibition. These cabinets are not to be used for the storage of film and not more than one of these articles should be required for any installation.

(iii) Not more than 20 standard cans of film, containing 1,000-ft. each or their equivalent, are to be stored in any rewind room at any time.

- (iv) Up to 200 standard 1,000-ft. reels of film or their equivalent in any one establishment may be stored in steel cupboards (subhead E.4), which must be placed in a safe locality within a fire-resisting building, away from radiators, heating devices or the direct rays of the sun.
- (v) No smoking or naked lights are to be allowed in rooms where steel cupboards containing film are stowed, nor is combustible material to be stowed within a distance of 10 ft. of such cupboards.
- (vi) Rooms and cupboards used for the storage of film are to be inspected and ventilated daily by a responsible and competent rating.
- (vii) Regulations for the storage of more than 200 standard 1,000-ft. cans of film or their equivalent will be promulgated in a further A.F.O.
- (viii) No smoking or naked lights are to be allowed anywhere where film is situated in or out of cans or where film is handled, even if no film is present at the time.
- (ix) No projector fitted with an automatic fire extinguisher may be used unless the device is set and fitted with a loaded cylinder of CO₂ (Roc Cylinders Full, Pattern No. 3735). The automatic fire extinguisher has a limited application and will not provide complete immunity from fire. A reserve stock of not more than six and not less than two Roc cylinders must be maintained.

17. The vast majority of fires in cinemas are caused by negligence. If a fire occurs in a projector, the operators are generally to blame for carelessness in projecting, examining or rewinding the film and are to be held responsible accordingly, even if no damage is caused.

18. Projection, rewind and film storage rooms are to be kept at a temperature of about 60°. Adequate ventilation must be provided. Heating must be by water or steam pipes or by low temperature tubular electric heaters mounted at a height of 6 ft. 6 in. from the deck. Where this is not practicable, guards are to be provided 4 in. clear from the heating appliance. Electric filament heaters or open fires are not permitted.

19. Dust covers are to be provided for cinema projectors and amplifiers.

20. (a) Amplifiers are to be mounted on a shelf fixed at a convenient height on the wall in which the ports are pierced and on the right hand (operating) side of a single projector or between the two projectors where a dual installation is provided.

(b) The following tools and equipment should be provided for the use of cinema operators if these operators have not already been supplied with them from the R.N. School of Cinema Projectionists, R.N. Barracks, Chatham:—

Feeders, oil ... ..	...	Pattern No. 402	Nos. 1
Feeders, oil ... ..	...	Pattern No. 21	Nos. 1 (35-mm. installations only).
Screw drivers ... ..	...	Pattern No. 3603	Nos. 1
Screw drivers ... ..	...	Pattern No. 3604	Nos. 1
Pliers ... ..	...	Pattern No. 1398	Nos. 1
Pliers ... ..	...	Pattern No. 3605	Nos. 1
Brushes, crow, small ... ..	...	Pattern No. C.356	Nos. 1
Brushes, crow, small ... ..	...	Pattern No. C.380	Nos. 1
Scissors ... ..	...	Pattern No. 50	1 pair
Chamois leather ... ..	...		Nos. 1
Carbon tetrachloride ... ..	...		$\frac{1}{2}$ gallon
Cleaning cloth, surgical spirit and cambric for lens cleaning.			

21. Furniture and apparatus in operating and rewind rooms is to be arranged so as to afford unimpeded egress in case of fire, and must be limited to a total of one chair or stool for each operator in these compartments.

22. Construction of operating boxes and rewind rooms.—Operating boxes and rewind rooms must be constructed of fireproof material. Non-permanent compartments of timber framework, covered both sides with flat asbestos sheeting,

are permissible and a suitable design is given in A.F.O. Diagram 368/43, (C.E.-in-C., Drawing No. 5452/43). Where operating boxes of the "portable" type are used, a railing or other device must be placed outside to prevent access to within 3 feet of the structure except as is necessary for the exit of the operators.

Instructional Cinema Auditoria

23. Films are only to be shown in rooms with at least two exit doors. All exit doors are to open outwards.

24. In rooms regularly used for showing films, all exits are to conform to the following scale:—

(i) Units of Exit Width

(a) In new buildings the unit of exit width should be 22 in., and all doorways be at least 2 units wide, i.e. 44 in.

(b) In existing buildings:—

Doorways 40 in. to 55 in. may count as 2 units.

Doorways 56 in. to 75 in. may count as 3 units.

