2587

Ancient Monuments Laboratory
Report 25/96

THE TREE-RING DATING OF 2 MILK STREET, SHREWSBURY, SHROPSHIRE

D W H Miles

Ancient Monuments Laboratory Report 25/96

THE TREE-RING DATING OF 2 MILK STREET, SHREWSBURY, SHROPSHIRE

D W H Miles

Summary

Nineteen samples were taken from eighteen timbers from 2 Milk Street, Shrewsbury (SJ 492124). Eight of the timbers sampled were from the earliest phase, Building B, which was a jettied timber-framed bay to the rear. Six samples from this range dated, three with precise felling dates of spring AD 1467. Eight timbers were also sampled from Building A to the front, and six dated, one of which provided a precise felling date of spring AD 1566. Finally, two samples were taken from a phase of roof reconstruction, one of which dated with a precise felling date of spring AD 1655. Two site master chronologies were produced: MILKST1 for Building B is of 114 rings spanning the years AD 1353-1466, and MILKST2 for Building A is of 174 rings spanning the years AD 1392-1565. A single sample ms19 related to the roof reconstruction and had 126 rings spanning AD 1529-1654. The dendrochronology was unable to prove whether the shopfront was coeval with the rest of Building B, but this may be discernable from the building archaeology. However, the dating did show that the roof was reconstructed re-using many of the elements from the old roof, such as principal rafters, V-struts, purlins, and rafters.

Author's address :-

Mr D W H Miles
Mill Farm
Mapledurham
Oxon
RG4 7TX

Table 1: 2 MILK STREET, SHREWSBURY - SUMMARY OF TREE-RING DATING

Sample number		Timber and position	Dates AD spanning	H/S bdry	Sap-wood	No of rings	Mean width mm	Std devn mm	Mean sens mm	Felling seasons and dates/date ranges
REAR WING - BUILDING B										
ms1a	c	NE purlin bay 4	1370-1466	1441	25¼C	97	1.63	0.86	0.203	spring 1467
b	c	NE purlin bay 4	1418-1466	1441	25¼C	49	1.02	0.35	0.242	1452-1486
* *ms1*		Mean of ms1a+ms1b	1370-1466			97	1.62	0.87	0.203	
ms2	c	SW purlin bay 4	-		15¼C	76	2.54	1.14	0.273	
* *ms3x*	c	SW raking strut T.VI	1397-1445	1438	7	49	2.57	1.33	0.192	1449-1483
ms4	c	Collar T.VI	1364-1446	1446	H/S	83	2.47	0.87	0.231	1457-1491
* *ms5*	c	Tiebeam T.VI	1353-1466	1448	18¼C	114	1.59	0.70	0.169	spring 1467
* *ms6*	c	SW wallplate T.VI	1355-1446	1433	13	92	1.85	0.99	0.200	1444-1478
ms7	c	NW door post NE wall bay 4	-		H/S	45	3.18	1.04	0.243	
ms8	c	NW window jamb NE wall bay 4	-		H/S	56	2.53	1.02	0.200	
= *MILKST1* **site master**			**1353-1466**			**114**	**1.86**	**0.83**	**0.155**	
FRONT RANGE - BUILDING A										
First phase structure										
* *ms11*	c	NW corner post T.V	1466-1544	1526	18	79	1.55	0.47	0.194	1537-1571
* *ms12*	c	NW principal post T.IIII	1417-1538	1530	8	122	1.76	0.59	0.200	1519-1553
ms13	c	SE doorpost T.IIII	-		14¼C	45	2.87	1.23	0.356	
* *ms14*	c	1st NW rafter NE T.IIII	1487-1565	1543	22¼C	79	1.37	0.67	0.251	spring 1566
* *ms15*	c	NW V-strut T.III	1392-1555	1551	4	164	1.15	0.66	0.321	1562-1596
ms16	c	SE purlin bay 1	-		22	120	1.16	0.50	0.180	
* *ms17*	c	SE principal rafter T.II	1408-1542	1542	H/S	135	1.37	0.72	0.166	1553-1587
* *ms18*	c	NW purlin bay 1	1412-1538	1538	H/S	127	1.59	0.66	0.245	1549-1583
Second phase roof reconstruction										
ms19	c	NW 'cruck' principal T.II	1529-1654	1629	25¼C	126	1.10	0.50	0.201	spring 1655
ms20	c	SE extension post T.III	-		34C	127	1.78	0.91	0.208	
= *MILKST2* **site master**			**1392-1565**			**174**	**1.50**	**0.52**	**0.188**	

Key: * = sample included in site-master; **c** = core; ¼C,C = bark edge present, partial or complete ring: ¼C = spring felling, or C = winter felling;
H/S bdry = heartwood/sapwood boundary - last heartwood ring date; **std devn** = standard deviation; **mean sens** = mean sensitivity

THE TREE-RING DATING OF 2 MILK STREET, SHREWSBURY, SHROPSHIRE

1. Introduction and objectives

No. 2 Milk Street, together with 3 Milk Street, form a group of three buildings on the east side of Milk Street. The main range of 2 Milk Street (Building A) is three bays running parallel to the road and including an original driveway to the rear courtyard (Fig 1). The building is timber-framed and was originally jettied. When built it was of two stories, but subsequently had another half-storey added to it. This included three gables with some ornamental blind windows flanking either side of the main windows at the front with the close studding continued below the new wall plate. At the rear, however, the raised section had diamond bracing between the studs. In a drawing dated 1821, there were two large box oriels at first floor level. A date, no later than the fifteenth-century, has been put forward for this front range by J T Smith, although this has not been been widely accepted (Smith 1953, 298).

To the rear is a single-bay jettied building (Building B) fronting onto the courtyard with remains for a shopfront consisting of a door and window, with evidence for a second window to the west. The north elevation is close-studded above the shopfront, whereas the back wall is close-studded at ground-floor level, but large-panel with one mid rail at first-floor level. This range may have continued to the east, and may lay encased in the buildings belonging to the present pub, previously the Old Post Office Hotel. 3 Milk Street is essentially a later brick building of *c* AD 1700 and was not part of the present dendrochronology project.

For most of this century the property has been known as Proud's Mansion, presumed to have been built for a wealthy draper, George Proud, in 1568 (Forrest 1912). However, this has been dismissed by later writers on the grounds that the building was not of the same quality as other fine town houses of the period, and that it more than likely occupied the site to the north at the junction with the High Street. Subsequent occupiers of the building included a bootmaker, a cabinet maker, and until recently a bicycle shop (Morriss 1994).

The dendrochronology was undertaken to try and give a chronology to the development of the site, and to determine if Building B predated Building A, and whether Building A was originally a self contained unit later combined with Building B.

2. Methods

All samples were of oak from what appeared to be primary first-use timbers, or in the case of the reconstructed roof, any timbers which might have been re-used from the first phase as well. Those timbers which looked most suitable for dendrochronological purposes with complete sapwood or reasonably long ring sequences were sampled through coring, using a 16mm diameter hollow auger. The dry samples were sanded without pretreatment on a linisher using 60 to 1200 grit abrasive paper, and were cleaned with compressed air, to allow the ring boundaries to be clearly distinguished. They were then measured under a x10/x30 microscope using a travelling stage electronically displaying displacement to a precision of 0.001mm, rounded to the nearest 0.01mm.

After measurement, the ring-width series for each sample was plotted as a graph of width against year on log-linear graph paper. The graphs of each of the samples in the phase under study are then compared visually at the positions indicated by the computer matching and, if found satisfactory and consistent, are averaged to form a mean curve for the site or phase. This mean curve and any unmatched individual sequences are compared against dated reference chronologies to obtain an absolute calendar date for each sequence.

Here this was accomplished by using a combination of both visual matching and a process of qualified statistical comparison by computer. The samples were first matched visually, and then independently matched by computer. The ring-width series were compared on an IBM compatible 486SX computer for statistical cross-matching using a variant of the Belfast CROS program. Statistical comparisons were made using a maximised *t*-value, those over $t = 3.5$ being considered significant (Baillie and Pilcher 1973). Nevertheless, most dendro-chronologists prefer to see a well-replicated series of matches against local independent chronologies with at least a $t = 5$ or 6. A version of this and other programmes were written in BASIC by D Haddon-Reece, late of the Ancient Monuments Laboratory and latterly re-written in Microsoft Visual Basic by M R Allwright and P A Parker. The bar diagram graphics software was written by M R Coome.

