

WALTHAM ABBEY SOUTH SITE ROYAL GUNPOWDER FACTORY

BUILDING No. M349

REPORT No. ESG 2363/97



ENVIRONMENTAL SERVICES GROUP REPORT NO. 2363/97

WALTHAM ABBEY SOUTH SITE ROYAL GUNPOWDER FACTORY

HISTORICAL SURVEY OF BUILDING NO. M349

This document is of UK origin and is © Royal Ordnance plc. It contains proprietary information which is disclosed for the purposes of assessment and evaluation only. The contents of this document shall not in whole nor in part: (i) be used for any other purpose, (ii) be disclosed to any member of the recipient's organisation not having a need to know such information nor to any third party individual, organisation or government, (iii) be stored in any retrieval system nor be reproduced or transmitted in any form by photocopying or any optical, electronic, mechanical or other means, without the prior written permission of the Director, P & E S Business Unit, Royal Ordnance plc, Westcott, Aylesbury, United Kingdom.

Environmental Services Group Royal Ordnance Division British Aerospace Defence Limited Westcott Venture Park Westcott Aylesbury Bucks HP18 ONP

Tel: 01296 652123 Fax: 01296 652121 Date: September 1997 Ref: Int 3-97/2363 Issue 2

REPORT NO. ESG 2363/97

Subject:

Historical Survey of Building M349 Waltham Abbey South Site

Client:

Royal Ordnance Property Services Department

8.10.57DATE

8.10.97 DATE

Acetone Store / Box House M349, South Site, Waltham Abbey Royal Gunpowder Factory, Essex

Table of Contents

LIST OF PLATES	2
LIST OF FIGURES	2
INTRODUCTION	3
SURVEY METHOD	3
HISTORY OF THE SITE	4
A BRIEF HISTORY OF THE ACETONE / BOX STORE M349	4
DESCRIPTION OF THE ACETONE / BOX STORE M349	4
ACKNOWLEDGMENTS	8
BIBLIOGRAPHY	8
UNPUBLISHED SOURCES	
PUBLISHED SOURCES	8

List of Plates

Plate 1	Photograph showing the cordite workers in the First World War in a process building. The lady on the right is holding a box that would have been stored in the M349 Box House.
Plate 2	Design drawing of the Acetone Store / Box House from 1892 showing arrangement of racks for boxes, drums and trays. Also note roof ventilator and detail of corrugated iron walls.
Plate 3	Detail of north wall, from south-east
Plate 4	Detail of junction of frame upright, rafter and truss
Plate 5	Steam pipe exiting south-west corner, south wall
Plate 6	Window, south-east loading door and telegraph pole
Plate 7	East end of building, from east
Plate 8	North wall: steam pipe, support and roller loading ramp
Plate 9	Central loading doors, east end
Plate 10	East loading doors: detail of ramp hooks and building number
Plate 11	Detail of joint, upper end of rafters
Plate 12	Detail of truss hanger and rod supporting steam pipe
Plate 13	Switch box on telegraph pole, east end
Plate 14	Detail of lighting systems and join between central and outer truss
Plate 15	Lighting systems and truss rod
Plate 16	General shot of interior, from east door
Plate 17	Fixtures and fittings: leather trunk with integral chute

List of Figures

Fig 1	Plan of Waltham Abbey South Site dating from between 1890 and the 1894
	explosion on Quinton Hill showing the Acetone Store. Also the narrow gauge
	railway approaching the east of the building from its east-west route along
	Black Ditch.
Fig 2	Location Map showing South East England, Waltham Abbey, South and
	North Site and location of Acetone Store / Box House within South Site.
Dwg No: M349/1	Overall plan of M349
Dwg No: M349/2	Section through M349 showing ventillator

Introduction

Following the recent announcement by the Epping Forest District Council to grant planning permission for a development on the South Site the Essex County Council Planning Department's Archaeological Advisory Group has called for a survey of the Acetone Store /Box House. The development proposals for the South Site will probably result in the firing and demolition of this building so this report aims to provide an accurate and permanent record of this historically important structure.

The initial survey report of the South Site at Waltham Abbey with component sheets for each building and a computer generated CAD plot has been completed (Chaddock 1996). The report outlines the history of the site, provides a description of each area and outlines appropriate manufacturing techniques to allow fuller comprehension of the archaeological remains. Those buildings of major importance that did not have a 'documentation pack' have been selected for further recording; they include a part of the Guncotton Factory G431, the Boiler House G403, the Box Store M349, the Guncotton Drying Stove M351 with its attendant Fan House 495, the Cordite Mixing House 486 and the gas-proof Air Raid Shelter SS113. This report provides a more detailed record of the building, complementing the initial survey, and placing the structure in its wider context. A copy of this report, the archive comprising plans and photos will be deposited in the Essex Records Office.

Survey Method

Measured surveys of the buildings were carried out using tapes for both vertical and horizontal measurement throughout. In G403 and G431, where health and safety problems were encountered in gaining access to the full interior height of the roofs, reference was made to surviving architects' drawings in the site archive. Copies of these drawings, converted photographically to metric scales, were used as reference for details, and checked for accuracy wherever possible. Original drawings for M349 and M351 were also referred to and checked, but did not form a significant element of the survey of those buildings.

A Kern GK-O level was used to establish floor levels, etc, in the buildings. Reference to Ordnance Survey datum levels was provided by information from plans of the site supplied by Royal Ordnance (RO).

All plans and sections were drawn in pencil on permatrace. Plans and main sections were drawn at scales of 1:50 or 1:100, depending on the size of the building concerned. Detailed sections were drawn at 1:50, and sections through the passageways in 486 and M351 were recorded at 1:10. A total of 17 drawings were produced, all on A1 or A2 sheets. Following approval by RO and Essex County Council Archaeological Advisory Group (AAG) these were digitised (CAD 12), and A3 copies printed for archiving and the final reports.

A detailed written description of each structure was prepared on proformas prepared in conjunction with the AAG, and is presented in this fashion. Reference was made to the measured surveys for major dimensions: more detailed measurements were made as required with a 5-metre steel tape. The fieldwork notes also contain many sketches of various elements of the buildings. The descriptions were subsequently word-processed, and are presented in hard copy and on disk (Word 6).

The photographic survey was carried out using two Pentax ME 35m SLRs, fitted with 28-70mm zoom lenses. The flash photography was carried out with a professional Metz 60 GT-1 flash, though natural light was used wherever possible. 400ASA film (colour slide and B&W) was used throughout. The photographic registers are presented in hard copy and on disk (Word 6).

The video surveys of 486 and M351 were carried out by a professional cameraman under HAT's direction. Given their similarity, both buildings were recorded in a similar sequence, and structural details, etc, were singled out en route for special attention. Both buildings

were filmed in natural light, with the exception of the NG delivery tunnel in 486, where a portable floodlight was used.

