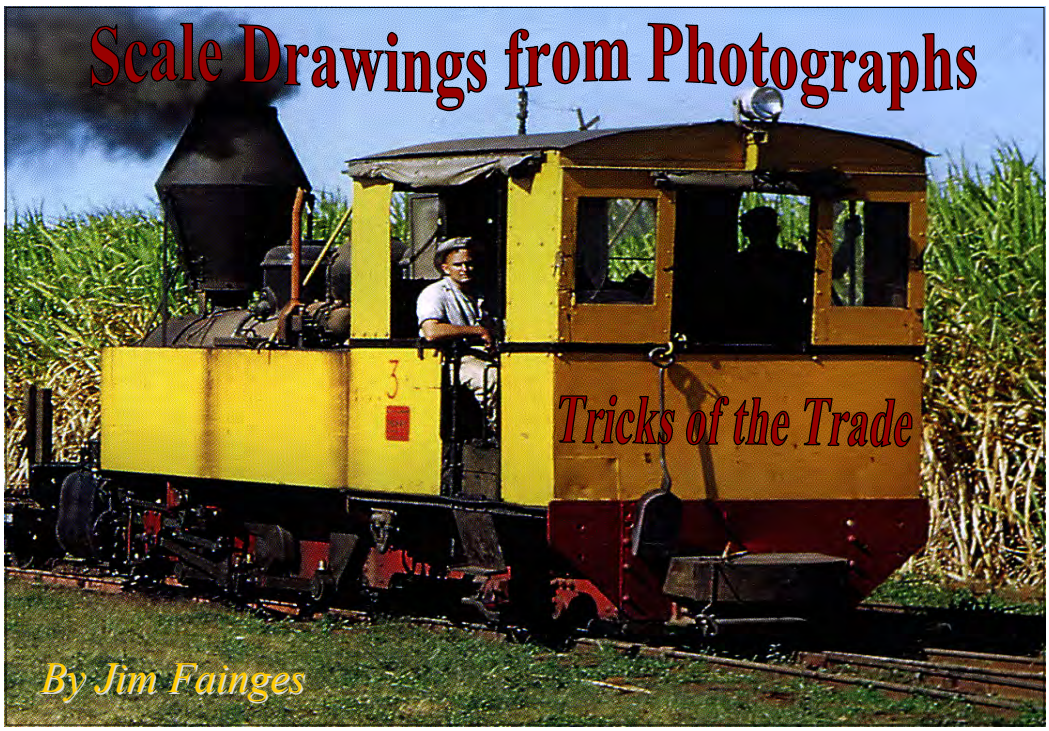

Jim Fainges draftsman

- Adapted from a Modelling the Railways of Queensland Convention presentation
  [Lynn Zelmer, Editor & CaneSIG Coordinator]
- Many of Jim's drawings available online from the CaneSIG web site:
  http://www.zelmeroz.com/CaneSIG

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Photogrammetry

- It's a technique for developing reasonable drawings when no others exist
- Caution: dimensions, when given, may be 'slippery' as usually only one or two critical dimensions are known, and even those may have been estimated (eg scaled from distance between rails) or hard to scale (eg wheel diameter)

Commonwealth Handbook

- Handbook of Heritage Photo-grammetry: a technical resource for heritage professionals

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Formula

- Full of facts and complicated formula essential to produce drawings from photos
- Bull!!!

$$\delta Z = \frac{Z^2}{f}\frac{\delta p}{b}$$

δ p can range from 0.1mm with a parallax bar to 0.005mm with a comparator.

many other fa...