Once a tree-ring sequence has been firmly dated in time, a felling date, or date range, is ascribed where possible. With samples which have sapwood complete to the underside of or including bark, this process is relatively straight forward. Depending on the completeness of the final ring, ie if it has only the spring vessels or earlywood formed, or the latewood or summer growth, a *precise felling date and season* can be given. If the sapwood is partially missing, or if only a heartwood/sapwood transition boundary survives, then an *estimated felling date range* can be given for each sample. The number of sapwood rings can be estimated by using a statistically derived sapwood estimate with a given confidence limit. An accepted national sapwood estimate for British oaks is given as between 10 and 55 rings with a 95% confidence range (Hillam *et al* 1987). Sometimes a regional sapwood estimate may be used, for instance a 95% confidence range of 11-45 has been found to be more appropriate for Shropshire (Miles forthcoming). If no sapwood or heartwood/sapwood boundary survives, then the minimum number of sapwood rings is added to the last measured ring to give a *terminus post quem.*

Some caution must be used in interpreting solitary precise felling dates. Many instances have been noted where timbers used in the same structural phase have been felled a year or two apart. Where ever possible, a *group* of precise felling dates should be used as a more reliable indication of the *construction period.* It must be emphasised that dendrochronology can only date when a tree has been felled, not when the timber was used to construct the structure under study. However, it was common practice to build timber-framed structures with green or unseasoned timber (Charles 1984).

3. Results

Altogether, eighteen timbers were sampled from various phases of Numbers 2 and 3 Milk Street (see Appendix A). All were of oak and all showed evidence for subsequent shrinkage consistent with being converted prior to seasoning (Fig 2). These were identified by the distinctive shakes and deformed surfaces which would have been straight and true when initially cut by the saw or axe. Details of the samples taken are shown in Table 1.

Rear wing, Building B

In the earliest phase, Building B, virtually all of the timbers sampled were either heart sawn (halved), quartered, or slabbed. However, most of the shop front below used timbers which were boxed heart from whole trees. Most of the trees sampled were between 50 and 125 years old when felled. Samples ***ms5*** and ***ms8*** included the pith, or were within a few rings of the centre.

Eight timbers were sampled from this phase, three having complete sapwood, all with earlywood present indicating spring fellings, and the rest at least a heartwood/sapwood boundary. The locations of these are shown on the plans in Appendix A. Sample ***ms1a*** broke at the heartwood/sapwood boundary when coring, and as it was not certain whether the break was a clean one, a secondary sample, ***ms1b***, was taken adjacent to ensure a complete sequence. These were cross-matched with a *t*-value of 6.2 and were combined to form sample ***ms1*** This, together with samples ***ms3***, ***ms5***, and ***ms6*** were found to match each other as shown in Table 2 below. These were therefore combined to form a site master ***MILKST1*** comprising 114 rings.

Table 2: *t*-values and overlaps for components of ***MILKST1*** plus **ms4**

	ms2	***ms3***	***ms4***	***ms5***	***ms6***
	1466	1445	1446	1466	1446
ms1	4.57	4.77	2.00	5.33	5.06
	76	49	77	97	77
ms2		3.16	2.30	4.01	3.04
		49	56	76	56
ms3			3.81	4.47	5.25
			49	49	49
ms4				3.54	3.87
				83	83
ms5					5.46
					92

The site master ***MILKST1*** was then compared with numerous reference chronologies. Consistent results were obtained when ***MILKST1*** spanned the period AD 1353-1466. At this date high *t*-values and good visual matches were obtained with several local reference chronologies (Table 3).

Table 3: Dating of ***MILKST1*** (Building B) against reference chronologies at AD 1466

Reference chronology	Spanning	Overlap	t-value
ALTON *(Hillam 1983)*	1348-1504	114	4.72
* CONDOVER *(Miles and Haddon-Reece 1993)*	1318-1444	92	4.90
* ABBOTSHS *(Miles and Haddon-Reece 1994)*	1348-1457	105	5.36
EASTMID *(Laxton and Litton 1988)*	882-1981	114	5.39
OXON93 *(Haddon-Reece et al 1993)*	632-1987	114	5.39
SENGLAND *(Bridge 1988)*	1083-1589	114	5.45
SALOP95 *(Miles 1995)*	881-1745	114	5.48
SHERNAVE *(Bridge 1993)*	1339-1474	114	5.54
MASTERAL *(Haddon-Reece and Miles 1993)*	404-1987	114	5.87

* indicates component of SALOP95

Two of the timbers dated, samples ***ms1*** and ***ms5***, had complete sapwood. As both had the spring growth for the year after the last measured full ring of AD 1466, the timbers were felled in the spring of AD 1467. The other dated samples from this phase had consistent heartwood/ sapwood boundaries, suggesting that the timbers are all of the same building phase (Fig 3).

The timber from which sample ***ms3*** was extracted had complete sapwood. This became detached on coring and a second short core was extracted adjacent, but this too broke at the same position, preventing the complete sapwood section of 20¼ rings from matching up with complete certainty. However, taking into account the last measured ring on the main body of sample ***ms3*** dated to AD 1445, and that 20¼ rings of sapwood extended beyond, a felling date of not before spring AD 1466 is likely and clearly coeval with the other dated samples.

Although sample ms4 matched samples ***ms3***, ***ms5***, and ***ms6***, it only matched the site master with a *t*-value of 3.6, so it was decided not to include it in the site master. Sample ***ms2*** was distorted, and this contributed to its not dating despite having 76 rings and complete sapwood. Samples ***ms7*** and ***ms8*** failed to date mainly because there were too few rings. Their failure to date should not be taken as evidence for the shopfront being a different phase.

Front range, Building A

For Building A, ten samples were taken from both the roof and the first floor. As the roof had been reconstructed reusing many of the original timbers, it was not always possible before the tree-ring analysis to determine which were phase 1 and which were phase 2. However, as it was intended to date both the original building as well as the reconstructed roof phase, this did not pose a problem. Therefore, samples were selected mainly for the suitability of their ring patterns and for the presence of sapwood, from a wide variety of elements.

All timbers sampled were either heart sawn (halved), quartered, or slabbed. Most of the trees sampled were between 100 and 175 years old when felled, although a doorpost (***ms13***) was from a timber unlikely to be older than 75 to 100 years of age. None of the samples came near the pith, but four had complete sapwood (see Table 1) and the remaining six had either some sapwood or a heartwood/sapwood boundary.

Six of the samples matched together as shown in Table 4 below and were combined to form a second site master ***MILKST2*** comprising 174 rings. As can be seen in the bar diagram in Figure 4, all of these samples appeared to have come from the same phase, the primary phase for the front range.

Table 4: *t*-values and overlaps for components of ***MILKST2*** plus **ms4**

	ms12	***ms14***	***ms15***	***ms17***	***ms18***
	1538	1565	1555	1542	1538
ms11	9.87	3.96	5.24	6.10	6.21
	73	58	79	77	73
ms12		4.64	5.02	8.53	5.55
		52	122	122	122
ms14			2.95	3.11	3.87
			69	56	52
ms15				3.20	5.51
				55	127
ms17					6.95
					127

The site master ***MILKST2*** was then compared with the reference chronologies and dated to AD 1565. The *t*-value comparisons of the site master against the reference chronologies are shown in Table 5 below.

Table 5: Dating of ***MILKST2*** (Building A) against reference chronologies at AD 1565

Reference chronology	**Spanning**	**Overlap**	**t-value**
SENGLAND *(Bridge 1988)*	1083-1589	174	6.32
GIERTZ *(Siebenlist-Kerner 1978)*	1341-1636	174	7.56
* BROOKGT *(Miles and Haddon-Reece 1993)*	1362-1611	174	8.02
EASTMID *(Laxton and Litton 1988)*	882-1981	174	8.30
NORTH *(Hillam 1994)*	440-1742	174	9.58
MASTERAL *(Haddon-Reece and Miles 1993)*	404-1987	174	9.62
SALOP95 *(Miles 1995)*	881-1745	174	10.11

* indicates component of SALOP95

One timber, a reset rafter from which sample ***ms14*** was taken, had complete sapwood and dated to AD 1565. As the sample had the earlywood growth for the year after, the timber was felled in the spring of AD 1566. The other sample with complete sapwood, ***ms13***, failed to date because there were insufficient rings. Sample ***ms16***, however, had 120 rings yet failed to date either individually or against the other samples from the site.