History of the Site

The Royal Gunpowder Factory at Waltham Abbey was a centre of gunpowder production, and latterly chemical-based explosives manufacture, for more that 300 years. There is documentary evidence that gunpowder was being produced at North Site by mid 1660's. The mills were acquired by the government in 1787, and expanded greatly as a result of the demand for powder generated by the Napoleonic wars. After a period of retrenchment for the 1820's, the RGPF returned to prominence in the second half of the 19th century, playing a leading role in technical innovation, meeting demand for cannon powders for guns of ever increasing size, and manufacturing moulded powders in large quantities (RCHME 1993).

A brief history of the Acetone / Box Store M349.

M349 was originally built as an acetone store in 1892 where acetone was stored in barrels to be used in the solvent cordite manufacturing process. Although it has remained relatively untouched, its role changed to that of a **Box and Tray Store** when a range of acetone stores were constructed to the east of Quinton Hill later in 1892. Boxes were used to transport the cordite paste from building to building and trays were used to lay the strands of cordite in after extruding and during the drying process. In addition to the boxes and trays there were also stencils and paint, brushes and solvent for the marking up of boxes when they were leaving the factory area. The store was serviced by the narrow gauge railway system, as can be seen from Fig1, but it was also positioned close to the early east-west waterway, Black Ditch. While other buildings have been photographed, usually as a record of explosions on the site, M349 remained in the background and the only record of its existence are the numerous photographs of boxes and trays in use in the process buildings (Plate 1).

Description of the Acetone / Box Store M349

Building no: M349 Box Store NGR: TQ3804 9946

1. General

A rectangular single-storey structure 13.1 x 9.4m overall, aligned east-west. Pitched roof, gable end walls.

Walls: 6 wrought iron 130 x 150mm 'I' beam uprights per side, set into concrete floor base (Plate 3). The end walls have five uprights each: the central ones are truncated at the sill level of the central window, and the outer ones at the door tops. The top of each upright on the side walls ends with horizontal rectangular plate, $360 \times 150 \times 15$ mm, fixed by riveted angle brackets to the central web (Plate 4). There are three runs of horizontal framing of 80 x 80mm steel angle, bolted to the outside face of the uprights. Diagonal bracing of the same material is present in all but the central bays, bolted both to the outside face of the uprights and to the horizontals. The angle used is rolled steel, and bears the mark:

GLENGARNOCK STEEL

The outside of the frame is clad with 16-gauge galvanised corrugated iron sheeting. Individual sheets appear to be *c*.700mm wide, and are riveted together (Plate 5). Brackets of steel strip hooked over the horizontal framing are bolted to the cladding to secure it.

Gable Ends: Both are identical (a drawing of a similar building in the site archive, originally labelled 'Acetone Store', and produced here as Plate 2 has mirror image gable ends to these). Below eaves height, from left to right, there is a pair of loading doors, then a 12-pane window above a section of corrugated iron wall (plate 6), then two pairs of loading doors,

then an access door, and finally a fourth pair of loading doors (Plate 7). Largely above eaves height is a centrally-placed 24-pane window, essentially two of the 12-pane units previously described, side by side. The remainder of both gable ends is clad with corrugated iron.

Paintwork: Interior woodwork and exterior window frames white, exterior doors red, ironwork unpainted.

2. Services

Electricity: For lighting only. See Sections 8 & 11.

Steam: For heating only. See Section 9.

Guttering: Runs along eaves, both sides, of cast iron box-section gutter on large iron brackets bolted to the wall cladding (Plate 8). Both downpipes are at the east end of the building (both are now missing).

3. Passageways & Traverses

None.

Door & Window Details

Access Doors: One at each end of building, outward opening. 2145 x 1410 mm, c.50mm thick. Frame with central crosspiece and 45° bracing on inner face, vertical flush planking (tongue and groove) on external face. Each door fitted with 3 x 100mm steel hinges, a Suffolk latch and a 250mm long iron bolt on the central crosspiece. Above each door is a 10-pane fanlight, 1410 x 810mm, non-opening.

Loading Doors: 8 at each end: locations as described in Section 1. Each door measures 1430 x 1150 x 50mm, consisting of a rectangular frame with a vertical crosspiece visible on the interior face, and a vertical flush-planked (tongue and groove) external face. Viewed from outside, the two left-hand pairs of doors are hung to the right, and the two right-hand pairs are hung to the left (Plate 9). 'Hung' is perhaps the wrong word: instead of hinges, the loading doors each have two external flat iron pegs, which locate in holes in one side of the frame. On the opposite side, on the inside face, are two 150mm bolts. This arrangement allows all loading doors to be lifted out completely.

The upper and lower loading doors are separated by a substantial horizontal oak frame. Below each upper loading door, two large iron hooks are bolted through this frame(Plate 10). Plate 2 shows that these were used to hang a removable loading ramp.

Windows: The left-hand windows at each end are non-opening 12-pane units, timberframed, 1340 x 1305mm overall. The upper central windows are made up of two 12-pane units, side by side. The glass used varies greatly in colour and quality, especially in the east end windows, suggesting replacements over a long period (Plate 7).

5. **Signs & Instruction Boards**

A wooden board screwed to inside face of upper loading door to south of east access door. 375 x 270 x 23mm, painted red. Headed in white, sign-written, italic serif lettering:

BOX & TRAYS STORE

... MAP 502

(The missing section of the label has something chalked in: a '1' and a '6' are visible) Below this are glued two small typewritten notices. The left one reads:

HOUSE LIST Boxes, sweeping . . . 1

Mops 1 Brace & Drill 1 Over..., pairs . . 2 Brooms, hair 1 Packs, stencil . . 1 Brushes, stencil . . . 2 Pencils 1

Buckets, fire 6 Plated stencil . . as required

....., acetone . . . 1 Screwdrivers . . . 2 Chairs 1 Scrapers 2 Stands, wood . . . 2 Desks 1

Gloves,	IR pairs	2	Stool					1
India r	ubber, pieces	1	Tables					1
Knives		1	Trays,	Z	ind	2		1
Levers,	instal	2	Rule .					1

The right one reads:

SPECIAL RULES

1.

Before closing the house for any purpose, all paints, solvents,, brushes, pads and stencil plates, usually left in the trays are to be deposited by the Chargeman in provided for the purpose, outside the house.

2.

Men working in this house may on entering the building take off their caps and roll up the sleeves of their shirts. The Chargeman is responsible that before a man leaves the building his sleeves are turned down and the cap is replaced on his head.

3.

Every case before return to Woolwich for repairs etc must be completely emptied, wiped out, and its proper lid screwed down, and a packing label signed by the Chargeman attached.

Behind the notice (which was temporarily removed for deciphering in daylight!) a small hand-written note was found pasted on the door:

Box & Tray Store, Map 502. Board Removed for Alteration.

2. On lower right central loading door, east end, is a small black-painted rectangle with the legend "M349"

6. Roof

General: Iron framed, divided by trusses into 5 bays, as walls. 25° pitch, with low clerestory vent over central 3 bays.