Stage 1

- Have desired photograph enlarged
- Mount on a drawing board
- Align the verticals
- Cover with tracing paper

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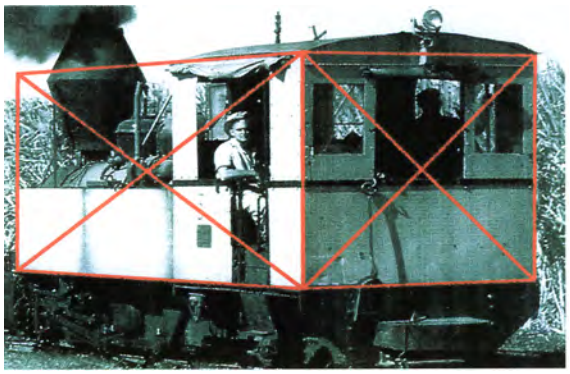
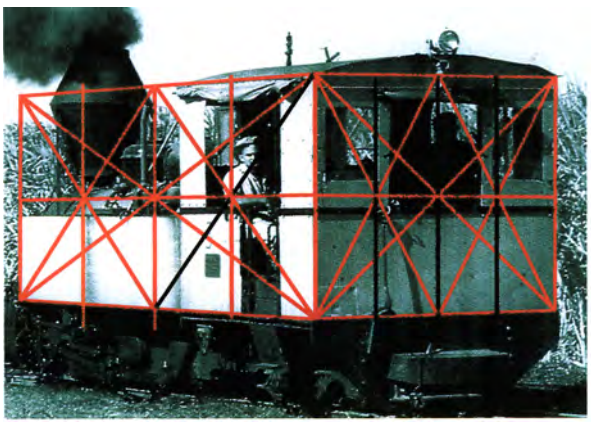
Stage 2

- Draw boxes using edges
- Draw diagonals



Stage 3

- Draw verticals and horizontals
- Then more diagonals
- Continue verticals and horizontals



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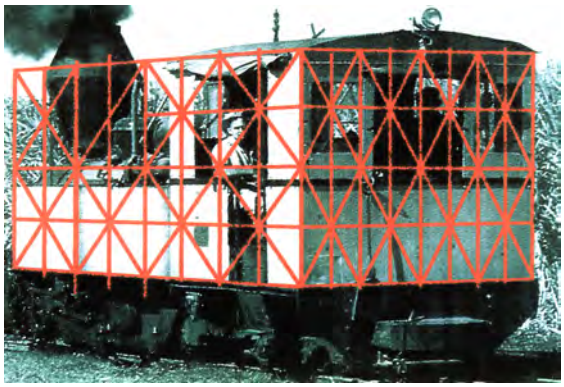
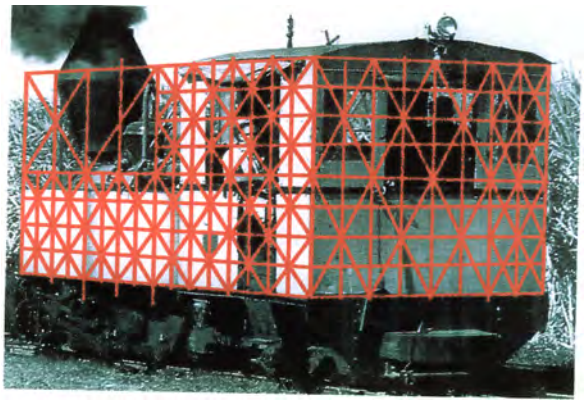
Stage 4

- And more of the same
- Note not all spaces need filling



Stage 5

- Keep on till areas are divided into even spaces
- Then remove diagonals



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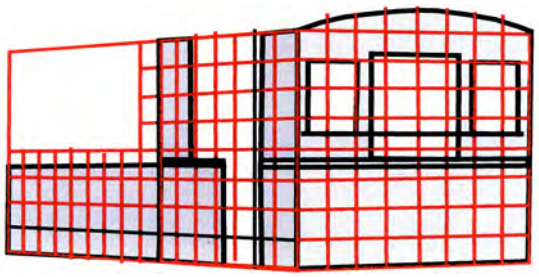
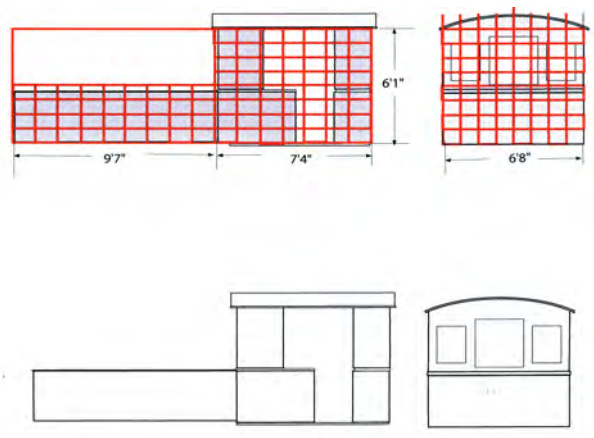
Stage 6

