Measuring Concrete Work

Concrete Work: General

- Most concrete items are shown on the drawings. Examples: footings, columns, walls etc.
- Some items are not shown and must be determined based on the knowledge of the estimator and from the specifications. Examples: Formwork, finishing, curing.
- Start by defining the concrete dimensions to measure the volume of concrete in the item then consider the other requirements of formwork, finishing, etc.
- It is also good practice to measure all concrete-related work for one assembly (e.g. footings) and then move to another assembly.

Measuring Notes: Concrete

- Concrete is measured by volume “net in place”
- Concrete is classified by categories (for complete list, see p.100) such as:

Isolated footing
Continuous footings
Retaining walls
Grade beams
Columns &
Beams

Slabs on grade
Stairs & landings
Manholes
Sidewalks
Other structures
pedestals

Measuring Notes: Concrete (Cont)

- Different Mixes of concrete (Strength & Cement types) are measured separately in each of the above categories.
- No adjustment is made for reinforcing steel or small openings (below 0.05 m^3)
- Walls & Columns extending between floors are measured from top of slab below to undersurface (bottom) of slab or beam above. (Figure 5.1)
- Beams and slabs may be measured separately. But, if poured together, they are combined at the time of pricing

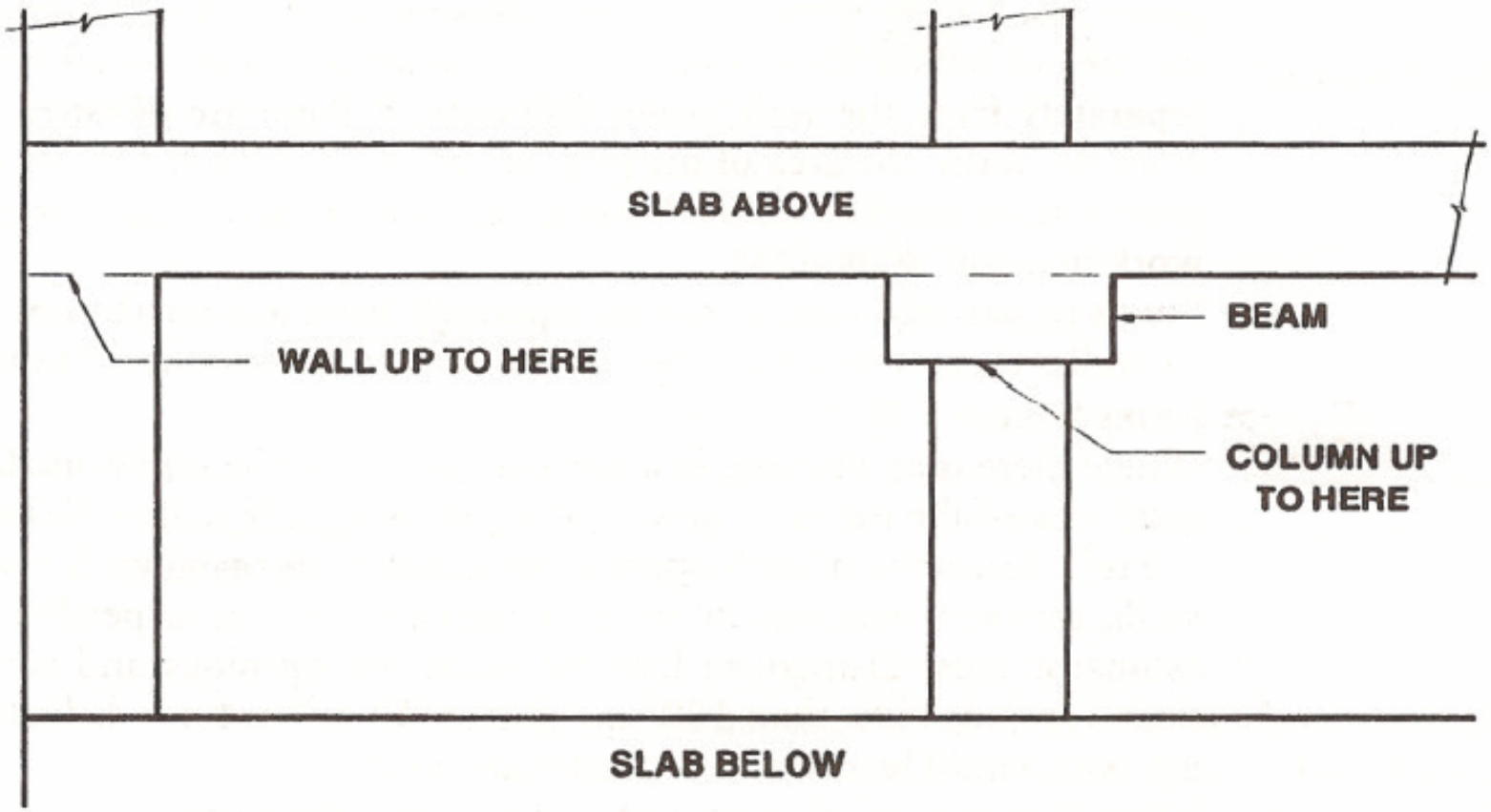

Figure 5.1 Measuring Concrete Walls and Columns

Formwork: General

- Formwork involves the following activities
  - Fabricating forms
  - Erecting
  - Stripping
  - Moving
  - Cleaning & oiling for reuse
- These activities are accounted for in the pricing
- For measurement only the area of concrete that is in contact with the forms is measured. This area is referred to as ‘Contact Area’

Measuring Notes: Formwork

- Measured by contact area (sm, s-ft)
- Classified in the same categories as concrete (forms to wall, forms to columns etc.)
- Curved surfaces should be measured separately
- Edge forms are measured separately. Similarly, pilasters projecting out of walls are measured separately. (Figure 5.2)

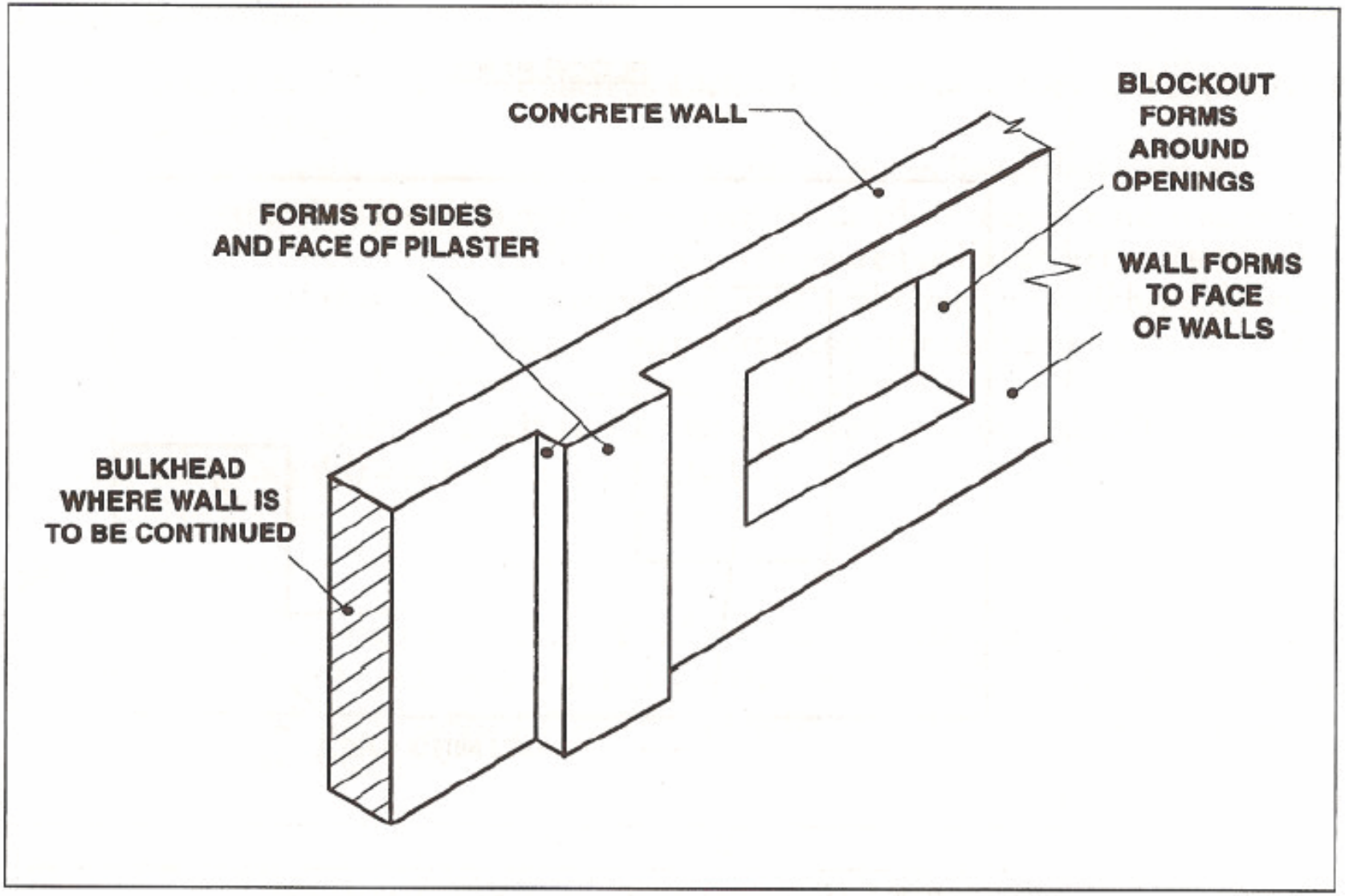

Figure 5.2 Formwork Categories

Measuring Notes: Formwork (Continued)