Framing: Rafters of T-section beams, 120 x 100mm, joined at apex by riveted plates (Plate 11). Outer ends have riveted on each side a shaped plate, in which the trusses are located, and two angle brackets which are bolted to the plate on top of the wall uprights (Plate 4).

Trusses of forged rod, 32mm diameter. Each truss comes in three sections, joined by flat links. The outer sections locate in slots in the plates at the lower end of each rafter, and are tensioned with iron wedges driven into those slots. The joins between the central and outer trusses are linked to the rafter above by hangers made from two strips, each pair with a central iron spacer, and to the roof apex by forged rods (Plate 12).

Purlins of 100×100 mm angle, 3 runs on each pitch, bolted to the upper face of the rafters, with an angle bracket on the outer side. Each purlin has a 100×100 mm timber bolted into it: to these are nailed the roof boards, which are 180mm wide and c.35mm thick, covered with bitumenised felt.

Clerestory: Vents consisting of 5 louvres each side with c.25mm gap between each (Plate 11). Top of clerestory covered with zinc sheet.

7. Interior Fixtures & Fittings

See Lighting and Heating (Sections 8 & 9).

8. Lighting

External: Single light fitting on post outside east end (Plate 6), above fuse box/main lighting switch for M349. Conduit runs down post to fuse box (Plate 13) A second conduit runs up the post, turns and enters the building at eaves level through the east wall.

Internal: 3 light fittings down each side of interior, each linked to conduit running on top of the trusses and wired to them. Round cast metal light fittings, originally with glass domed covers (Plate 14). More recent secondary lighting system, 2 large shaded fittings with glass domes, wired to trusses near east access door (Plate 15). Wiring of grey plastic cable, not in conduit, runs towards same exit point as original wiring conduit. All lights appear to be switched from fuse box on pole outside east end.

Power supply to M349 appears to come from the north, to the shortened telegraph pole at the east end of the building. Wire remaining on the insulators (single-ridged white ceramic) points in that direction, and there is a steel guying cable for a pole still attached to its ground anchor in the woodland to the north of the building.

9. Heating

 2×120 mm diameter steam pipes suspended from roof trusses by c.750mm forged rods and brackets, and linked by pipe across loading doors at east end. Steam enters the building in a 38mm diameter pipe through its north side, near the north-west corner (Plate 16). Outside the building there is a pipe run at 2m+ above ground level, supported on wooden posts (Plate 8). The pipe zigzags away from the building in a north-easterly direction, before disappearing in the undergrowth. A truncated lagged pipe from the interior heating pipes exits the south-west corner of building: there is no indication of its destination (Plate 5).

10. Buildings Close by with Obvious Relationship to this Building

On the north side of the Black Ditch, 12m south of M349, is the remains of a timber landing stage. Its proximity suggests that boxes and trays could have been moved to and from M349 by barge.

11. Communications

There is no evidence of telephone links. The pole route which follows the Black Ditch to the south appears to ignore M349.

12. Floor

Stone thresholds on access doors, internal concrete floor covered with brown linoleum, now in poor condition. Outside the east end is a concrete hardstanding, much overgrown.

13. Additional Observations

- 1. As noted in the ECC survey, M349 contains 'many wooden storage boxes and leather trunks (Plate 16). Benches, tables, lab. equipment. Old circular blade (brass blade for cutting up gun-cotton or cordite). Gas cylinder within a wooden frame (a jury-rigged piece of experimental equipment, apparently associated with pressure-related research)'. There are also a large number of modern plastic drums, all empty. Leather covered cordite paste box (Plate 17).
- 2. Plate 2 shows an internal shelving arrangement for a similar building. There are free-standing wooden shelf units along the side walls, and a double width of shelving runs down the middle, broken by a cross-passage. Shelving depths are related to the width of the loading doors. Some shelves are designated for drums, and some for boxes.
- 3. Outside the east end, close to the south-east corner, are two large cylindrical iron containers, one with lifting handles. Their function is uncertain, and it is possible that they have no connection at all with M349.

Phasing: M349 appears to be of a single build, completely unaltered. The use of steel as well as iron in its framing may make it one of the earliest surviving English structures to use steel in its construction. The steam pipe run across the upper loading doors at the east end implies that steam heating was a later addition, although documentary evidence suggests that it was an original feature.

Acknowledgments

I would like to acknowledge the assistance of Royal Ordnance staff G.G.Vincent, Trevor Wilson, Ed Andrews and Lynne Lennard. Wayne Cocroft of the RCHME Keele office. Malcolm McLaren once head of management services RGPF Waltham Abbey. The Hertfordshire Archaeological Trust recording team led by Bob Zeepvat. Amanda Kennedy and Melissa Eyears for research work at the PRO.

Photographs are reproduced here by kind permission of the Waltham Abbey Trust Company Limited whose collection is at present administered by the Epping Forest District Museum in Sun Street, Waltham Abbey.

Bibliography

UNPUBLISHED SOURCES

CRDD 1947 The Chemical Research and Development Department 'Its Programme and Facilities'
Internal Report 21 May 1947

Drayson.F. 1830 Treatise (PRO Supply 5/762, Drawings M.P.11.15)

Fraser and Chalmers Ltd 1908 The Quinan System of Drying guncotton. Trade pamphlet

Lord Sandhurst Committee. Report of the Committee appointed to enquire into the explosion of the 7th May 1894 at the nitro-glycerine Factory, Waltham Abbey. Together with minutes of evidence and appendices. HMSO London. 1894.

REP01 EAB/1,/2,/3 Short report on R.O. Factory, Waltham Abbey. 18.3.86

Supply 5/327 1894-1898 Relating to the Explosions at Waltham Abbey.

Supply 5/332 1916-1929 Home Office Reports in connection with the Standing Committee on the Cause of Explosions.

Supply 5/466 1891-1895 Guncotton General.

Supply 5/491 1892-1902 Nitroglycerine General.

Supply 5/710 1902-1907 Quinton Hill NG Factory Annual Reports.

Supply 5/760 1861-1904 Photograph Album - RGPF Explosions and Plant

Supply 5/861 1903-1938 Photograph Album - RGPF Explosions and Plant

Supply 5/862 1903-1930 Photograph Album - RGPF Various

Supply 5/863 1940-1941 Photograph Album - Damage by Enemy Action

WASC 1508 c.1945 RGPF Buildings Ledger

WASC 1680 c.1925 RGPF Buildings Ledger

WASC 1764 1908 RGPF Buildings Ledger

WASC/1506/1 1972 Explosives Research and Development Establishment List of building numbers and functions

Younghusband.C (WASC 20) 1873 'Description of the Manufacture of Abel's Pulped and Compressed Guncotton at Waltham Abbey' Unpublished typescript dated 13.11.1873

PUBLISHED SOURCES

Clarke. B. The Eighteen Inch Gunpowder Factory Railway at Waltham Abbey. Privately published. E.C.C.F.A.G. Nitroglycerine Washing House, South Site, Waltham Abbey Royal Gunpowder Factory, Essex. Survey Report. June 1996.