Doorways 76 in. to 100 in. may count as 4 units.

Doorways 101 in. to 125 in. may count as 5 units.

(c) In determining what exits are needed, doorways under 40 in. should be disregarded, except that, in small halls seating 150 persons or less, doorways 30 in. wide may count as single units.

In all buildings, neither revolving doors, doors opening inwards, nor turnstiles, should be taken into account as exits.

(ii) Number of Exits and Units Needed

The following table shows the minimum number of units of exit width and the minimum number of exits required, according to the number accommodated:—

Number accommodated	Units and Exits
Under 80	2 units 1 exit
80 to 350	4 units 2 exits
350 to 500	5 units 2 exits
500 to 750	8 units 3 exits
750 to 1,000	10 units 4 exits
1,000 to 1,250	13 units 4 exits
1,250 to 1,500	15 units 5 exits

If it is desired to work to floor areas instead of numbers accommodated, six square feet should be allowed per person in a closely seated audience.

Persons moving in an orderly manner without hurry should pass at the rate of about 40 persons per minute per standard of unit of exit width.

The above table provides for the auditorium to be emptied in 2½ minutes or less.

(iii) There should be an exit within 75 feet from any part of the floor. All entrance doors, corridors and stairways (if any) should be available for purposes of exit, the doors opening outwards from the building.

25. Gangways of a minimum width of 3 ft. 6 in. are to be provided to allow unobstructed passage to, and maximum egress through, all exits. Sufficient room must be left between rows of seats to allow the audience to stand, turn and march out in an orderly manner.

26. Whenever films are shown, a responsible officer or rating must be present to take charge in the event of emergency, and rules for the evacuation of the cinema are to be posted prominently within the building.

27. Fire appliances, suitable to the character of the building and adequate to deal with an outbreak of fire, are to be provided and maintained in good order at suitable fire points clearly marked as such.

28. Where exits from auditoria open directly on to a staircase, continuous handrails are to be fitted and the exits are to open immediately on to a landing giving a space of at least five feet from the exit to the top stair. Where the level of an exit is four feet or less from the ground, a ramp of a suitable and safe gradient is to be fitted.

29. (a) Safety or emergency lighting is to be provided in the auditorium and the exits therefrom, and must be maintained during the whole time the audience is present. This lighting is to consist of one of the following systems :—

