QUALITY ISSUES IN
CONVENTIONAL METHODS & MATERIALS
3.0 QUALITY ISSUES IN CONVENTIONAL METHODS & MATERIALS

Conventional designs that comprise beams, columns, brick/block infills and plastering have inherent inefficiencies during construction. Brick/block wall infills are labour-intensive and cement-sand plastering, a wet process, is often messy and requires more preparatory work. There are also constraints in concealing and routing M&E services. Apart from using more intensive manpower and longer construction duration, there are some inherent difficulties in achieving high quality. Some examples of the challenges posed by such conventional design and materials are highlighted in this chapter.

3.1 CONSEQUENCES IN CHOICE OF INTERNAL FINISHES

Fig. 3.1 - Choice of methods and materials affect workmanship quality.
3.1.1 Traditional formwork system: More joints and poor surface finish

Traditional formwork system has more connections and joints and it requires more manpower to erect, maintain and dismantle. During erection, close monitoring and supervision is needed to achieve the desired workmanship quality of the finished concrete. If the formwork is not erected properly, the end product would not be satisfactory. Often this means another layer of thick plaster is required to cover the uneven concrete surface.

3.1.2 Restricted M&E services run

Many services in a building e.g. electrical, ACMV and sanitary plumbing, etc are concealed under slabs or covered by false ceiling. If there are too many internal beams, especially non-shallow beams, it may be difficult to locate such services under floor slabs. This may restrict the height of false ceilings or the floor storey height may need to be increased to accommodate such services.
3.1.3 More turns and corners

The width of RC column may be different from the width of the brickwall laid against it, especially in internal partitions, e.g. a 200mm wide column and 100mm thick brickwall. In such situations, an offset of 100mm will appear wherever an RC column adjoins brickwork resulting in a non-flush surface with many corners and returns. There will be greater difficulty in completing the architectural finishing works like plastering, skirtings, architraves, etc.

3.1.4 Additional treatment to joint between two different materials

At the joint interface between different materials e.g. RC and brickwork, special treatment like metal lathing is required to ensure there is proper bond and to prevent cracking of plaster wall at the joint. The additional number of joints increase the time and cost of construction.
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3.2 CONSEQUENCES IN CHOICE OF EXTERNAL FINISHES

Fig. 3.9 - Common issues in conventional methods.

- Brick and RC Joints: Need additional treatment.
- Bulged RC surface: Require thick plaster.
- Scaffolding: More housekeeping and longer construction period.
- Thick plaster: Possible waviness.
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3.2.1 Scaffolding tieback holes

To carry out plastering, scaffolding is necessary. The tie back holes used for securing scaffolding can be patched and re-painted only after the scaffold is dismantled. This is to be carried out via gondolas. Due to the different stages of operation, patchiness or uneven finishing on the surface is inevitable on the external wall surfaces.

![Fig. 3.10 - Scaffolding tie-back holes on facade plastering.]

3.2.2 Possible cracks and hollow plastering

Depending on the background substrate, plastering operations are usually 2 or 3 coats work and may comprise a spatter-dash, base or scratch coat and final skim-coat. Proper curing is also required between coats. This affects the overall progress. Besides, if the plaster thickness exceeds the allowable thickness, there is possibility of defects like cracks and hollowness appearing on the surface due to shrinkage of mortar.

![Fig. 3.11 - Surface cracks and hollowness appear when plaster is too thick.]

3.2.3 Additional waterproofing treatment on joints

For external surface at RC and brick joints, besides laying metal lath, a layer of waterproofing treatment is required to ensure water tightness. Failure to execute these measures properly may result in defects such as cracks and seepages. All these measures are needed to ensure quality in construction and will add to construction time and costs.

![Fig. 3.12 - External joints require waterproofing treatment.](image1)

![Fig. 3.13 - Potential water seepage if joints are not treated properly.](image2)

3.2.4 Housekeeping and longer construction period

Scaffolding, and wet trades like brickwork and plastering evidently require more housekeeping effort. More time is required to erect and dismantle scaffolding. This may hinder other concurrent activities and lead to longer construction period.

![Fig. 3.14 - More housekeeping is required for scaffolding and wet trades.](image3)

Although adopting conventional methods and materials may lead to lower construction costs in some cases, the majority of wet trades pose inherent difficulties in achieving quality construction compared to buildable dry construction. In its place, good buildable design systems that facilitate ease of construction, depend less on-site labour, improve productivity and quality should be considered. These are considered in the following chapters.