Encyclopaedia Britannica 1950 Encyclopaedia Britannica Vol.11.

Englebach. F.G 1899 'Her Majesty's Ordnance Factories Waltham Abbey - 11' The Army and Navy Illustrated. 30 Dec 1899.

Fitzgerald, W.G 1895 'How Explosives are Made' The Strand Magazine Vol. IX p307-18.

Gordon. Dr.S 1987 'IMI Summerfield Rocket Motors and Propellants History and Development' in Journal of the British Interplanetary Society. Vol 40 pp311-322. 1987.

Guttman. O. 1895 'The Manufacture of Explosives' London.

Hogg O.F.G. 1963 'The Royal Arsenal.' Vol. II London

Jenkin C.F 1891 'The Electric Lighting of Danger Buildings' Proc. of the Institution of Civil Engineers. 110. 367-79.

Jenkins. J.M 1989 'The Railways of the Royal Gunpowder Factory, Waltham Abbey' Industrial Railway Record 117. 385-415.

Johnson. C.H 1965 'The Explosives Research and Development Establishment, Waltham Abbey' Chemistry and Industry. 20 Feb 320-27.

McLaren. M 1975 'The Explosives Research and Development Establishment, Its Historical Background' Journal of Naval Science Vol. 1 No.2 April 176-83.

Nathan. F.L 1909 'Guncotton and Its Manufacture' Journal of the Society of Chemical Industries 28. 177-187.

Nathan. F.L and Rintoul. W 1908 'Nitroglycerine and Its Manufacture' Journal of the Society of Chemical Industries Vol. XXVIII No.5 193-205.

RCHME 1993 Survey of the Royal Gunpowder Factory, Waltham Abbey, Essex. Cocroft report, A4 report and A3 book of maps. RCHME Publications, London.

Simmons. W.H 1963 'A Short History of the Royal Gunpowder Factory at Waltham Abbey' Privately published Controllerate of Royal Ordnance Factories.

Sobrero. Prof. A 1847 Concerning some new explosive compounds obtained by means of the action of nitric acid on organic substances. Memoirs of the Royal Academy of Science of Turin.

Feb 21 1847.

Walton. J 1977 'ERDE Waltham Abbey Monks Mills and Missiles' The Soldier 26. 8 Feb. War Office 1895 Treatise on Service Explosives. HMSO London.

Appendices

Appendix 1: Photographic Register

Photographic Register

WALTHAM ABBEY RGPF SOUTH SITE	Date: August 1997 Initials: RJZ	
Building: M349 Box Store	Film: 400ASA Colour Slide &	
	Monochrome	

Shot No. Description B/W+Col		Scale used	Neg. No. B/W
1	East end of building, from east	2m	0
2	Central loading doors, east end	2m	1
3	Window, south-east loading door and telegraph pole	1m	2
4	Switch box on telegraph pole, east end	-	3
5	Iron tubs outside east end	1m	4
6 *	Steam pipe exiting south-west corner, south wall	1m	5
7	West end of building, from south-west	1m	6
8	North wall: steam pipe, support and roller loading ramp	1m	7
9	North-east corner: steam pipe and gutter	-	8
10	East loading doors: detail of ramp hooks and building number	500mm	9
11	General shot of interior, from east door	-	10
12	Detail of north wall, from south-east	-	11
13	Lighting systems and truss rod	-	12
14	Central loading doors, east end, from interior. Notice board on upper left door and steam pipe above	-	13
15	Detail of junction of frame upright, rafter and truss	-	14
16	Detail of truss hanger and rod supporting steam pipe	-	15
17	Detail of lighting systems and join between central and outer truss	-	16
18	Detail of joint, upper end of rafters	-	20
19	Fixtures and fittings: experimental test rig	500mm	21
20	Handwritten note behind notice board on loading door, east end	-	22
21	Detail of notice board, east loading doors	500mm	23
22	Fixtures and fittings: brass ?guncotton cutting blade	500mm	24
23	Fixtures and fittings: leather trunk with integral chute	500mm	25
24	Building from south	-	-

Appendix 2: Archive Contents

Archive Contents

Survey plot of the Box Store at 1:50
Surveyed section of the Box Store at 1:50
Survey data on zipped disc using CAD12
Bound copy of typescript report
One set of monochrome prints from 35mm film
One set of Colour slides (35mm)
3 ½" floppy disc with text and photographic registers

Appendix 3: Essex Sites and Monuments Record Summary Sheet

Essex Sites and Monuments Record

Summary Sheet

Site name/Address: Box Store M349, South Site, Waltham Abbey Royal Gunpowder	Factory Essex				
Parish:	District:				
Waltham Abbey	Epping Forest				
NGR:	Site Code:				
TQ 3804 9946	WASS 97				
Type of Work:	Site Director/Group:				
Building record/survey	Steve Chaddock / Prince Research				
Building 10001d/3di1v0y	Consultants				
Date of Work:	Size of Area Investigated:				
01.07.97 - 31.08.97	-				
Location of Finds/Curating Museum:	Funding Source:				
Essex Records Office	Environmental Services Group,				
	Royal Ordnance plc				
Further Seasons anticipated?:	Related SMR Nos:				
NO, as site is due to be developed and this is last stage of	-				
recording.					
Final Report:					
Periods Represented:					
1892 to ?1950					
SUMMARY OF FIELDWORK RESULTS:					
A recording brief, carried out on the Box Store of the South Site Guncotton Factory, included a survey					
of the building in plan and sections through the building, and photographic coverage.					
The Box Store was a part of the cordite Mk 1 manufacturing facility situated on the South Site at the					
foot of Quinton Hill beside Black Ditch. The store held the boxes and barrels used in the various					
processes involved in cordite manufacture. It was also used to store acetone, a solvent used in cordite					
manufacture. It was connected to the other parts of the factory by a narrow gauge tramway and also					
had a dedicated loading platform onto Black ditch immediately to the South.					
A sectional and a section of the sec	- Dishad and make				
	A rectangular single-storey structure 13.1 x 9.4m overall, aligned east-west. Pitched roof, gable end				
walls. The building is historically interesting as it is a very early example of steel frame and corrugated iron construction.					
Hon construction.					
Previous Summaries/Reports:					
1996 ECC FAG Nitroglycerine Washing House Report by Stuart Foreman					
1996-7 Archaeological Evaluation of South Site by S. Chaddock including Site Survey in CAD					
Environment, Component Sheets for all buildings and text report detailing remains and processes					
carried out on site.					
Author of Summary:	Date of Summary:				
S. Chaddock	04/09/1997				

