

F10 BRICK/BLOCK WALLING

To be read with Preliminaries/General Conditions and Sections AA31 and AA90.
Items in this section to Contractor's Design as shown

TYPE(S) OF WALLING

110A CLAY FACING BRICKWORK TO LIBRARY EXTENSION:

REV C3

~~Include in Contractor's Designed Portion for Brickwork~~

- Bricks: To BS EN 771-1.

Supplier: European Building Materials Ltd (0121 4450036).

Manufacturer and reference: Coleford Brick & Tile (01594 822160) (TBC)

www.colefordbrick.co.uk

Mixed Tudor Red (TBC)

REV C4

Brick type: Hand-made solid stock.

Durability designation: F2.

Compressive strength: ≥ 49 N/mm² (MPa).

Water absorption: $\leq 3\%$ (24hr).

Work size: Imperial - 225 x 107.5 x 68 mm.

- Special shapes, as drawings:
1. Profiled cill brick.
 2. Corner unit profiled cill brick.
 3. ~~Profiled brick to underside of copings.~~
 4. ~~Corner unit profiled brick to underside of copings.~~
 5. Pistol bricks to lintels and masonry support system.
 6. Corner unit pistol brick.
 7. Half-brick headers (cut bricks) in cavity wall construction to give appearance of Flemish Bond.
 8. Soffit bricks to ~~2No~~**3No** deep recessed window openings.

REV C4

REV C4

- Mortar: Lime/sand mortar as section Z21.

Manufacturer and reference: Lime Technology Ltd (0845 603 1143)

www.limetechnology.co.uk

Limetec Moderately Hydraulic Lime Mortar.

Strength grade to BS EN 459-1: NHL 3.5

Mix: Pre-mixed 1:2.25 (± 0.25) hydraulic lime:sand.

Sand: Well graded sharp flint/quartz to BS 882:1992 Grades 'C' & 'M'.

- Colour of sand / mortar colour: (TBC).

- Bond:

- Generally: Flemish Bond, (half brick thick).

- Feature string course: ~~Half lap stretcher.~~ **Refer to 597-14620, 597-14621, 597-14622, 597-14623, 597-14624, 597-14625**

- Joints: Flush; brushed.

- Joint width: 10 mm nominally to suit F10/560.

- Selecting/sorting of bricks into batches to be carried out by manufacturer at brickworks prior to delivery to site. Order of selected batching to be maintained on site.

110B CLAY FACING BRICKWORK TO UKPN SUBSTATION:

REV C3

~~Include in Contractor's Designed Portion for Brickwork~~

- Bricks: To BS EN 771-1.

Supplier: European Building Materials Ltd (0121 4450036).

Manufacturer and reference: Ibstock Bricks Ltd (0844 800 4575) (TBC)

<http://www.ibstock.com>

Bradgate Red ~~Beamish Blond~~ (TBC)

REV C2

Brick type: Machine-made stocks.

Durability designation: F2.

Compressive strength: ≥ 20 N/mm² (MPa).

Water absorption: $\leq 12\%$ (24hr).

Work size: 215 x 102 x 65 mm (TBC).

Special shapes, as drawings: None.

- Mortar: Lime/sand mortar as section Z21.

Manufacturer and reference: Lime Technology Ltd (0845 603 1143)

www.limetechnology.co.uk

Limetec Moderately Hydraulic Lime Mortar.

Strength grade to BS EN 459-1: NHL 3.5

Mix: Pre-mixed 1:2.25 (±0.25) hydraulic lime:sand.

Sand: Well graded sharp flint/quartz to BS 882:1992 Grades 'C' & 'M'.

- Colour of sand / mortar colour: (TBC).

REV C5

- Bond: **Flemish English** (215 mm thick).
- Joints: Flush; brushed.
 - Joint width: 10 mm nominally to suit F10/560.
- Selecting/sorting of bricks into batches to be carried out by manufacturer at brickworks prior to delivery to site. Order of selected batching to be maintained on site.

350A CONCRETE COMMON BLOCKWORK (LIGHTWEIGHT DENSITY) TO INTERNAL NON-LOADBEARING PARTITIONS AND EXTERNAL INNER LEAF:

REV C3

~~Include in Contractor's Designed Portion for Brickwork~~

- Blocks: To BS EN 771-1.

Manufacturer and reference: Tarmac Building Products

www.tarmacbuildingproducts.co.uk

Hemelite

Density: Lightweight.

Form: Solid

Finish: Standard.

BRE Green Guide Rating: 'A+'.

