

Brick-Surfaced Concrete Block

れんがタイル先付コンクリートブロック

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Summary

Brick-surfaced concrete blocks are new building materials to combine high productivity of concrete block and beautiful appearance of brick together. They are produced by the newly developed S. E. C. (Sand Enveloped with Concrete) method, and have high structural strength and weather tightness.

These interlocking concrete blocks surfaced by thin bricks are easily installed at the construction site.

れんがタイル先付ブロックは、ブロックの即時脱型の生産性とれんがの風合いを融合させた、新しいコンクリート技術であるSELコンクリート工法によって成り立った、高強度・高品質の複合機能をもつコンクリートユニットである。

このれんがタイル先付コンクリートブロックは、インターロッキング方式なので工事現場での建て込みが容易である。

1. Introduction

Our seeking for the proper exterior material which is durable, intimate to people and corresponds to the aesthetic concept of the town came to the conclusion that the brick is the proper material.

However, the tradition of brick masonry in Japan is short and there are some problems occurring from the shortage of experience.

To solve these problems, the new building material to form appearance of the brick construction was developed. They are interlocking concrete blocks surfaced by thin bricks.

These special units combine high productivity of concrete block and beautiful appearance of brick together. The another merit of these units is easy and fast installation at the construction site.

This paper reports on this new composit unit of the facing brick and concrete block molded tightly together. The paper also reports the example of construction using these units.

2. Characteristics of The Brick-surfaced Concrete Block

- a. Beautiful appearance same as brick masonry
- b. High productivity by mass-production
- c. High strength and low water absorption
- d. Easy and fast installation (skilled layers are not required)
- e. Suitable for the lower-storied buildings.

3. Production of The Brick-surfaced Concrete Block

The Fig. 1. shows brick-surfaced concrete blocks. The brick is fine stoneware brick and its size is:

148 x 53 x 20mm

Six bricks are set in the mold for a block making the concrete block measuring:

298 x 148 x 200mm

One of the stretcher side of the brick is shaped thinner to form the joint line.

Fig. 2. shows the cross section of the brick-surfaced concrete block.

The concrete to form the block is the special concrete named S.E.C. (Sand Enveloped with Cement) to secure high compressive and bonding strength.

S. E. C. method is the automatic system to make concrete of higher flow index and less bleeding. After equalizing the surface moisture of aggregate, first mixing is done to cover the surface of aggregate with cement paste of small water/cement ratio. Then second mixing makes the cement of high fluidity.

As the result of these newly developed methods, the brick-surfaced concrete block wall shows the compressive strength of 300kg/cm or more.

As they are surfaced with bricks, the water absorption is very low (less 1.5%).

4. Example of the Housing by Brick-surfaced Concrete Blocks

Fig. 3 shows an example of housing by these brick-surfaced concrete blocks. This housing is designed to keep privacy of each family and to keep good social sharing with the neighbours.

As the blocks are interlocking, the construction was finished in the shorter period than expected.

Fig. 4. and Fig. 5. show details of the brick surfaced concrete block walls.

Because of the severe jurisdiction in Japan where the aseismic design is required, reinforcing is necessary in the block wall. However, it may be possible to grout the cavity of blocks without reinforcing in the non-seismic area.