Appendix 4: The Plates

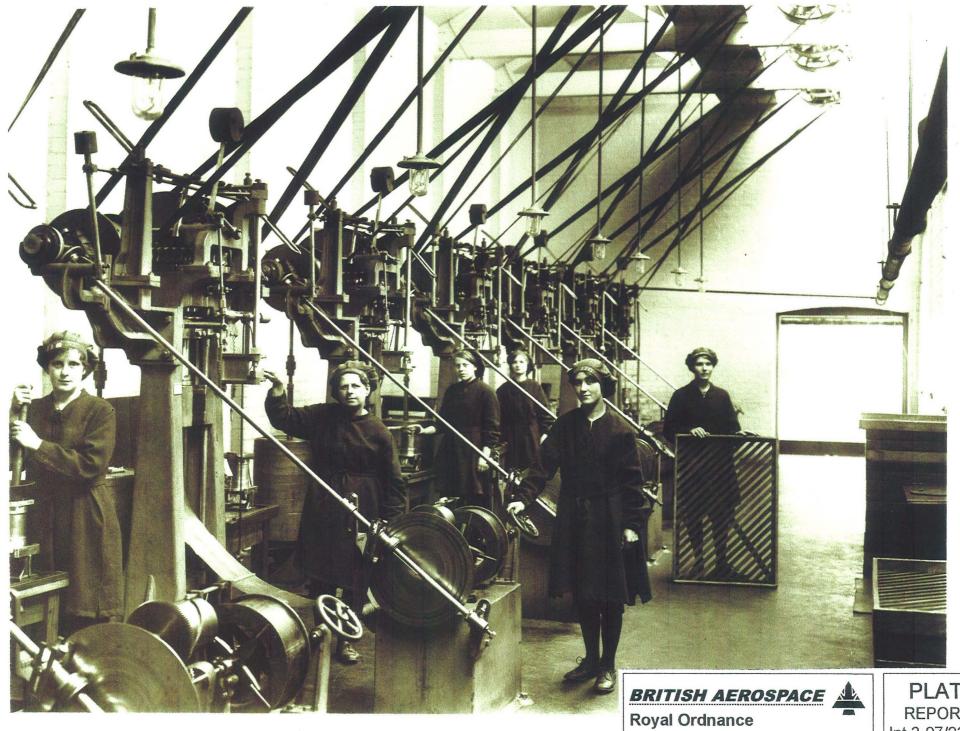
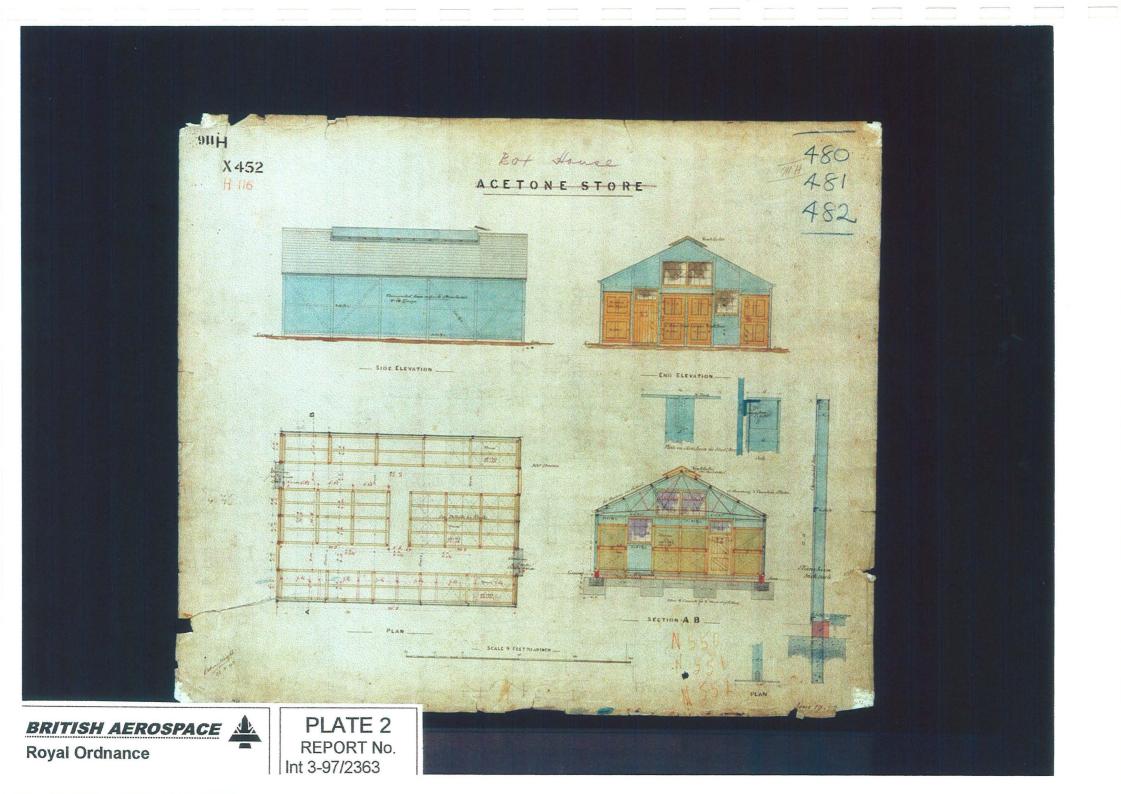
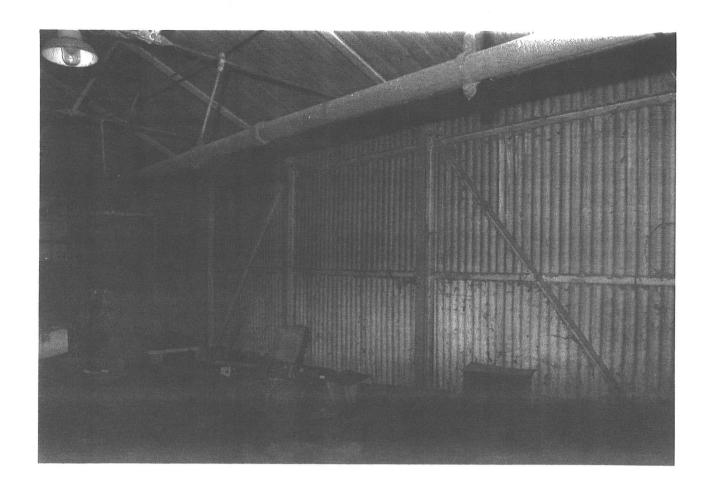
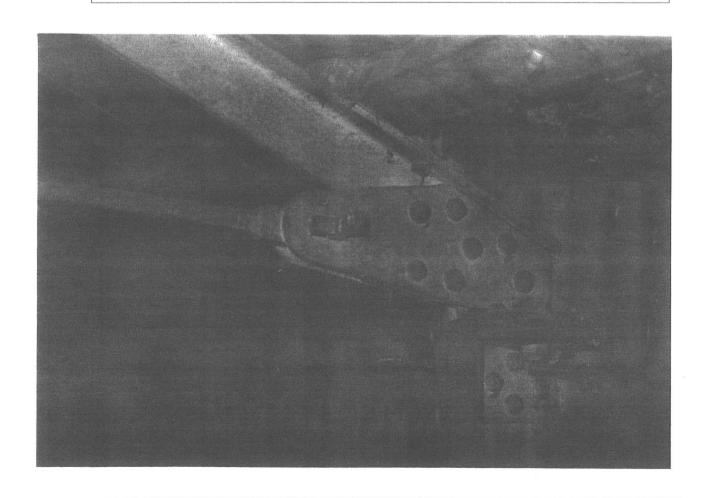