- Forms to slab edges are measured separately from forms to beams and walls (Figure 5.3)
- Opening of less than 10 m^2 are not deducted. All cutouts are deducted. (Figure 5.4)
- Items of longitudinal nature (grooves, keyways) are described with their sizes and measured by length
- Circular columns are described giving diameter and measured by length. Widening tops of columns are described and enumerated

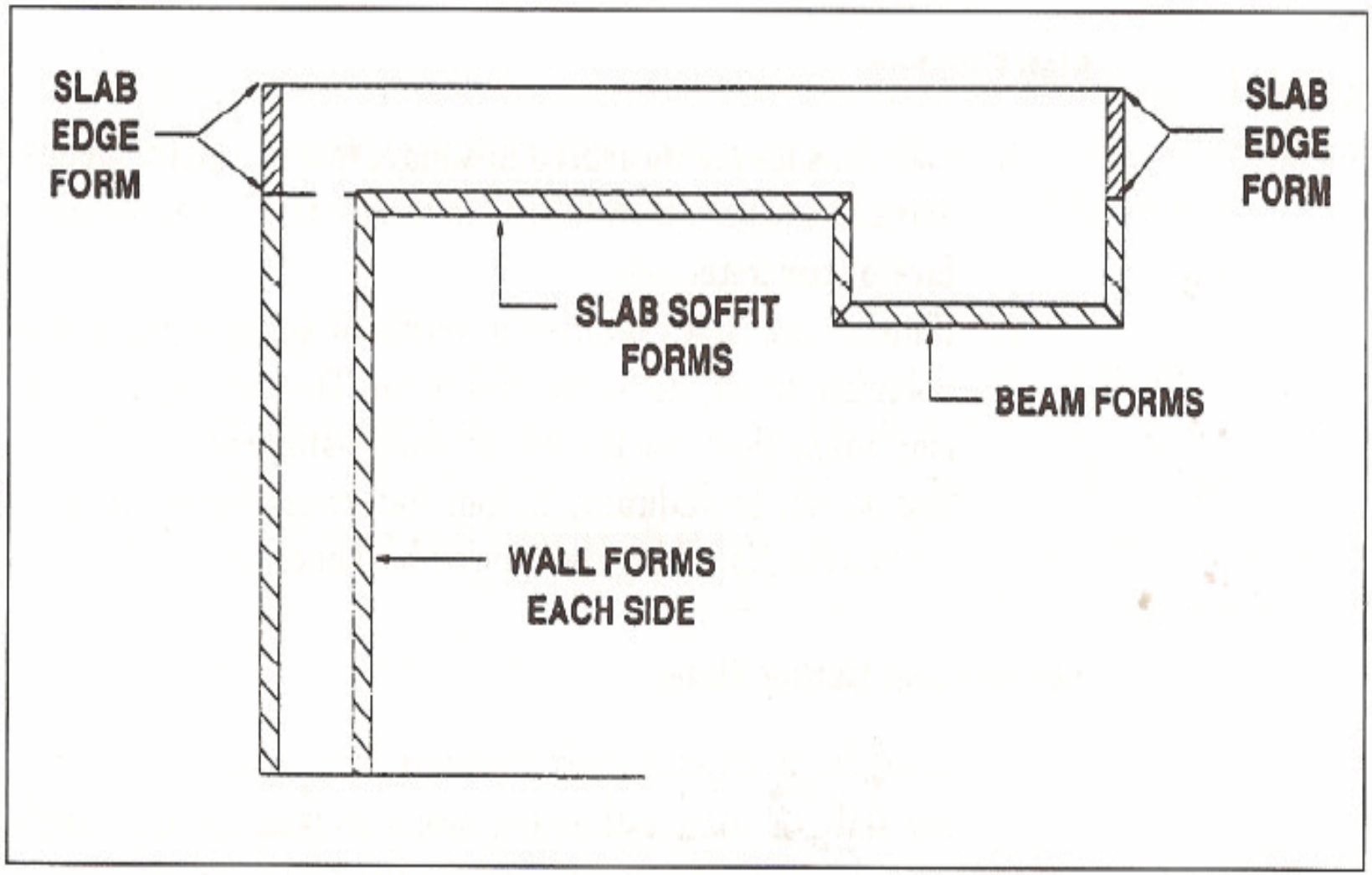

Figure 5.3 Types of Forms