Fig. 1. Brick surfaced concrete block

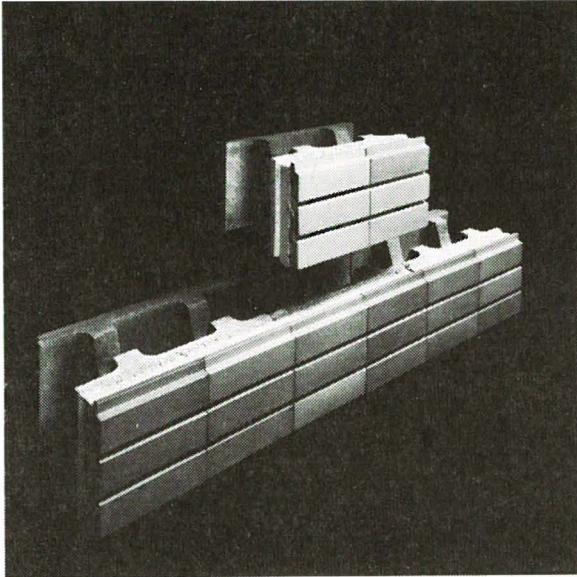


Fig. 3. Example of housing by brick surfaced concrete blocks

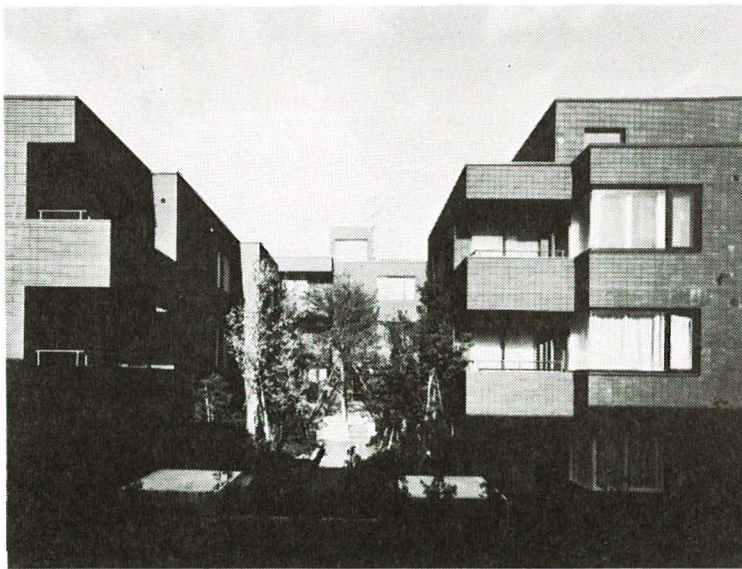