- Draw in details
- Remove tracing from photo
- Leaving drawing on grid



Stage 8

- Layout grid to scale
- Plot in the drawing
- Remove grid



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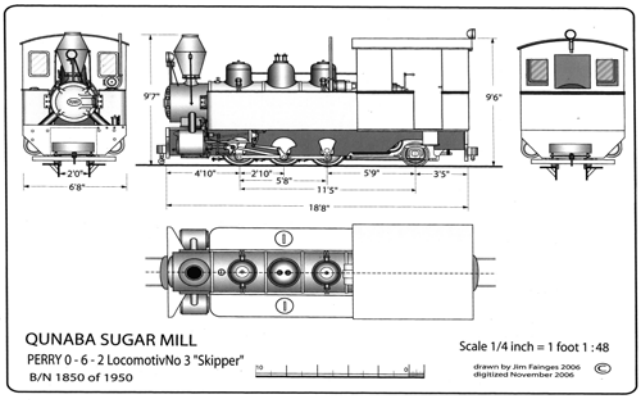
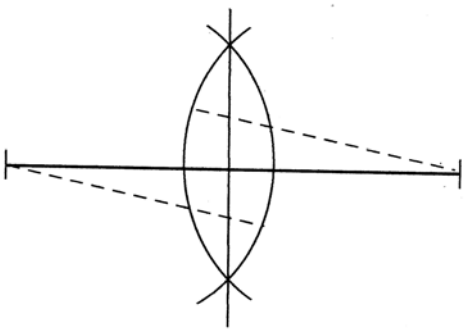
Stage 9

- Transfer to plan
- NOTE the plan of the Perry existed only cab tanks and stack were changed



Simple geometry 1

- **Finding the center of a line**
- Scribe two arcs longer than halfway and connect points



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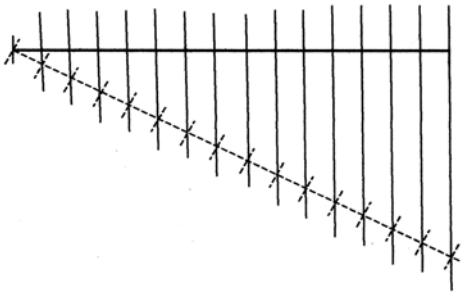
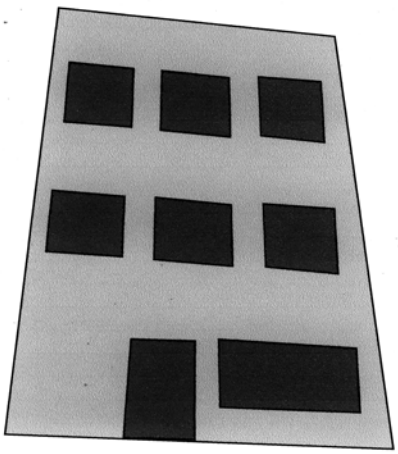
Simple Geometry 2

- **Dividing a line into equal parts**
- Draw a line at an angle to line divide into number needed
- Connect end of lines and draw rest parallel



Drawing from non parallel shape



- Photos taken from low angles distort
- These can be corrected

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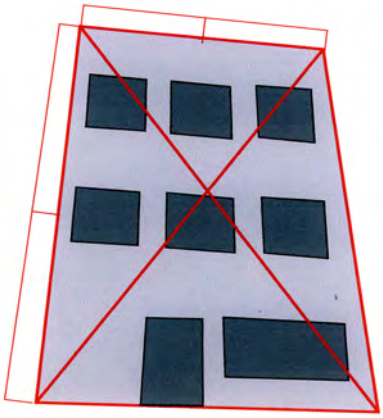
Odd shapes 1