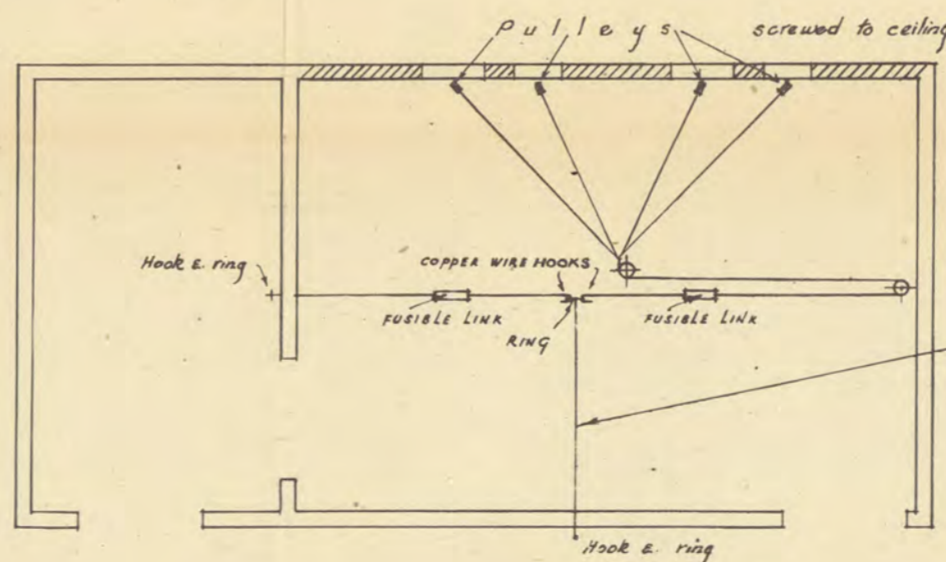
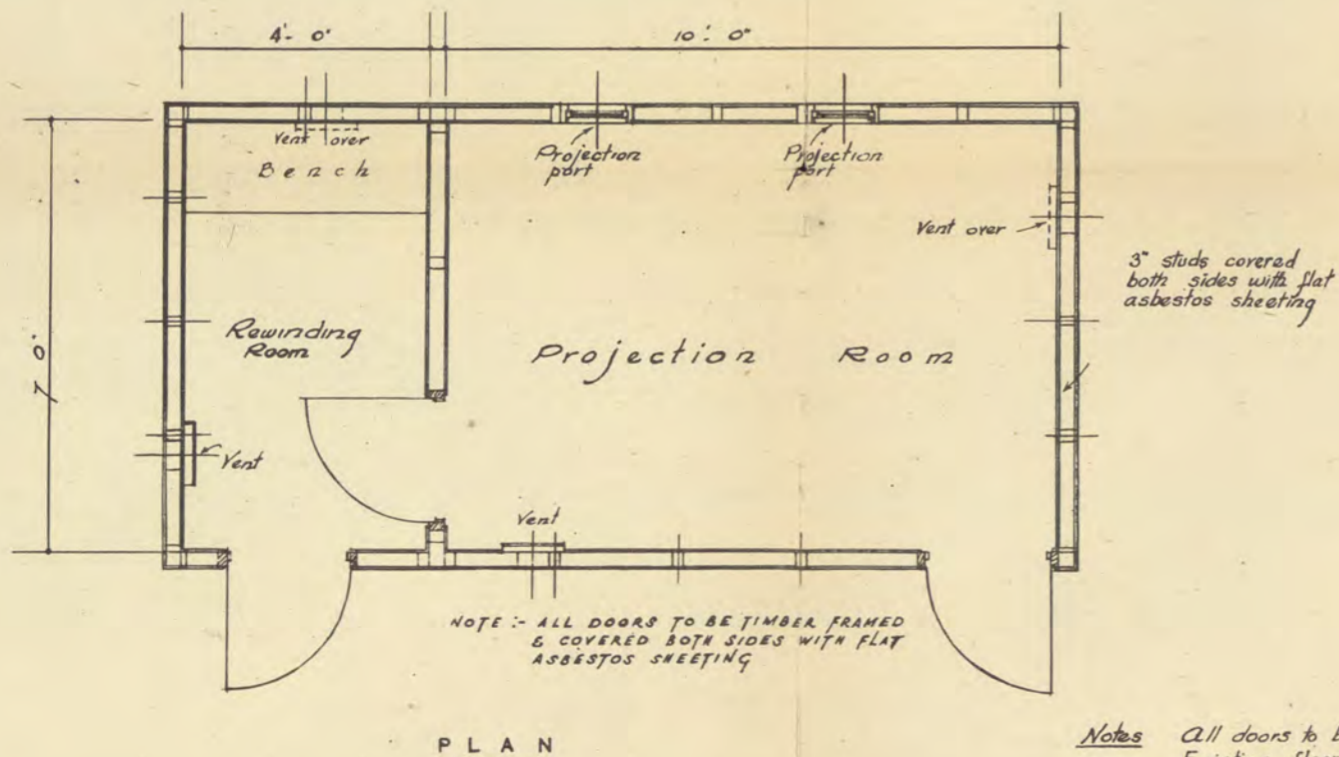
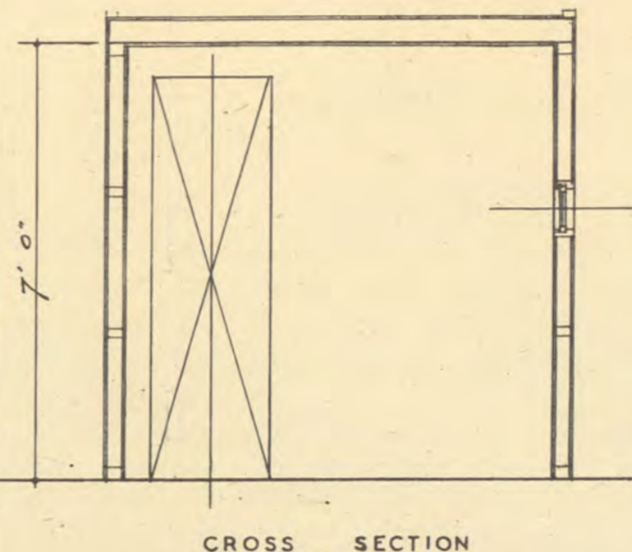