Fig. 2 Cross section of the brick surfaced concrete block

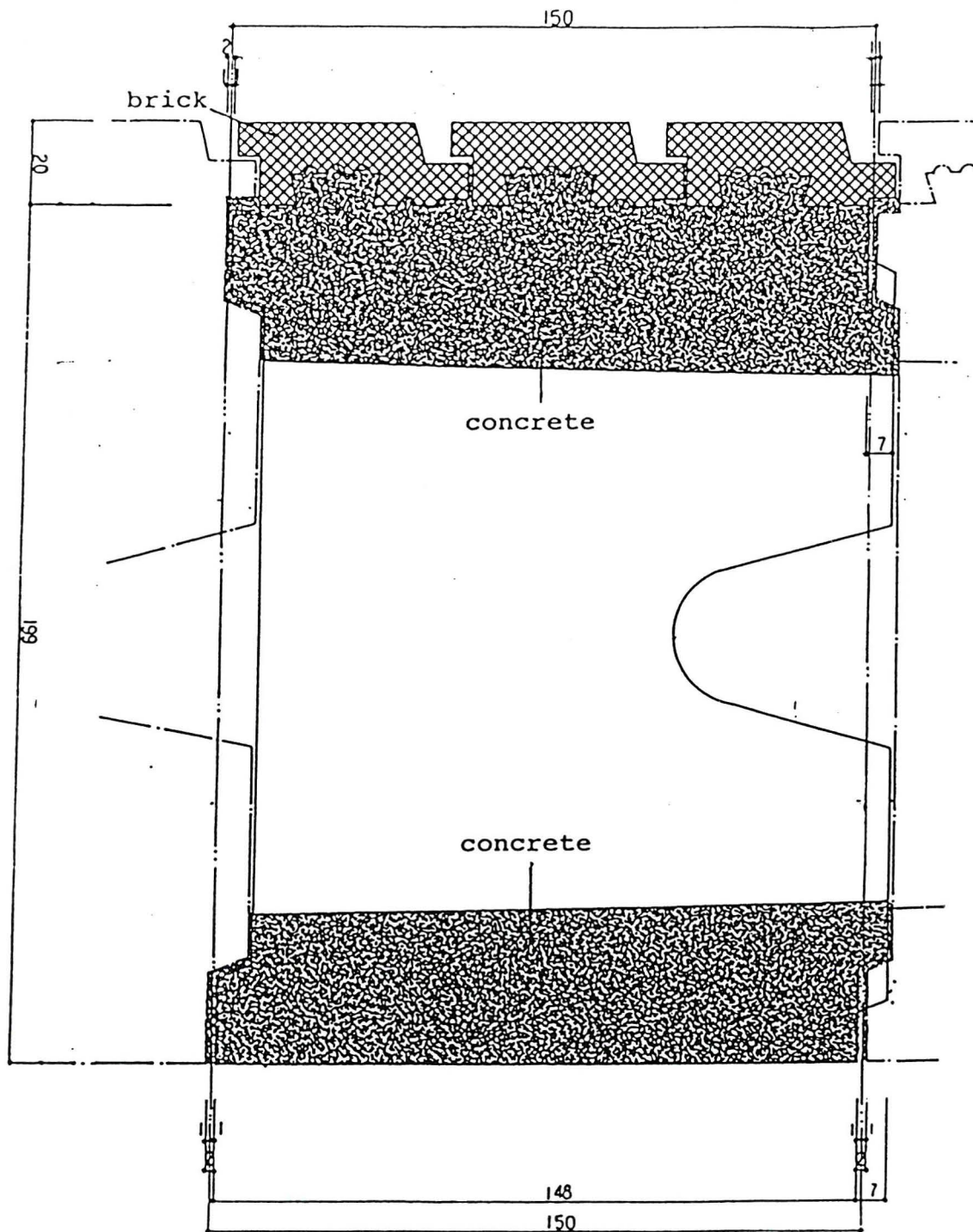


Fig. 4. The wall of
brick surfaced
concrete block

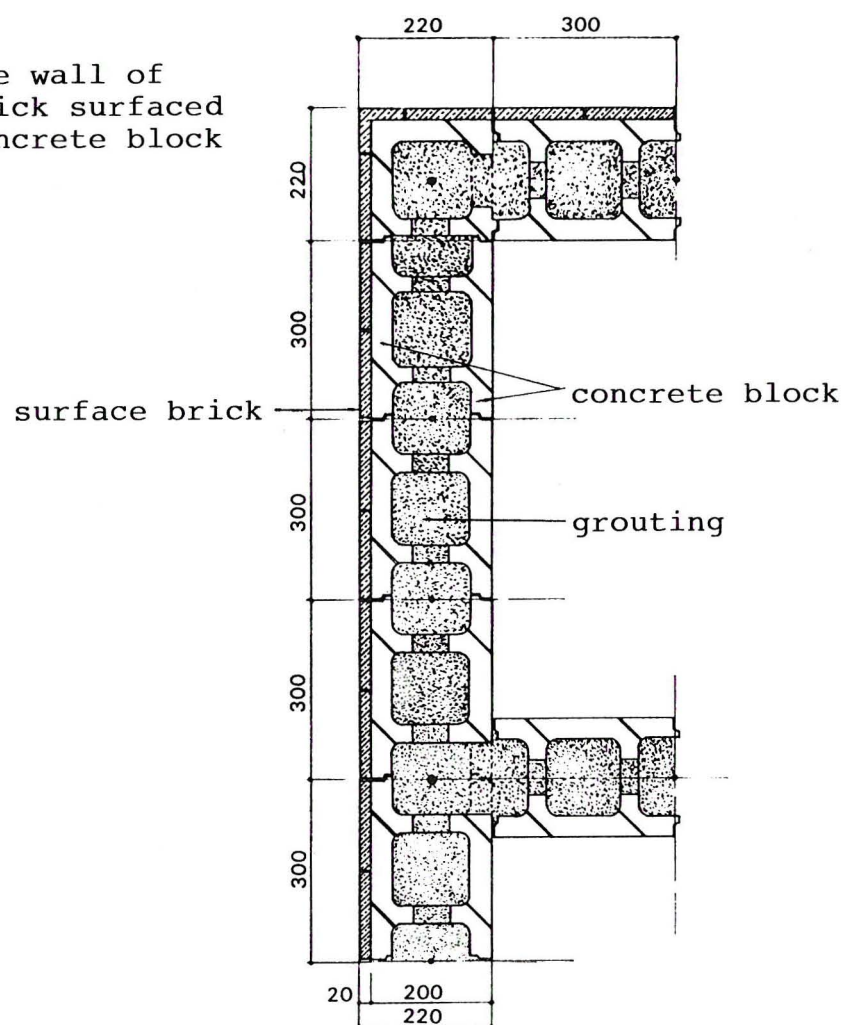


Fig. 5. Top of the wall