Although none of samples ***ms11***, ***ms12***, ***ms15***, ***ms17***, and ***ms18*** had complete sapwood, they all had heartwood/sapwood boundary dates which suggests that they were all coeval.

Reconstruction phase, Building A

Sample ***ms20***, from an extended main post, clearly dated from the reconstruction phase of the roof. This had complete sapwood with both earlywood and latewood present, and 127 rings but failed to date again either individually or against other samples from the site. However, sample ***ms19*** from the curved 'cruck-like' principal from T.II, did date individually against the master chronologies (Table 6) although it failed to match either ***ms20*** or any other of the samples from within the site. The last measured ring dated to AD 1654, which like sample ***ms14***, had complete sapwood with spring growth, thereby giving a felling date of spring AD 1655.

Table 6: Dating of ***ms19*** (Building A roof reconstruction) against reference chronologies at AD 1654

Reference chronology	Spanning	Overlap	t-value
* GIERTZ *(Siebenlist-Kerner 1978)*	1341-1636	108	4.65
EASTMID *(Laxton and Litton 1988)*	882-1981	126	4.76
NORTH *(Hillam 1994)*	440-1742	126	4.81
SALOP95 *(Miles 1995)*	881-1745	126	5.12
† NEWING *(Haddon-Reece et al 1987)*	1540-1678	115	5.21
OXON93 *(Haddon-Reece et al 1993)*	632-1987	126	5.21
MASTERAL *(Haddon-Reece and Miles 1993)*	404-1987	126	6.11

* indicates component of SALOP95

† indicates component of OXON93

It must be emphasised that dendrochronology can only date when a tree has been felled, not when the timber was used to construct the structure which is being sampled. However, it was common practice to build timber-framed structures with green or unseasoned timber, with construction generally being commenced within a year or so of felling (Charles 1984). Timbers which have been converted unseasoned or 'green' can be identified by the distinctive shakes and deformed surfaces which would have been straight and true when initially cut by the saw. All primary timbers sampled within this site showed evidence for subsequent shrinkage consistent with being converted prior to seasoning as illustrated in Figure 2.

4. Conclusion

Three phases were sampled at 2 Milk Street, Shrewsbury. In all, nineteen samples were taken from eighteen timbers; eight of the timbers sampled were from the first earliest phase, Building B, eight timbers were also sampled from Building A to the front, and two samples were taken from the reconstruction phase. Of all the timbers sampled, twelve were dated. Two precise felling dates of spring AD 1467 were obtained from the early rear-wing, whilst almost one hundred years later a single precise felling date of spring AD 1566 was obtained for the original phase of the front range (Building B). Another precise date of spring AD 1655 was obtained for a timber from the raising of the roof almost ninety years later still.

For buildings which are built in rural and village contexts, timber was usually obtained from local woodlands, specifically for the building proposed. On the other hand, towns and cities had much less woodland directly owned, and timber would have been obtained more through timber merchants. The timber therefore would be more likely to have come from different sources and the possibility of stockpiling is much higher. Therefore some caution must be exercised in using single felling dates, particularily from buildings in urban settings. Examples in which felling dates for a single phase vary by at least a year or two are not uncommon, and the above dates should be presented in this context (Miles and Haddon-Reece 1993; 1994; 1995). It must be emphasised that dendrochronology can only date when a tree has been felled, not when the timber was used to construct the structure which is being sampled.

The dating has shown that the site has experienced a major reconstruction every century on average. It is also perfectly possible that the main range was in fact Proud's Mansion, as its construction date of AD 1568 would be entirely consistent with the felling date of spring AD 1566 from the range in question. However more documentary research is needed to confirm or refute this hypothesis. The dendrochronology has shown clearly that the rear wing predates the front range by almost a century, but it cannot comment one way or the other about whether the front range was originally built as a separate unit, or was always intended to be joined up with the rear wing. Only further archaeological or architectural analysis of the building would be able to answer that question. Nevertheless, two well replicated site chronologies of 114 and 174 rings respectively have been constructed, along with a single dated sample of 126 rings.

5. Acknowledgements

The author is grateful to Mrs Madge Moran for site assistance, and to Mr Robert Brown for assistance in the Laboratory. Thanks go to Miss Cathy Groves of the English Heritage funded Sheffield University Dendrochronology Laboratory for assistance with the production of this report. Acknowledgements are also given to the Ancient Monuments Laboratory of English Heritage, and to Sheffield Dendrochronology Laboratory, for both published and unpublished data.

6. References

Baillie, M G L, and Pilcher, J R, 1973 A simple cross-dating program for tree-ring research, *Tree-Ring Bulletin*, **33**, 7-14

Bridge, M C, 1988 The dendrochronological dating of buildings in southern England, *Medieval Archaeol*, **32**, 166-74

Bridge, M C, 1993 List 52 - tree-ring dates, *Vernacular Architect*, **24**, 48-50

Charles, F W B, 1984 *Conservation of Timber Buildings*, London

Forrest, H E, 1912 *The Old Houses of Shrewsbury*, Shrewsbury

Haddon-Reece, D, Miles, D H, Tapper, M C, and the late Fletcher, J M, 1987 List 22 - tree-ring dates, *Vernacular Architect*, **18**, 54-5

Haddon-Reece, D, and Miles, D H, 1993 *Working compilation of 190 British reference chronologies supplied by various researchers*, unpubl computer file *Masteral*, the authors

Haddon-Reece, D, Miles, D H, Munby, J T, and the late Fletcher, J M , 1993 *Oxfordshire Mean Curve - a compilation of master chronologies from Oxfordshire*, unpubl computer file *OXON93*, the authors

Hillam, J, 1983 Tree-ring analysis of timbers from four buildings, in Millett 1983

Hillam, J, 1994 *Compilation of master chronologies from the North*, unpubl computer file *North*, Sheffield Dendrochronology Laboratory

Hillam, J, Morgan, R A, and Tyers, I, 1987 Sapwood estimates and the dating of short ring sequences, in *Applications of tree-ring studies: current research in dendrochronology and related areas* (ed R G W Ward), BAR Int Ser, **333**, 165-85

Laxton, R R, and Litton, C D, 1988 *An East Midlands Master Tree-Ring Chronology and its use for dating Vernacular Buildings,* Univ Nottingham, Dept of Classical and Archaeol Studies, Monograph Ser, **3**

Miles, D H, 1995 *Working compilation of 71 reference chronologies centred around Shropshire by various researchers*, unpubl computer file *SALOP95*, the author

Miles, D H, forthcoming A new sapwood estimate for Shropshire oak building timbers

Miles, D H, and Haddon-Reece, D, 1993 List 54 - tree-ring dates, *Vernacular Architect*, **24**, 54-60

Miles, D H, and Haddon-Reece, D, 1994 List 56 - tree-ring dates, *Vernacular Architect*, **25**, 28-36

Miles, D H, and Haddon-Reece, D, 1995 List 64 - tree-ring dates, *Vernacular Architect*, **26**, 60-74

Millett, M, 1983 The History, Architecture and Archaeological of Johnson's Corner, Alton, *Proc Hampshire Field Club Archaeol Soc*, **39**, 77-109

Morriss, R K, 1994 2-3 Milk Street, Shrewsbury, An Interim Report, *Mercian Heritage Ser*, **3**,

Siebenlist-Kerner, V, 1978 The Chronology, 1341-1636, for certain hillside oaks from Western England and Wales, in *Dendrochronology in Europe* (ed J M Fletcher), BAR, **51**, 157-61

Smith, J T, 1953 *Shrewsbury - Topography and Domestic Architecture to the Middle of the Seventeenth Century*, unpubl MA thesis, Univ Birmingham

Table 7: Ring-width data of the site master curves

MILKST1 AD1353-1466 2 Milk St Shrewsbury - ms1+ms3+ms5+ms6

ring widths (0.01mm)	**number of trees per year**
315 435 291 287 237 216 285 294 303 461	1 1 2 2 2 2 2 2 2 2
415 406 208 235 304 283 262 294 193 197	2 2 2 2 2 2 2 3 3 3
168 180 192 257 223 266 320 279 257 227	3 3 3 3 3 3 3 3 3 3
204 259 227 269 275 283 224 197 188 129	3 3 3 3 3 3 3 3 3 3
106 132 136 143 205 268 263 285 230 210	3 3 3 3 4 4 4 4 4 4
277 235 197 214 186 230 217 223 182 175	4 4 4 4 4 4 4 4 4 4
155 129 121 83 94 138 137 175 178 163	4 4 4 4 4 4 4 4 4 4
215 159 99 86 109 190 160 140 152 158	4 4 4 4 4 4 4 4 4 4
126 143 151 122 124 140 123 122 134 105	4 4 4 4 4 4 4 4 4 4
96 105 114 112 106 124 121 105 106 129	4 4 4 3 2 2 2 2 2 2
108 128 109 107 88 74 66 78 69 78	2 2 2 2 2 2 2 2 2 2
84 77 101 80	2 2 2 2