PLATE 1 REPORT No. Int 3-97/2363

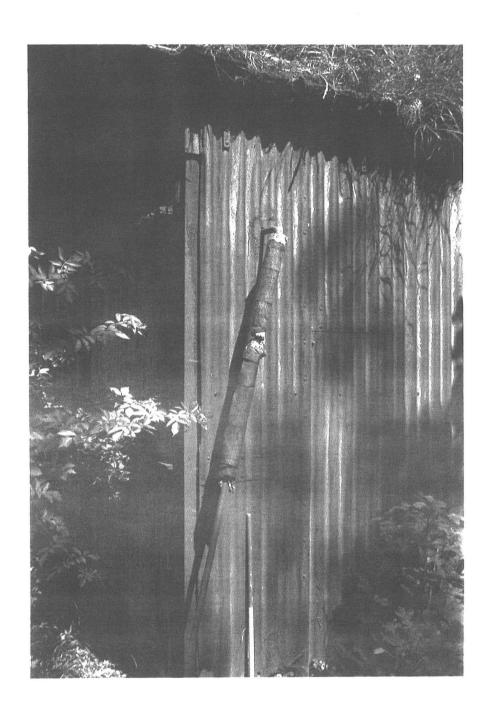




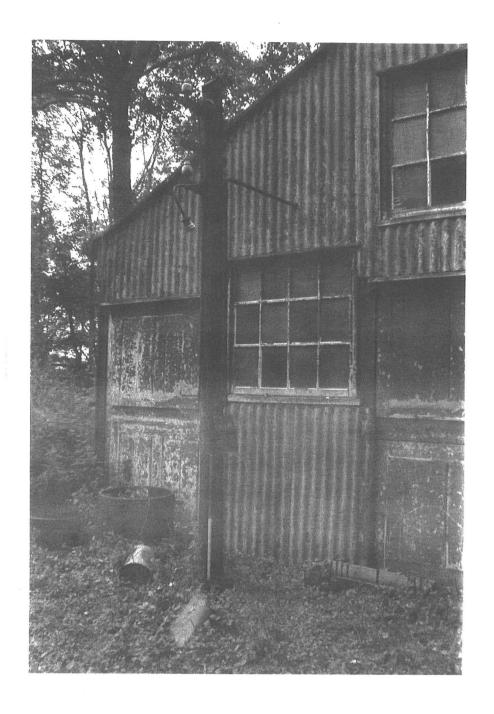
M349 PLATE 3 - DETAIL OF NORTH WALL FROM SOUTH EAST