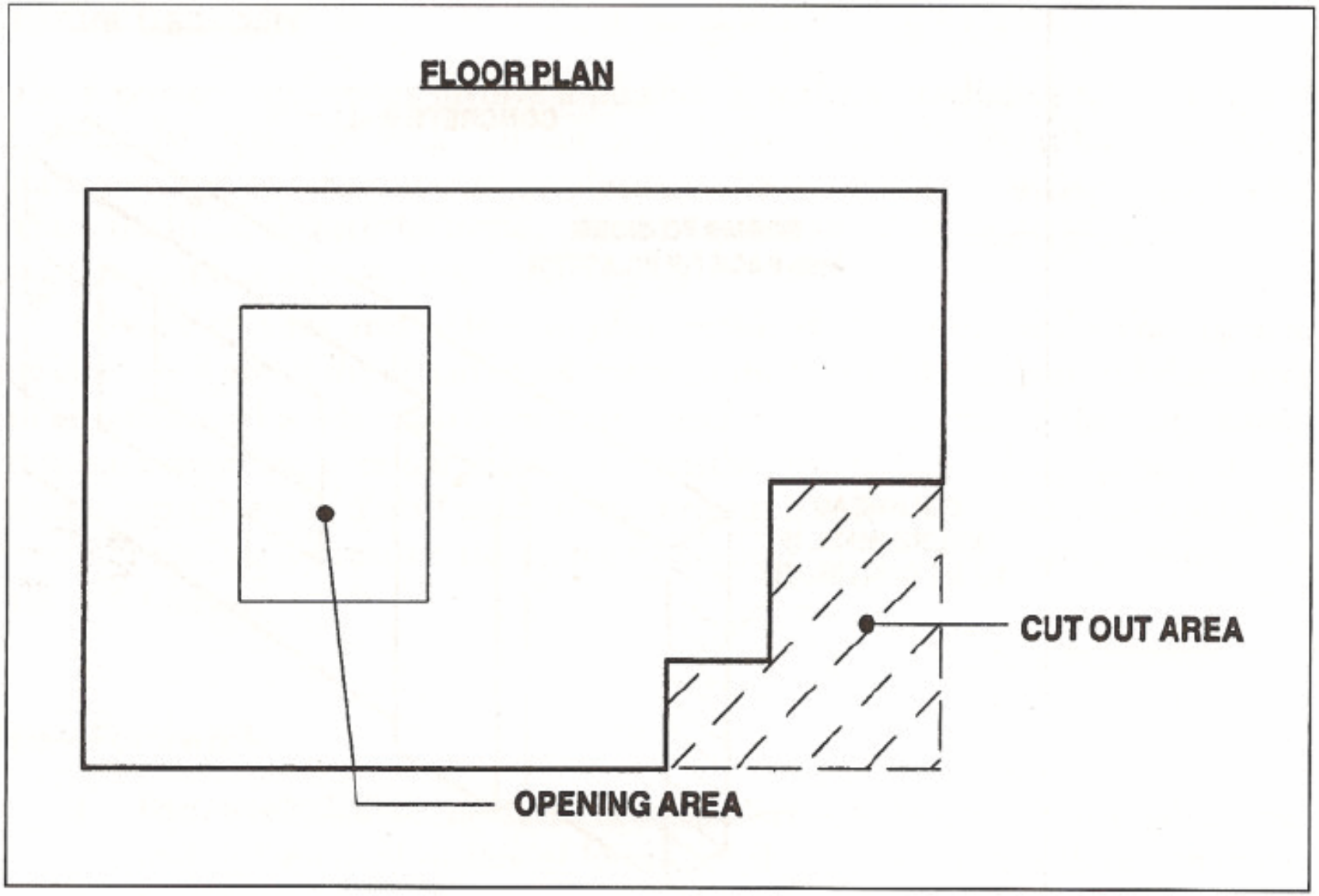

Figure 5.4 Openings and Cut Outs in Formwork

Measuring Notes: Concrete Finishing & Miscellaneous Work

- Slab Finishes, screeds, welded wire mesh are measured by area.
- Finishes are classified by item to be finished and then by type of finish (steel trowel, broom finish, Wood float etc.)
- Reinforcing steel is measured by length and converted to weight.
- Expansion joints are measured by length.

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