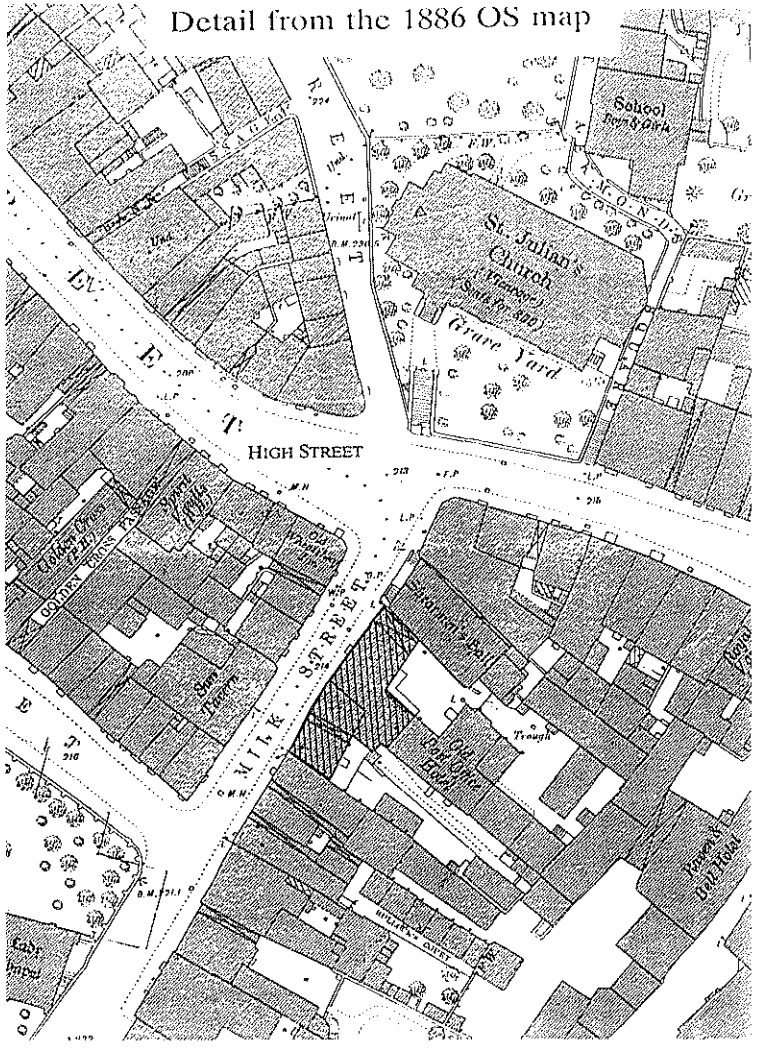
MILKST2 AD1392-1565 2 Milk St Shrewsbury - ms11+12+14+15+17+18

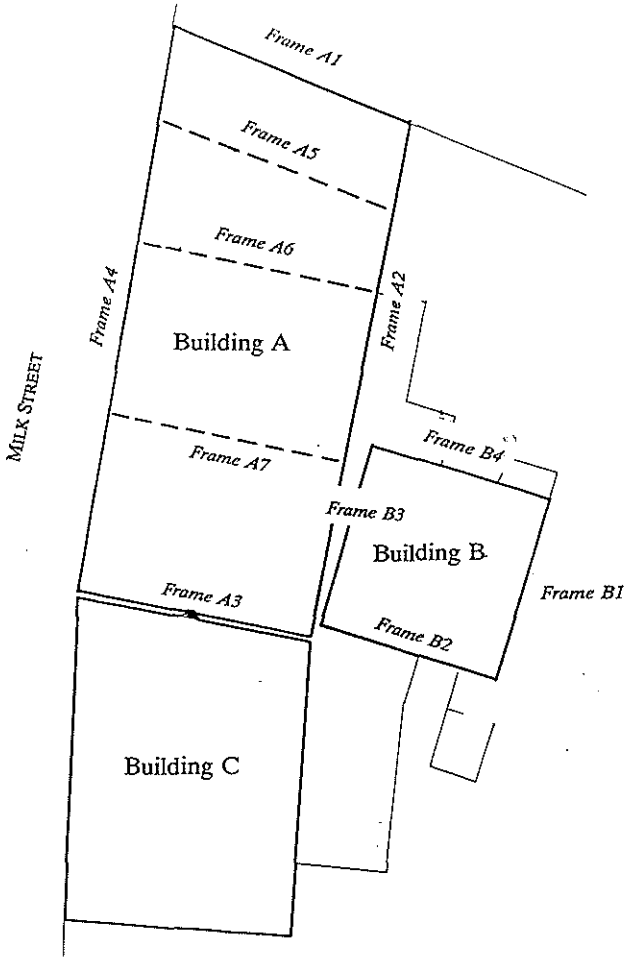
ring widths (0.01mm)	**number of trees per year**
139 167 101 131 293 177 199 190 163 163	1 1 1 1 1 1 1 1 1 1
145 151 109 160 171 173 285 341 311 208	1 1 1 1 1 1 2 2 2 2
287 269 309 269 189 251 257 183 250 248	3 3 3 3 3 4 4 4 4 4
220 255 168 168 133 123 196 186 124 141	4 4 4 4 4 4 4 4 4 4
172 125 120 139 157 150 147 100 141 165	4 4 4 4 4 4 4 4 4 4
144 157 151 212 219 178 168 193 164 148	4 4 4 4 4 4 4 4 4 4
146 136 117 140 150 130 133 100 116 122	4 4 4 4 4 4 4 4 4 4
121 130 97 127 139 191 185 150 152 149	4 4 4 4 5 5 5 5 5 5
120 131 101 153 155 162 171 179 157 193	5 5 5 5 5 5 5 5 5 5
170 138 125 98 138 220 181 152 148 106	5 5 5 5 5 6 6 6 6 6
114 118 137 139 209 170 113 144 164 143	6 6 6 6 6 6 6 6 6 6
118 105 112 132 124 82 98 118 97 112	6 6 6 6 6 6 6 6 6 6
119 118 98 84 90 78 112 136 113 119	6 6 6 6 6 6 6 6 6 6
133 95 95 62 87 115 117 110 99 159	6 6 6 6 6 6 6 6 6 6
88 122 120 140 163 116 130 141 173 156	6 6 6 6 6 6 6 4 4 4
96 105 99 146 153 167 189 226 248 274	4 3 3 2 2 2 2 2 2 2
164 144 187 169 48 67 76 99 94 104	2 2 2 2 1 1 1 1 1 1
137 98 71 67	1 1 1 1

ms19 AD1529-1654 2 Milk St Shrewsbury - front 'cruck' T.II

ring widths (0.01mm)
293 235 338 219 196 190 209 231 239 202
147 128 076 068 084 094 132 091 086 093
134 185 197 148 203 191 182 113 132 098
091 125 113 210 148 132 117 060 051 060
077 081 068 072 093 113 109 086 101 067
078 094 106 104 068 107 133 146 081 080
111 093 114 109 130 169 143 116 110 107
134 084 101 125 107 110 071 090 116 093
075 092 092 089 092 081 099 102 106 076
065 085 076 078 077 062 058 079 096 093
105 089 076 076 051 072 060 072 092 115
093 105 094 068 098 073 077 064 057 073
070 059 052 070 051 100