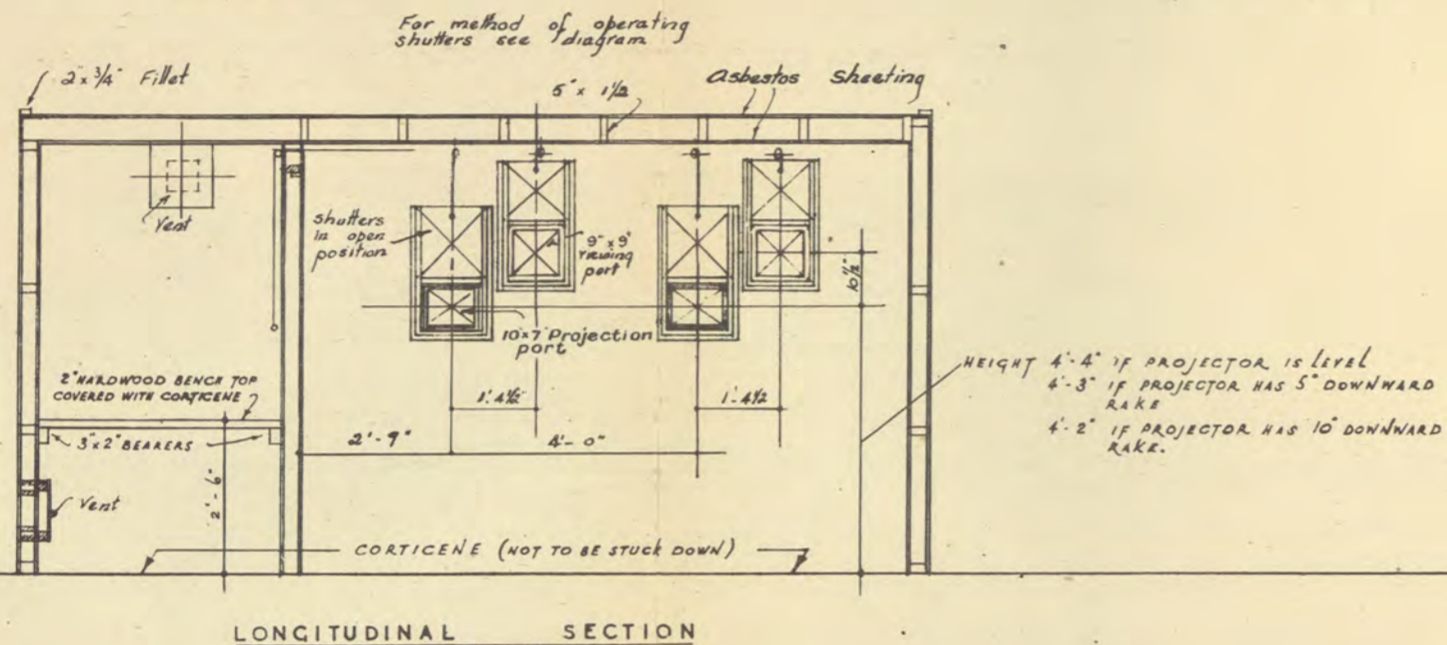
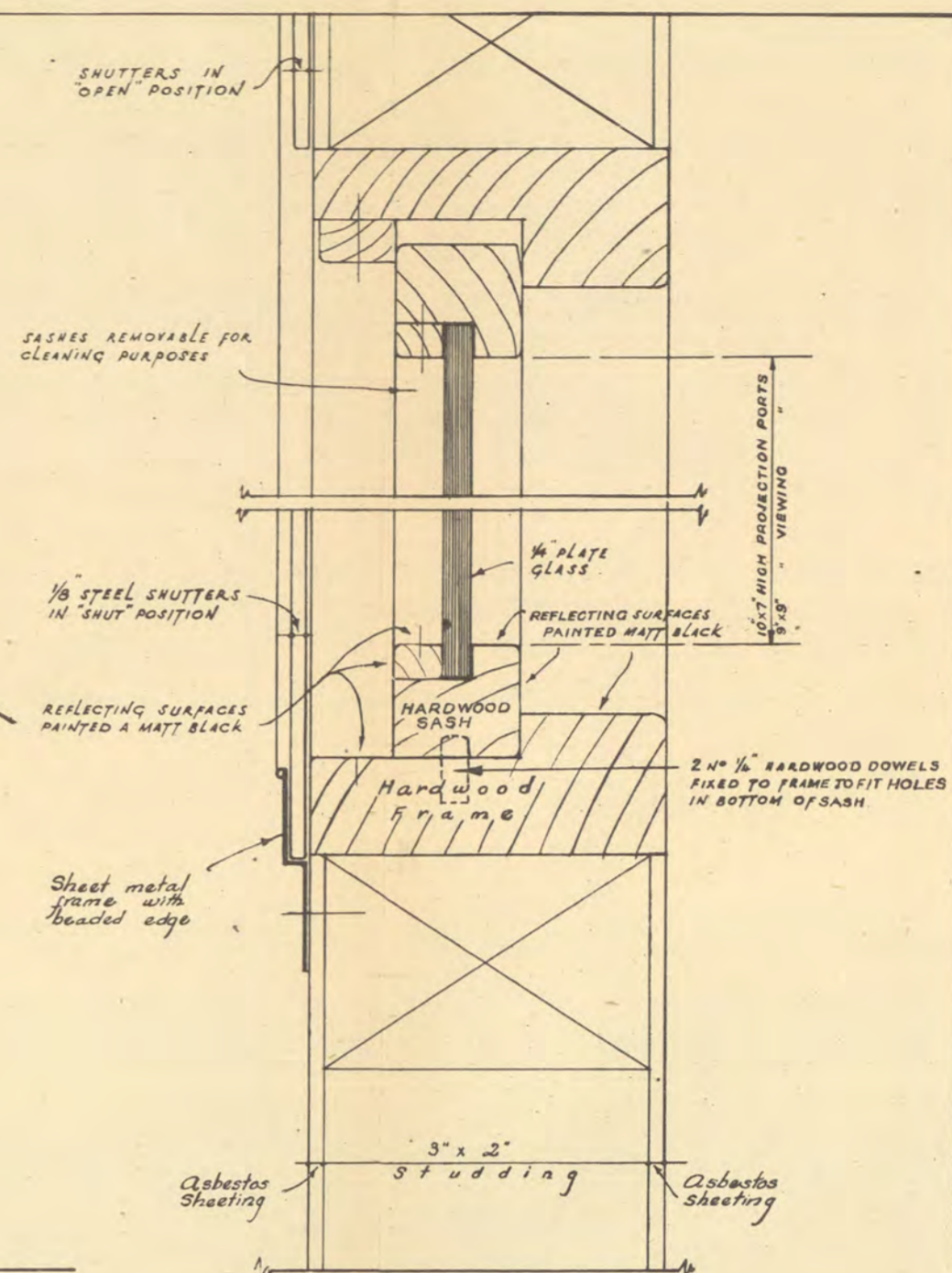
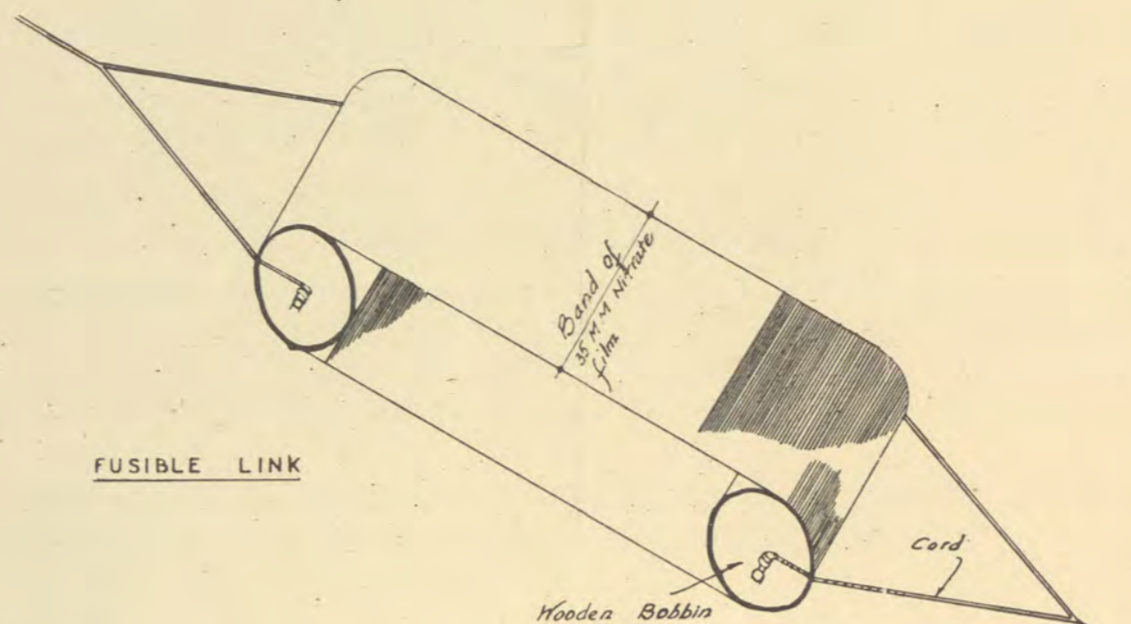