M349 PLATE 4 - DETAIL OF JUNCTION OF FRAME UPRIGHT, RAFTER AND TRUSS



M349 PLATE 5 - STEAM PIPE EXITING SOUTH WEST CORNER, SOUTH WALL

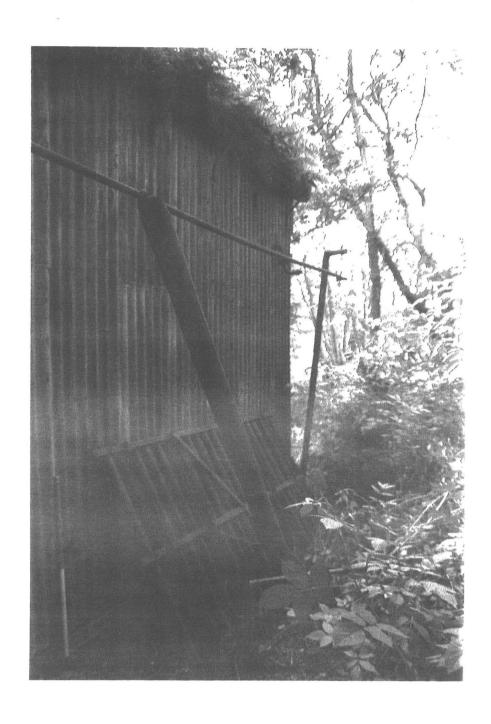


M349 PLATE 6 - WINDOW, SOUTH EAST LOADING DOOR AND TELEGRAPH POLE

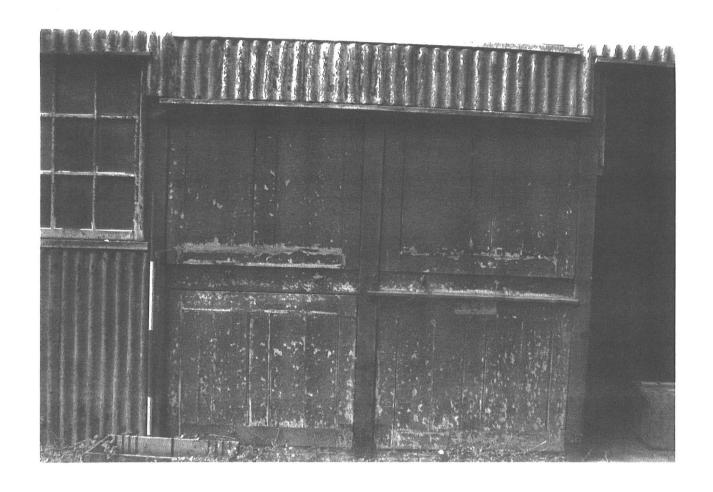


M349 PLATE 7 - EAST OF BUILDING, FROM EAST

INTENTIONALLY BLANK



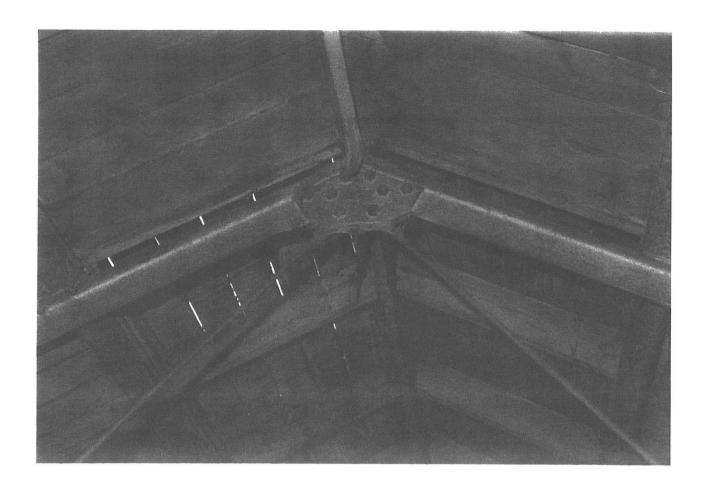
M349 PLATE 8 - NORTH WALL: STEAM PIPE, SUPPORT AND ROLLER LOADING RAMP



M349 PLATE 9 - CENTRAL LOADING DOORS, EAST END

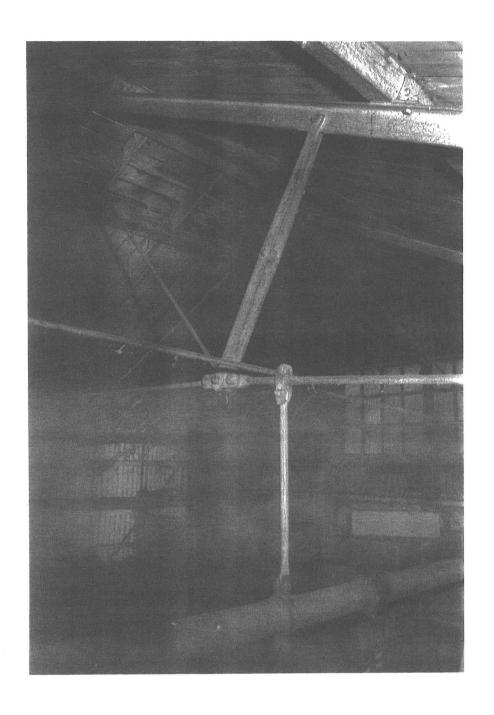


M349 PLATE 10 - EAST LOADING DOORS: DETAIL OF RAMP HOOKS AND BUILDING



M349 PLATE 11 - DETAIL OF JOINT, UPPER END OF RAFTERS

INTENTIONALLY BLANK



M349 PLATE 12 - DETAIL OF TRUSS HANGER AND ROD SUPPORTING STEAM PIPE



M349 PLATE 13 - SWITCH BOX ON TELEGRAPH POLE, EAST END



M349 PLATE 14 - TYPICAL LIGHTING AND JOIN BETWEEN CENTRAL/OUTER TRUSS



M349 PLATE 15 - LIGHTING SYSTEMS AND TRUSS ROD ARRANGEMENT



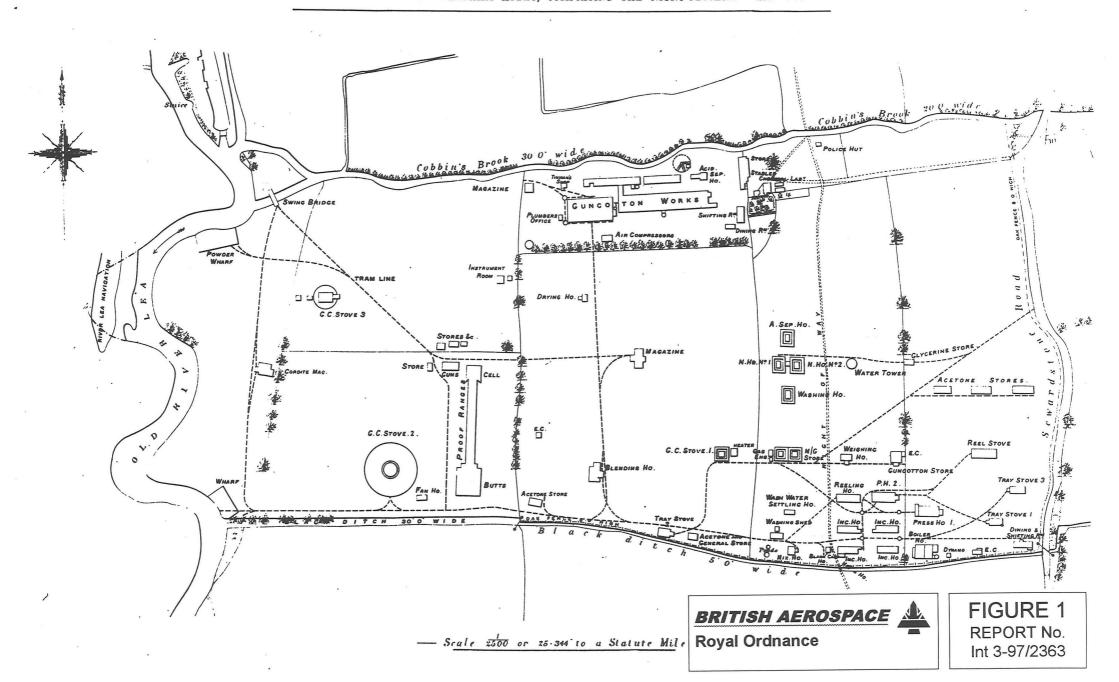
M349 PLATE 16 - GENERAL VIEW OF INTERIOR, FROM EAST DOOR



M349 PLATE 17 - FIXTURES AND FITTINGS: LEATHER TRUNK AND INTEGRAL CHUTE

Appendix 5: The Figures

PLAN OF THE CORDITE FACTORY AT WALTHAM ABBEY, COMPRISING THE NITRO-GLYCERINE AND GUN COTTON FACTORIES.



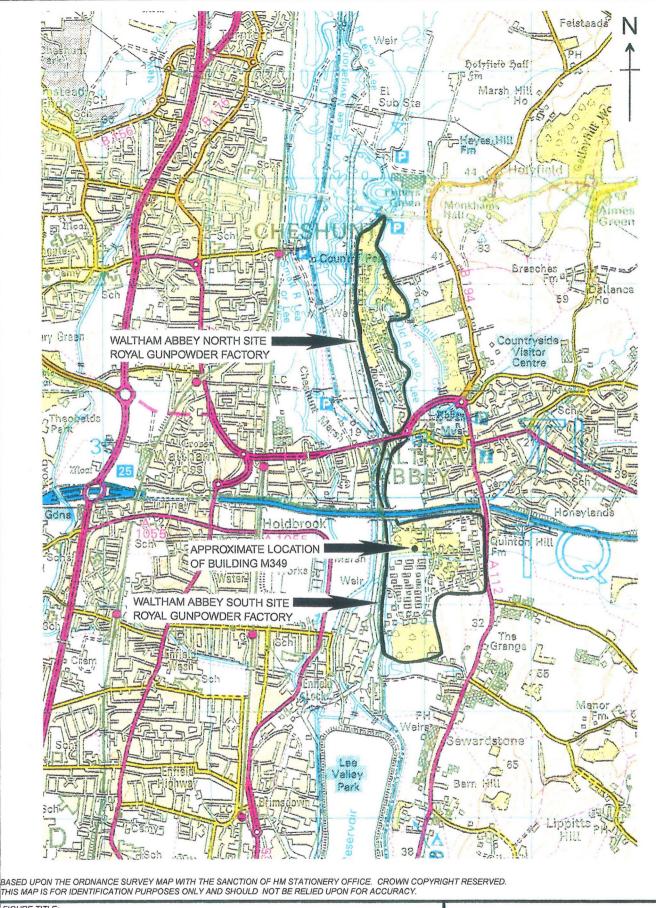


FIGURE 2 - SITE AND BUILDING M349 LOCATION

REPORT NUMBER:

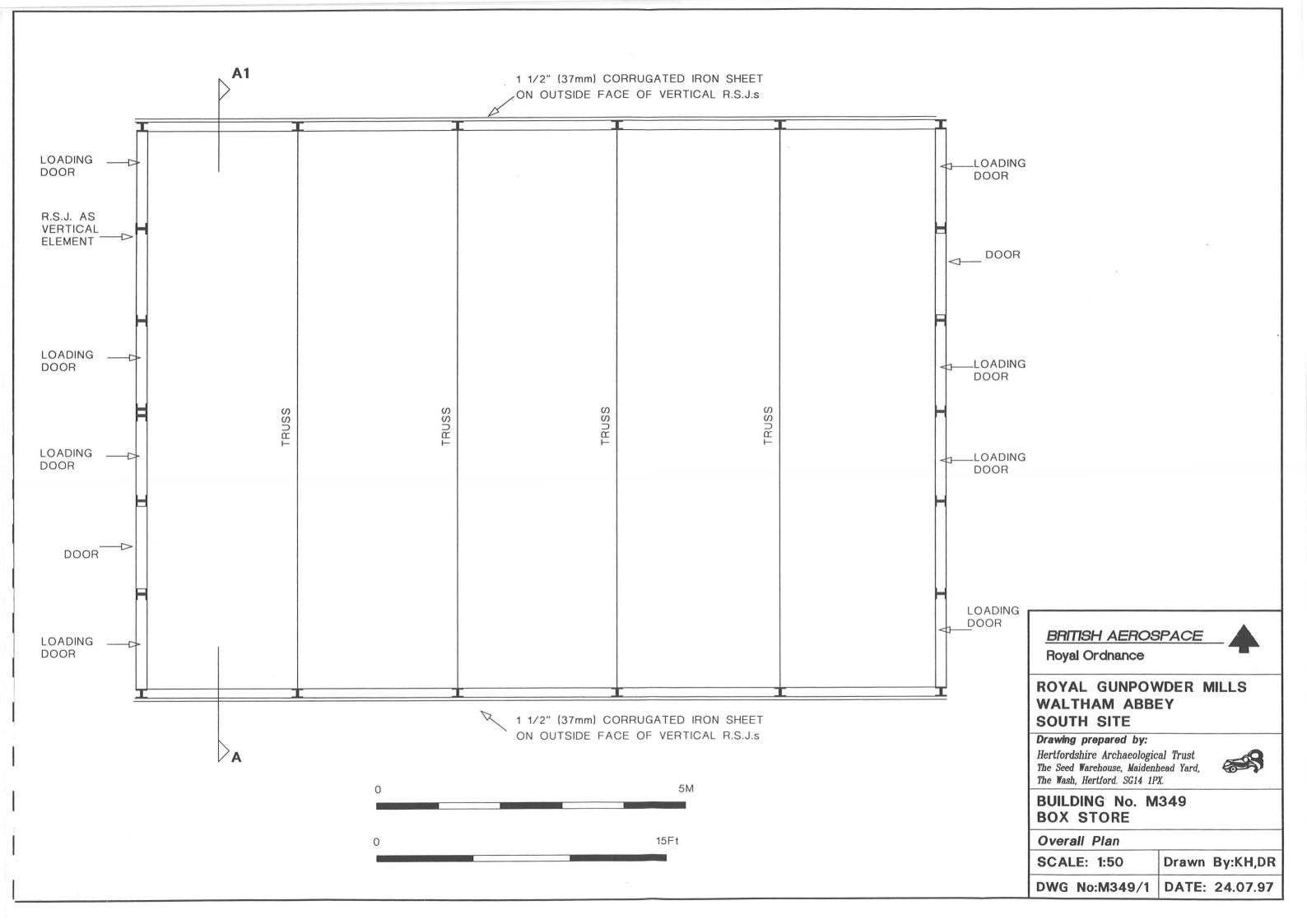
ESG 2363/97

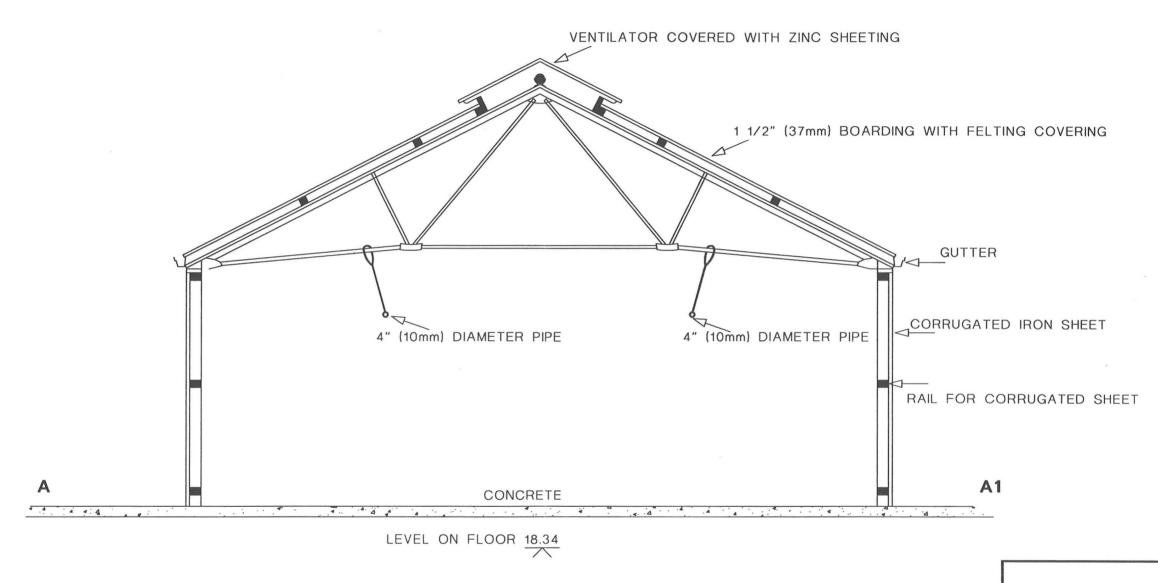
BRITISH AEROSPACE **Royal Ordnance**



PROJECT:

WALTHAM ABBEY SOUTH SITE RGPF







BRITISH AEROSPACE



Royal Ordnance

ROYAL GUNPOWDER MILLS WALTHAM ABBEY SOUTH SITE

Drawing prepared by:

Hertfordshire Archaeological Trust The Seed Warehouse, Maidenhead Yard, The Wash, Hertford. SG14 1PX.



BUILDING No. M349 BOX STORE

Section	A-A1

SCALE: 1:50

Drawn By:KH,DR

DWG No:M349/2 DATE: 24.07.97