Figure 1: Site location plan and phasing block plan (*Morriss 1995)*

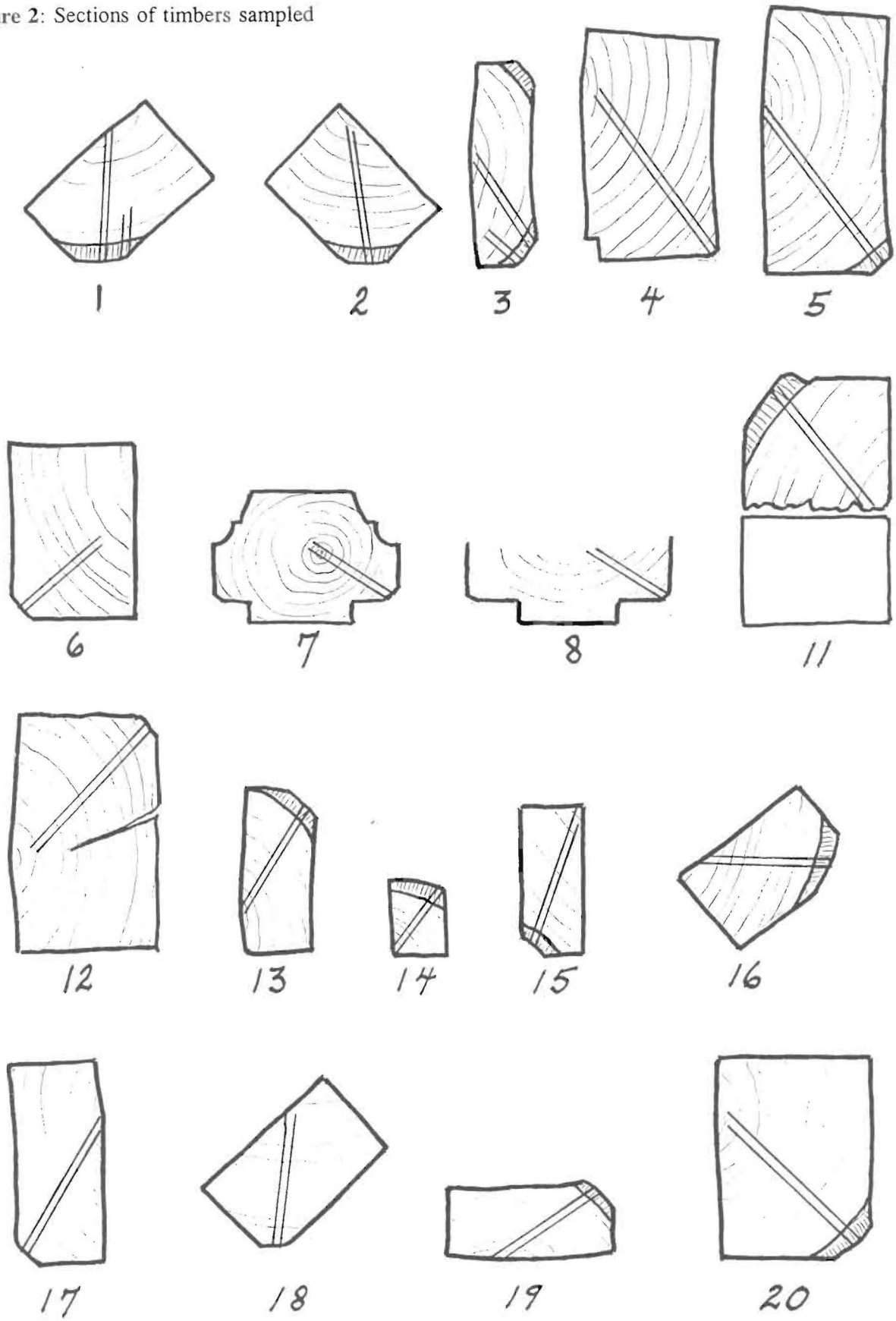




2-3 MILK STREET, SHREWSBURY:

Outline Block Plan and Frame Identification

Figure 2: Sections of timbers sampled



2 Milk Street Shrewsbury

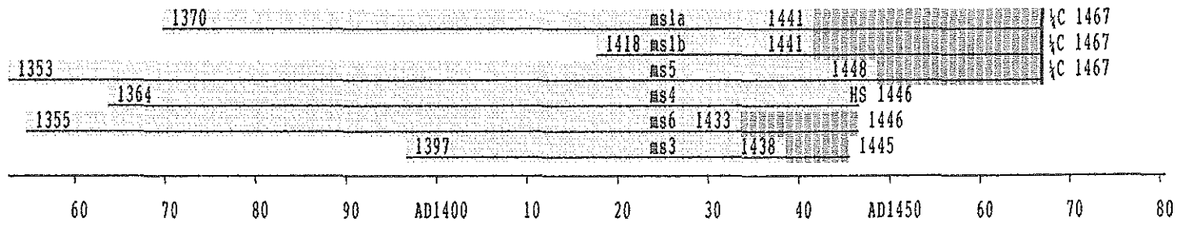


Figure 3: Bar Diagram of dated samples for Rear Wing (Building B)