Mount as before

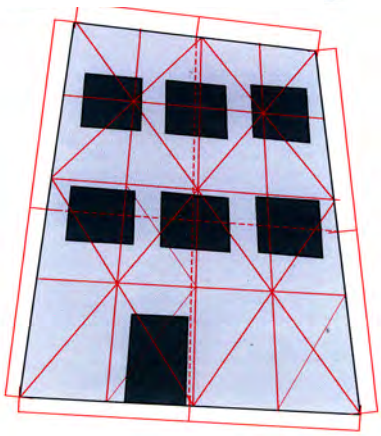
Fix outline and divide into halves

Draw diagonals

Note the center of diagonals is not the center of outside division

Draw lines parallel with outer divisions

Odd Shapes 2



- Continue diagonals and draw connecting lines at their intersections

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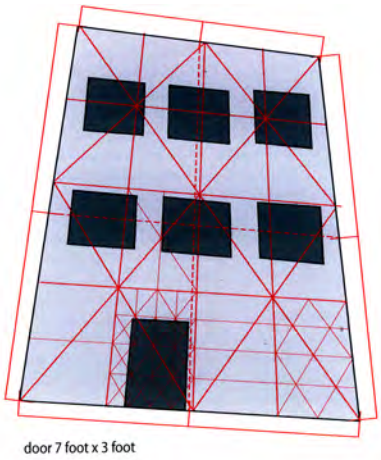
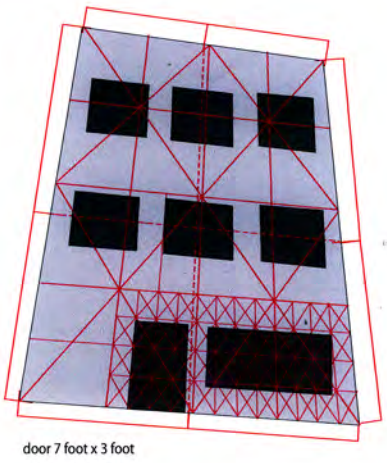
Odd Shapes 3



- The process continues where detail is required
- Note any known dimensions

Odd Shapes 4



- Subdivide where more detail is required

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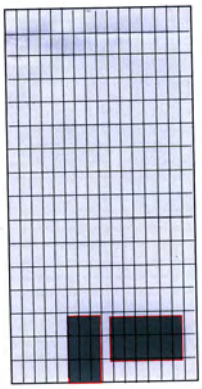
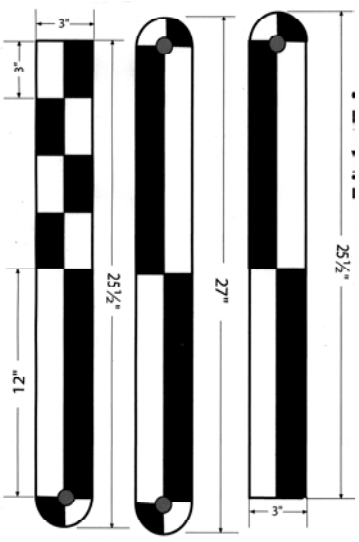
Odd shapes 5



- Proceed as before in making grid to known dimensions and proceed to plot drawing

Some Tools of the Trade 1

- SCALE RULE
- Made from 6 mm ply to dimensions shown
- Paint scale BLACK on one side and RED on the other
- NOTICE the dimensions are in IMPERIAL
- But a scale can be made in METRIC if required