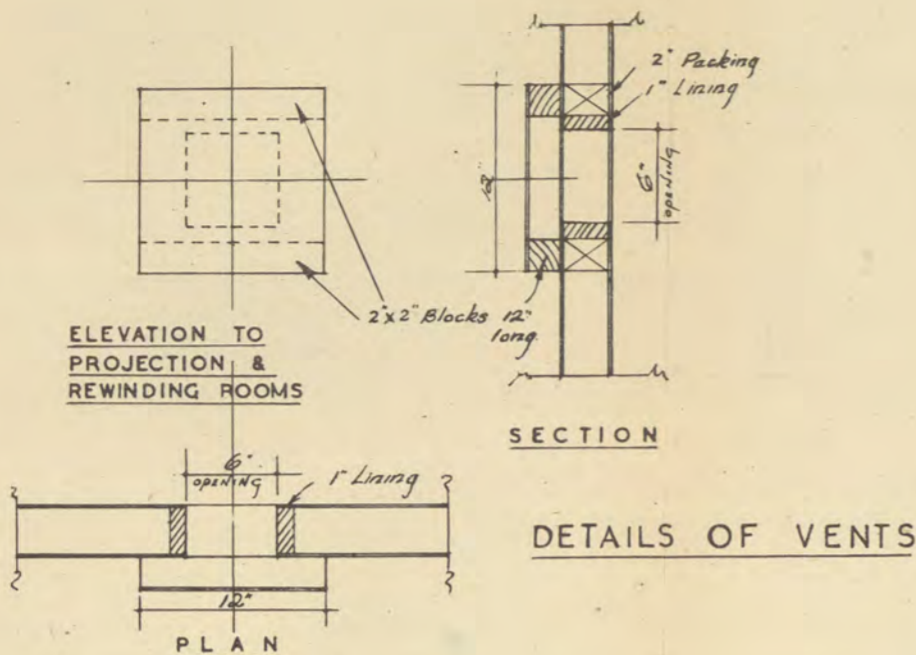
- (i) Electric from batteries.
- (ii) Gas.
- (iii) Oil or candle lamps.