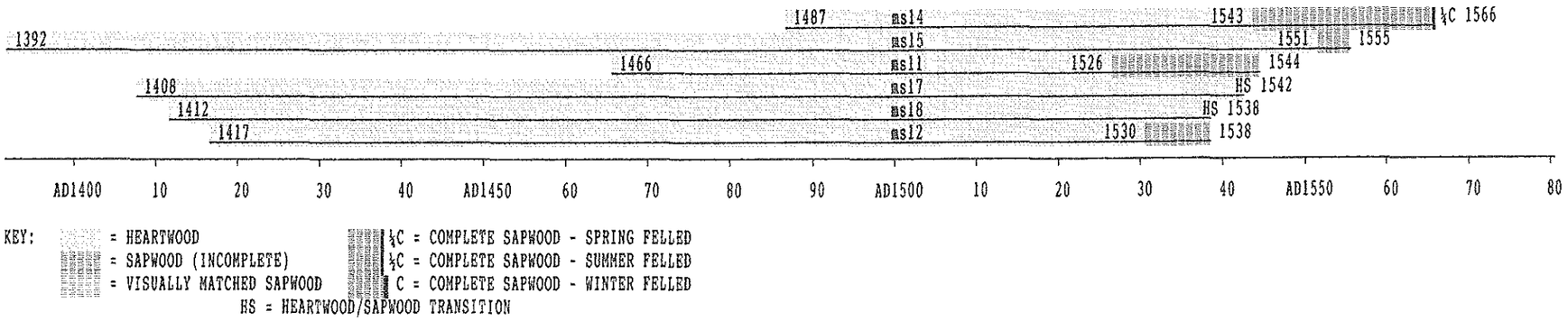
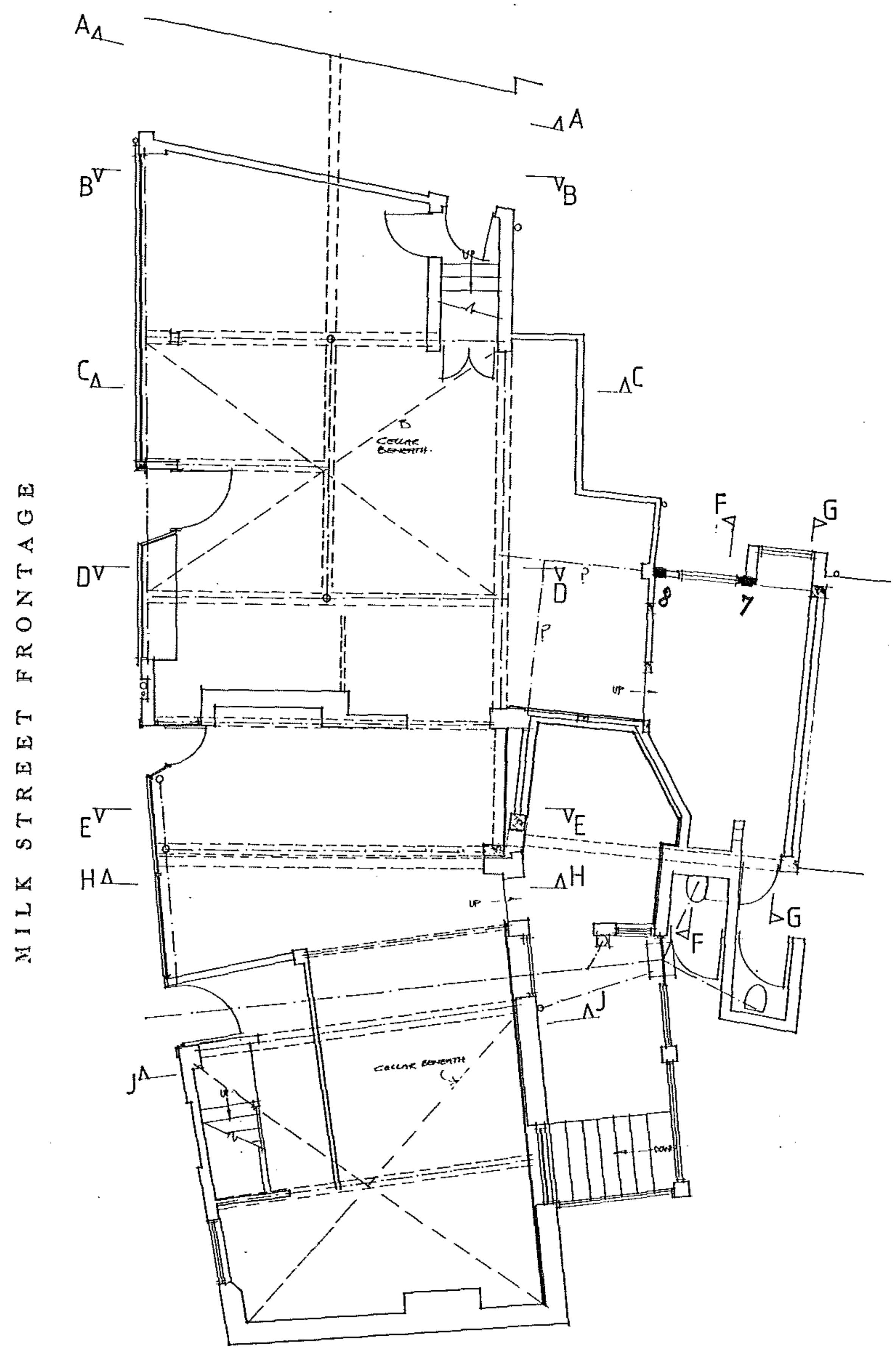
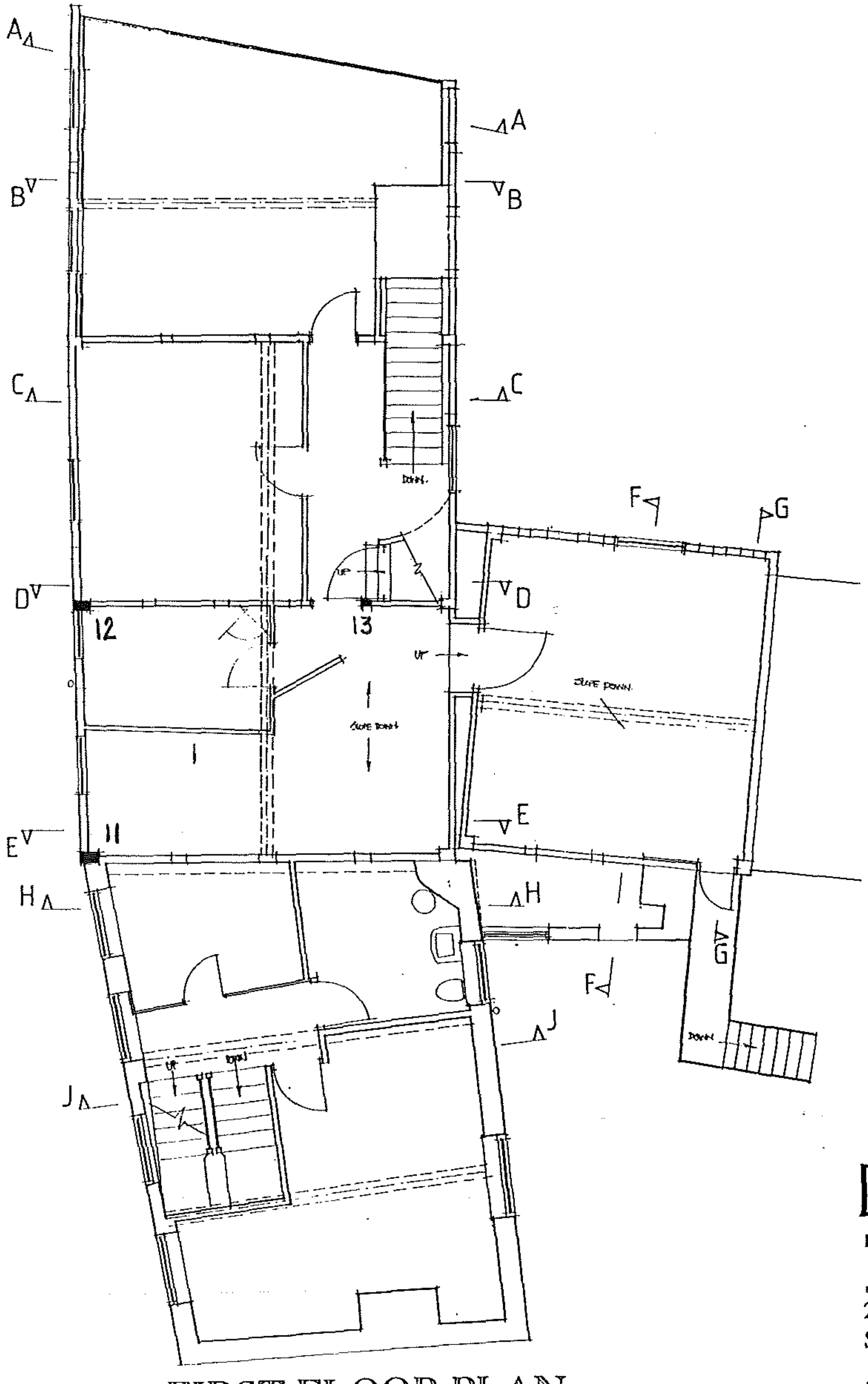


Figure 4: Bar diagram of dated samples for Front Range (Building A)



GROUND FLOOR PLAN



FIRST FLOOR PLAN

SURVEY OF 2 - 3 MILK STREET, SHREWSBURY.

1/4" to 1 foot

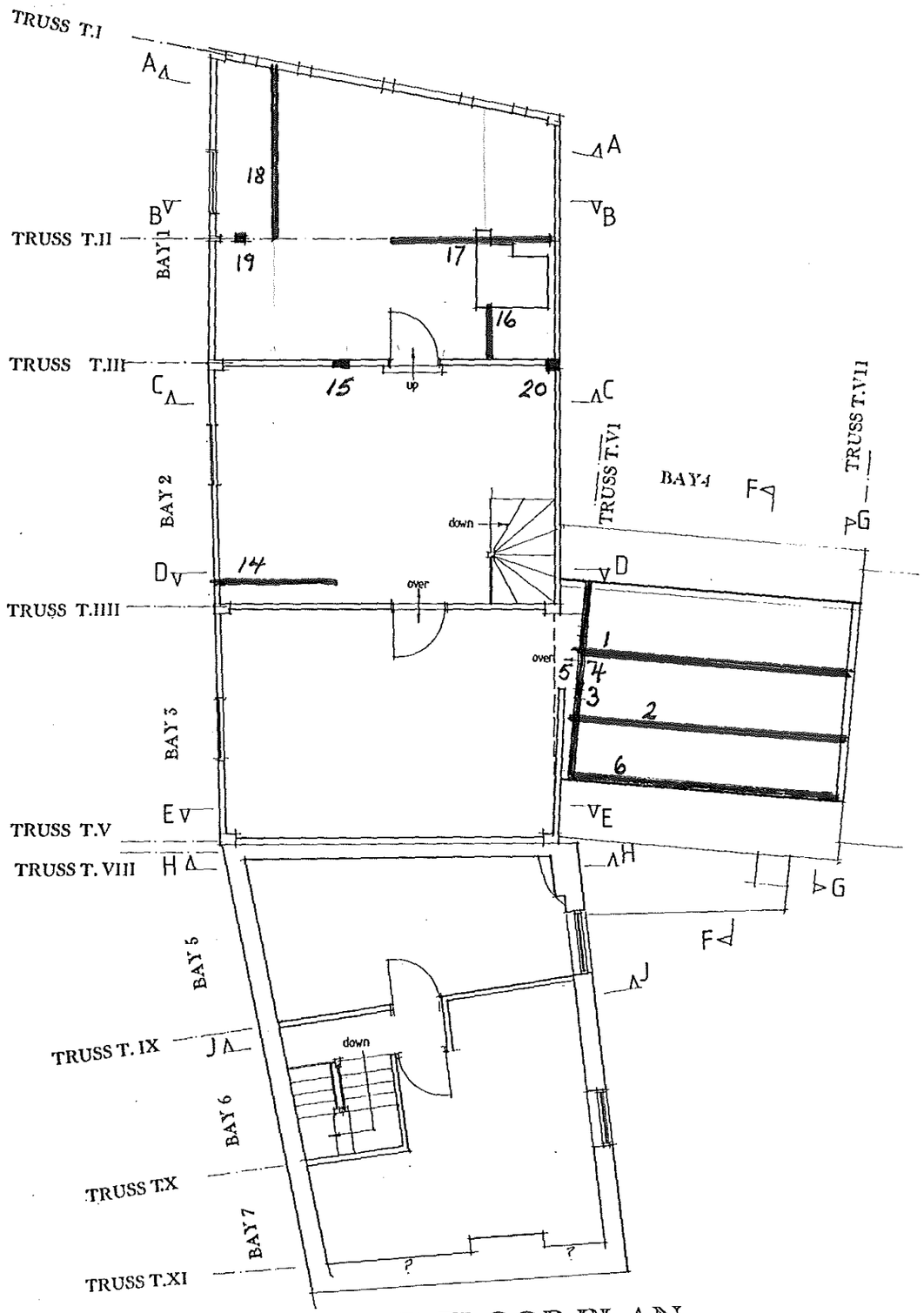
Pooks
Building Surveyors
26 Claremont Hill
Shrewsbury
Shropshire
SY1 1RE
Telephone 0743 236789
Fax 0743 242140