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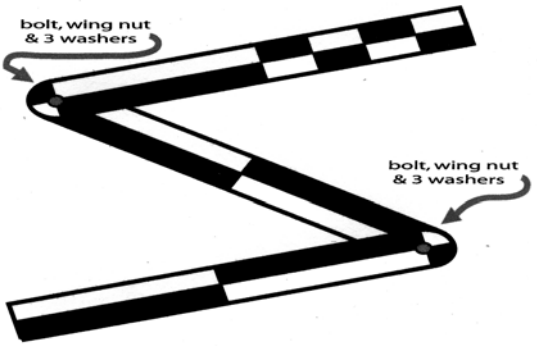
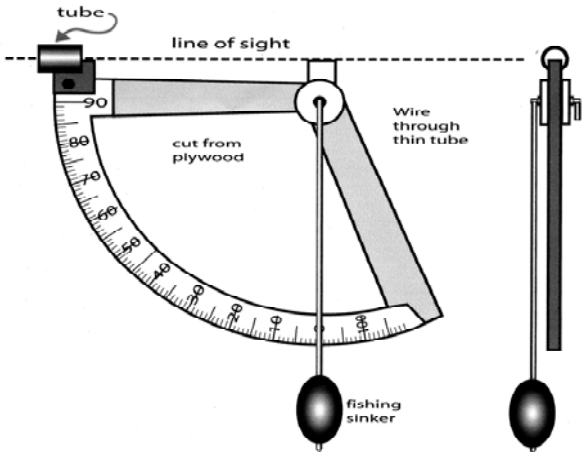
Scale rule 2

- Join sections with bolts and nuts with a washer between each part



More Tools of the Trade



- INCLINOMETER
- Used to measure heights
- Cut parts as shown
- Scale can be photocopied
- Construction is as shown

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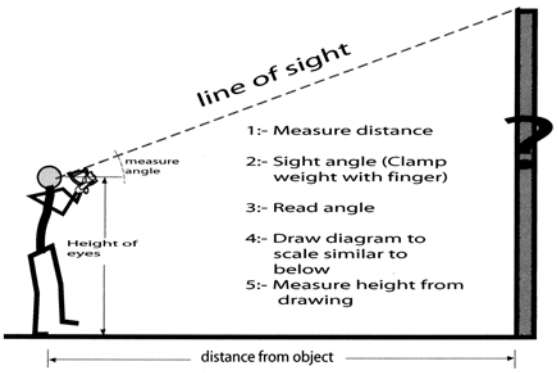
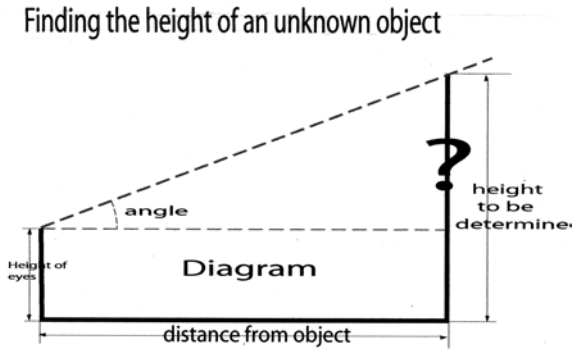
Inclinometer in use 1



- Sight on an object or feature and record angle
  Proceed as indicated
  It is a good idea to know how high your eyes are from the ground

Inclinometer 2



- Height of object can be obtained by diagram or calculation

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St Mathews Grovely

- Here I used the inclinometer for height of gables and eaves also the height of bell tower

Using the scale rule

- Here the rule is indicating the height of fascia and gutter on vestry

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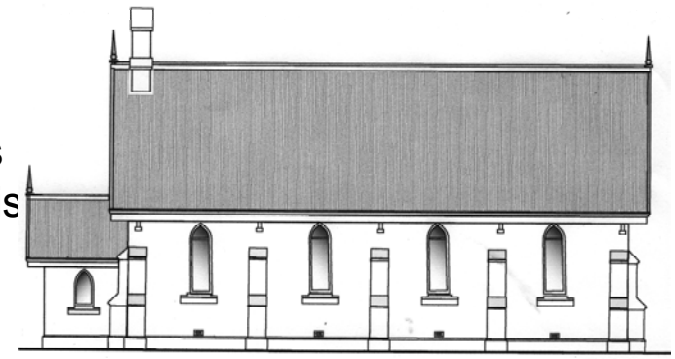
Sample Plan

- Side elevation of St Matthews original is drawn at 1:87



Computer-Aided

- Jim's photogrammetry drawing techniques can also be used with computer-based drawing tools
- Photoshop's 'layers', for example, can take the place of tracing paper. Diagonals can be drawn on a separate layer, or in a unique colour, making it easy to delete them at Stages 5-6. Similar techniques can work with many photo or drawing tools. [Lynn Zelmer, Editor & CaneSIG Coordinator]

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