(b) "EXIT" signs in 6-in. letters are to be posted over each exit from the auditorium, and the position of safety lighting fittings is to be such that these signs are adequately illuminated. Sufficient illumination is to be provided so that, in the event of failure of the main electricity supply, the audience is able to see its way out.

(c) Any new schemes for safety lighting to comply with the above conditions are to be prepared on minimum lines to meet site requirements and, where electrical work is involved, this must be carried out in consultation with the Electrical Officers of the associated dockyard. Full details of all schemes are to be forwarded to the Admiralty for information.

30. The above regulations, with the exception of paragraph 20 (b), apply to 35-mm. cinemas only and not to cinemas whose equipment consists solely of 16-mm. machines using "non-flam" film. The tools and equipment listed in paragraph 20 (b) are to be provided for all installations.

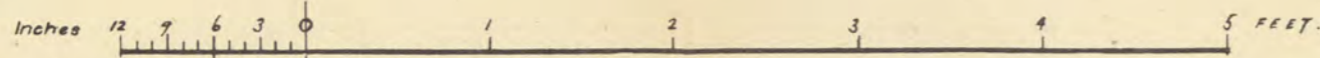
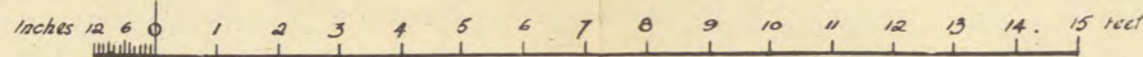




Note. This line enables shutters to be released from outside box by pulling ring off copper wire hooks. Sufficient slack must be available to permit the necessary travel for dropping shutters when operated by hand from rewind rooms.

DIAGRAM SHOWING METHOD OF OPERATING SHUTTERS RELEASE

Notes All doors to be self closing (spring operated)
Existing floor to be covered with corticene (but not stuck down)



MISCELLANEOUS.
CINEMA PROJECTION BOX FOR 35 MM. FILM.
GENERAL ARRANGEMENT.

DRG. No 5452/43