Project Title
2-3 Milk Street,
Shrewsbury

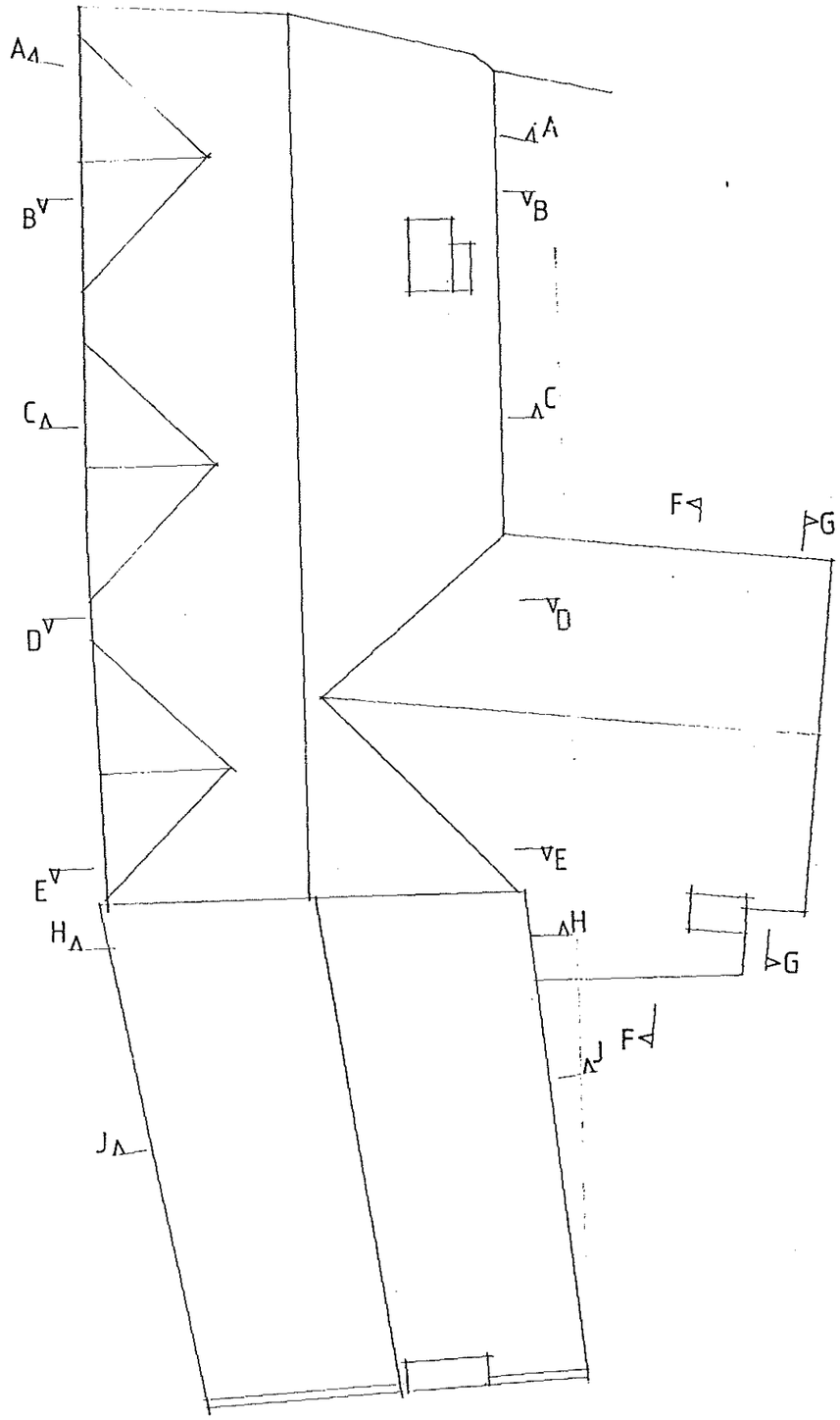
Drawing Title
Ground Floor & First
Floor Plans as Existing

Date	Scale	Drawn By
July 1992	1/4" = 1 foot	PJN

Drawing Number	Revision
92/102/1	



SECOND FLOOR PLAN



ROOF PLAN

SURVEY OF 2 - 3 MILK STREET, SHREWSBURY.

1/4" to 1 foot

Pooks
Building Surveyors
26 Claremont Hill
Shrewsbury
Shropshire
SY1 1RE
Telephone 0743 236789
Fax 0743 242140

