

The OPEN AIR CLASS  
at the  
Gardens on Spring Creek,  
9 Photographs



Laurie SMITH  
HISTORIC BUILDING GEOMETRY



1

The Gallery shows 9 photographs from a timber framing project at Fort Collins, Colorado, USA –

The project T shirt, showing the simple daisy wheel basis for the Open Air Class at Fort Collins, Colorado. The project was run by the Timber Framers Guild, geometrical tuition was by Laurie Smith and precision scribe tuition by Glenn Dodge, assisted by Chris Kates. The work was carried out at Guild board member Adrian Jones' Frameworks Timber workshop ~

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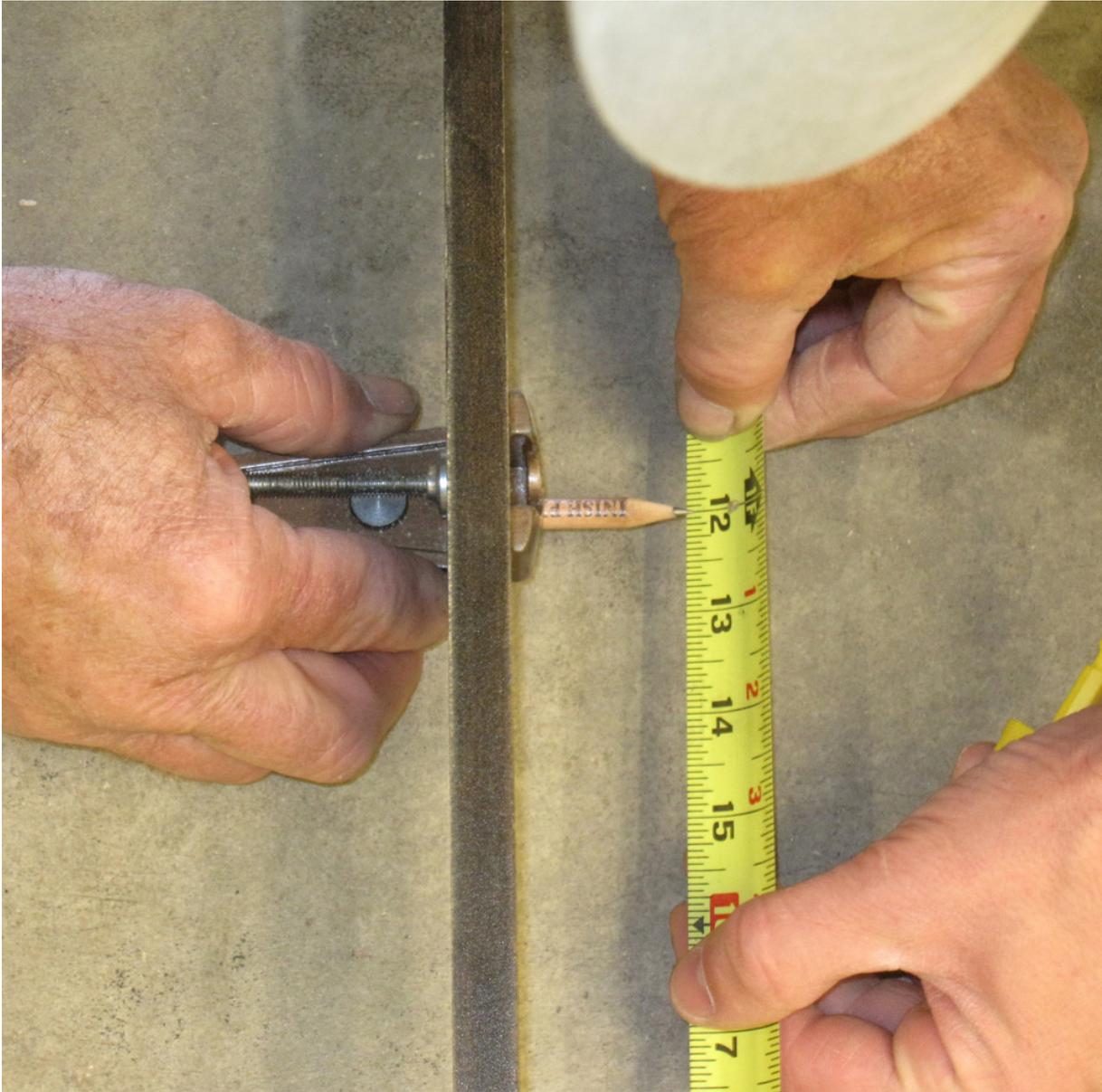
2

Using dividers to transfer joint dimensions across the timbers with visual reference to the vertical plumbline. The substantial scale of the timbers, beetle kill Lodgepole pine supplied free by Fort Collins City Council, is clear against carpenter Matt Doner (wearing his wonderful Make a Difference Day 2009 T shirt).



3

The working end of a jowl post, featuring the English tying joint which links the post to the tie beam of the building's cross wall and the wall plate of the side wall. Historic English carpentry details such as this and cambered tie beams were requested by Adrian Jones from the outset of the project.



## 4

Setting the marker on the trammel to a precise radius ready for a geometrical layout on the shop floor. The geometrical layout was drawn alongside another layout based on dimensions taken from the same geometry in Autocad. In the event the two layouts were identical and both methods eliminated the mathematical calculations that would otherwise be necessary. Drawing the geometrical design in Autocad automatically generated a proportional design, something that does not automatically occur when using dimensions.



## 5

Taking a depth reading against the vertical plumline with a small trammel in order to transfer the joint dimensions to the other timber. When both are marked up the cutting can begin. Later, the joint (and others) are test assembled to check the accuracy of their fit and any discrepancies are corrected. When all are correct the wall codes and assembly marks are cut or scribed into the timbers, ready for assembly on site.



6

Natural curve timbers. Adrian was keen to use natural curve timbers in the frame and had considered them for the cross wall bracing. In my view some of them would be hidden in this position and my suggestion was to use them in the frame's long walls where they could all be seen. This established a grammar for the timbers with natural curves in the long walls and straight braces in the cross walls, see photograph 7.



## 7

Straight braces in the cross walls. The braces rise from the jowl posts at exactly the same point as the jowl's inward angle and head towards the frame's ridge. The division of the post and brace has the same character as the division of a tree trunk and branch. The configuration also gives a visually clean triangulation between the jowl post, brace and tie beam.



## 8

The test assembly in Old Town Square in Fort Collins' city centre. The purlins and ridge beam were raised on three hand operated jacks, at opposite ends and at the centre of the frame. With the jacks raised to the correct positions the purlins were manually lifted into place in their mortices.



9

The daisy wheel, indicating the geometrical basis of the frame's design, and year of its construction. Many historic frames are inscribed with similar geometrical symbols and though many of these are interpreted by historians as apotropaic signs to ward off evil they can usually be shown to relate to the frame's proportions.

[For the full story of the project go to ARTICLES > The Open Air Class](#)

[www.historicbuildinggeometry.uk](http://www.historicbuildinggeometry.uk)