Project Title
2-3 Milk Street,
Shrewsbury

Drawing Title
Second Floor and Roof
Plans as Existing

Date
July 1992

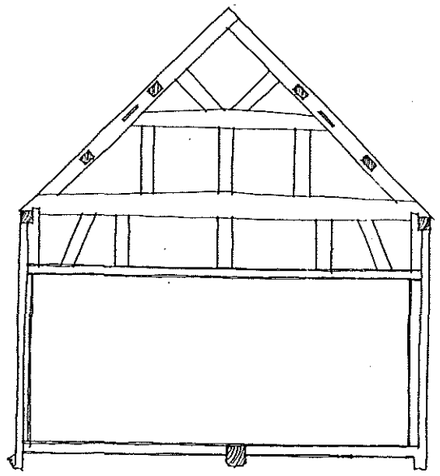
Scale
1/4" = 1 foot

Drawn By
PJN

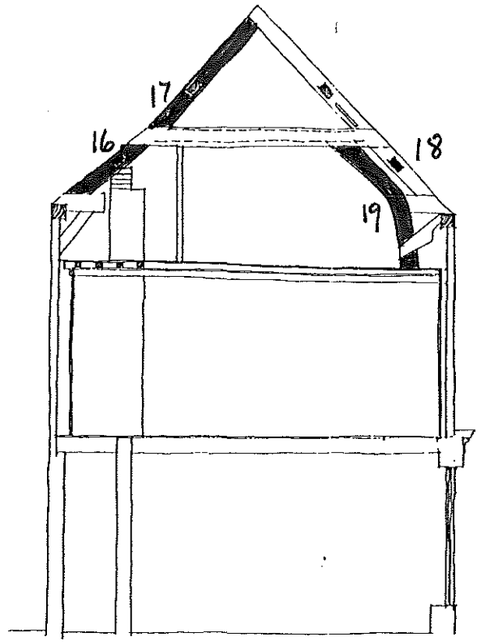
Drawing Number
92/102/2

Revision

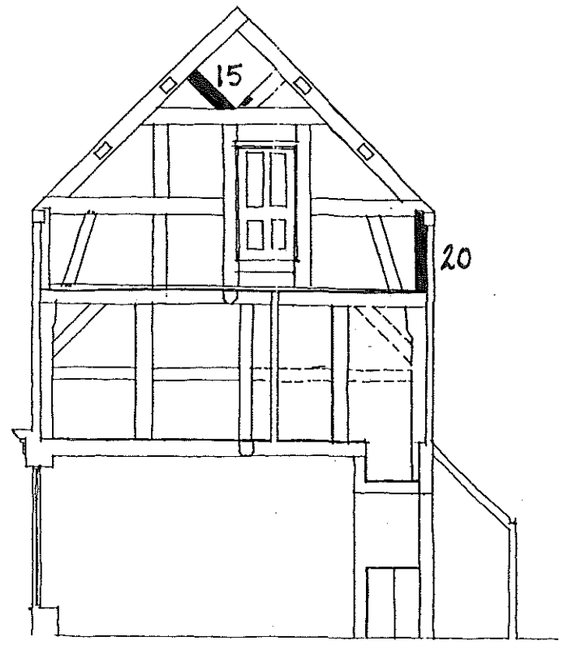
2



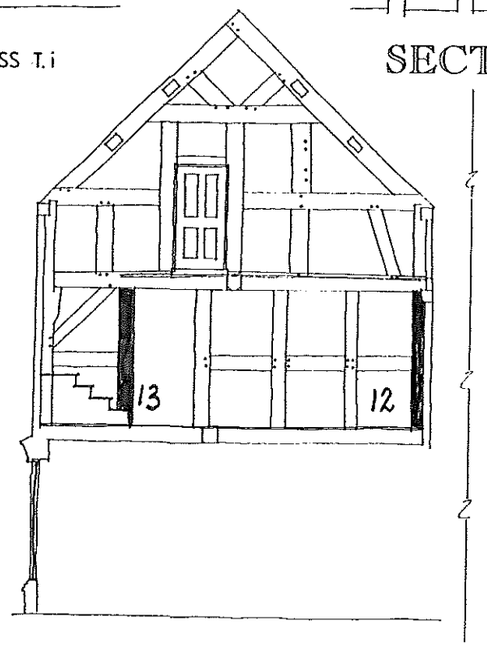
SECTION A-A TRUSS T.i



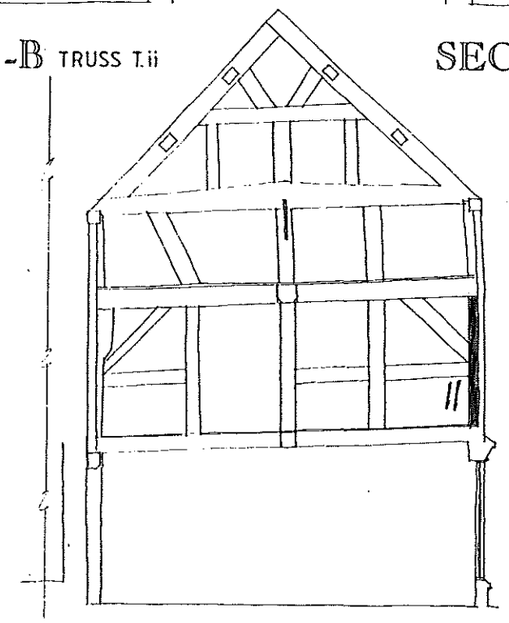
SECTION B -B TRUSS T.ii



SECTION C-C TRUSS T.iii



SECTION D-D TRUSS T.iiii



SECTION E-E TRUSS T. v

SURVEY OF 2 - 3 MILK STREET, SHREWSBURY

1/4" = 1ft

Pooks
Building Surveyors
26 Claremont Hill
Shrewsbury
Shropshire
SY1 1RE
Telephone 0743 236789
Fax 0743 342140

To be read in conjunction with drawing dated

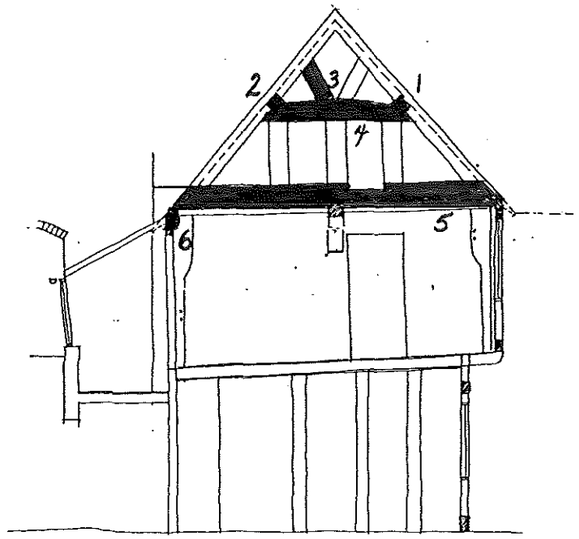
Project Title
2-3 Milk Street,
Shrewsbury

Drawing Title
Sections A-A; B-B; C-C;
D-D; E-E As Existing

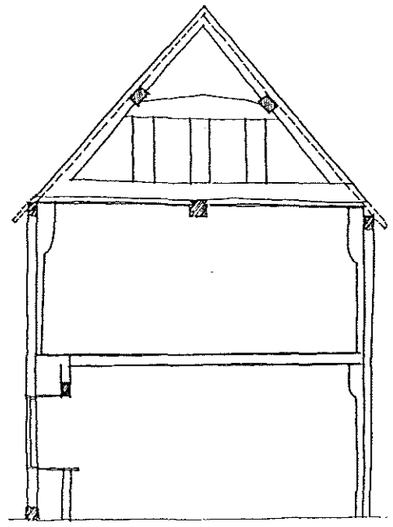
Date	Scale	Drawn By
July 1992	1/4" = 1 foot	PJN

Drawing Number
92/102/4

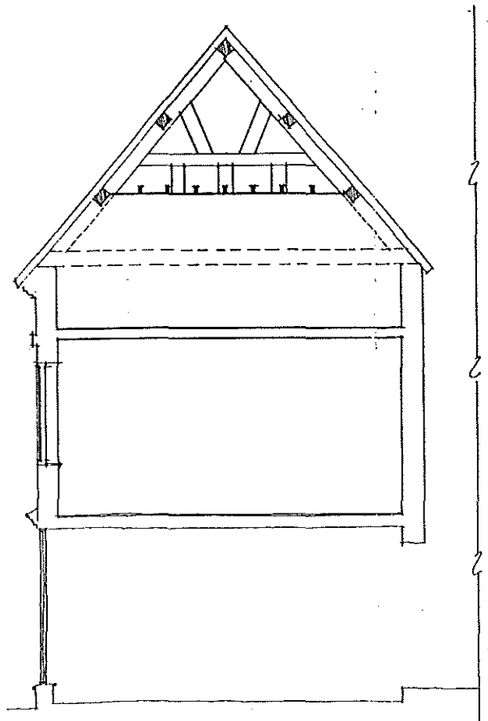
Revision



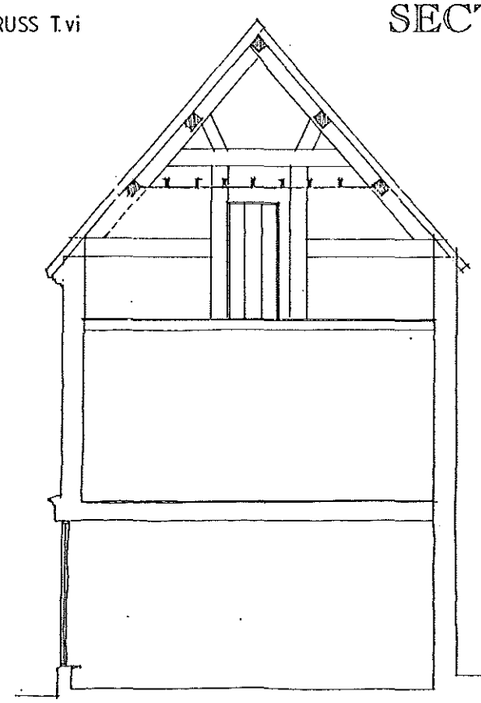
SECTION F-F TRUSS T.vi



SECTION G-G TRUSS T.vii



SECTION H-H TRUSS T.viii



SECTION J-J TRUSS T.ix

SURVEY OF 2-3 MILK STREET, SHREWSBURY.

1/4"=1ft

Pooks
Building Surveyors
26 Claremont Hill
Shrewsbury
Shropshire
SY1 1RE
Telephone 0743 236789
Fax 0743 242140

Project Title
2-3 Milk Street,
Shrewsbury

Drawing Title
Sections F-F; G-G; H-H;
J-J As Existing

Date	Scale	Drawn By
July 1992	1/4" = 1 foot	PJN

Drawing Number
92/102/5

Revision