- Constituent material: Includes 60% recycled/secondary aggregate content.

Minimum average compressive strength: 7.3 N/mm²

Net dry density: 1400 kg/m³.

Work size(s): 440 x 215 x 100 and 140mm as drawings.

Unit weight: 18.90 kg (140mm).

Special shapes: None.

- Mortar:
 - Type: Ready to use or dry-silo cement gauged mortar to BS EN 998-2.
 - Mix: Generally M4-M5 or Mortar Group 3.
 - Colour: Natural.
- Bond: Half-lap stretcher.
- Joints: 1. Raked joints (10mm depth) for plaster/render.
2. Flush joints for dry lining.
 - Joint width: 10 mm.
- Lintels: As F30/735.

350B CONCRETE COMMON BLOCKWORK (LIGHTWEIGHT DENSITY) TO INTERNAL NON-LOADBEARING PARTITIONS AND EXTERNAL INNER LEAF - PAINT GRADE:

REV C3

~~Include in Contractor's Designed Portion for Brickwork~~

- Blocks: To BS EN 771-1.

Manufacturer and reference: Tarmac Building Products

www.tarmacbuildingproducts.co.uk

Hemelite - Paint Quality

Density: Lightweight.

Form: Solid

Finish: Generally blockwork is to be left "fair faced" or to receive paint finish, therefore quality of workmanship should be as for fair-faced blockwork. Generally the fair face is to be on the corridor side of the wall.

BRE Green Guide Rating: 'A+'.

- Constituent material: Includes 60% recycled/secondary aggregate content.

Minimum average compressive strength: 7.3 N/mm² (MPa).

Net dry density: 1400 kg/m³.

Work size(s): 440 x 215 x 100 or 140mm as drawings.

Unit weight: 18.90 kg (140mm).

Special shapes: None.

- Mortar:
 - Type: Ready to use or dry-silo cement gauged mortar to BS EN 998-2.
 - Mix: Generally M4-M5 or Mortar Group 3.
 - Colour: Natural.

- Bond: Half-lap stretcher.
- Joints: Bucket-handle joints for painting or fair-faced.
 - Joint width: 10 mm.
- Lintels: As F30/735.
- Other requirements:
 1. Paint grade/close textured finish to be on side of wall shown as painted, unpainted or fair faced on drawings and to be constructed to fair faced standard on that side.
 2. Where both sides of a wall are required to be "fair-faced" the primary face shall be on the corridor/lobby side and the secondary face on the room side.
 3. Painted finish as M60/110C.

350C CONCRETE COMMON BLOCKWORK (DENSE AGGREGATE BLOCK) TO INTERNAL NON-LOADBEARING PARTITIONS:

- Blocks: To BS EN 771-1.
Manufacturer and reference: Tarmac Building Products
www.tarmacbuildingproducts.co.uk
Topcrete Solid Midi

Density: Lightweight.
Form: Solid
Finish: Standard.
BRE Green Guide Rating: 'A+'.
 - Constituent material: Includes 60% recycled/secondary aggregate content.Minimum average compressive strength: 7.3 N/mm²
Net dry density: 1950 kg/m³.
Work size(s): 290 x 215 x 100 and 140mm as drawings.
Unit weight: 17.5 kg (140mm).
Special shapes: None.
- Mortar:
 - Type: Ready to use or dry-silo cement gauged mortar to BS EN 998-2.
 - Mix: Generally M4-M5 or Mortar Group 3.
 - Colour: Natural.
- Bond: Half-lap stretcher.
- Joints:
 1. Raked joints (10mm depth) for plaster/render.
 2. Flush joints for dry lining.
 - Joint width: 10 mm.
- Lintels: As F30/735.

380 ENGINEERING BRICKWORK TO MISCELLANEOUS BRICKWORK INFILL/REPAIRS, MANHOLES, GENERAL BELOW GROUND LEVEL CONDITIONS:

REV C3

~~Include in Contractor's Designed Portion for Brickwork~~

- Bricks: To (NA) BS EN 771-1 - Class B.
Type: HD
Mean compressive strength: ≥ 75 N/mm² (MPa).
Freeze/Thaw category: F2.
Manufacturer and reference: Contractor's choice.
- Work size: Imperial to match existing.
- Mortar: As section Z21.
 - Repairs to existing fabric:
 - Lime : sand mortar as F10/110A.
 - Manholes, etc:
 - Standard: To BS EN 998-2.
 - Mix: Mortar group 2-3.

Rev C1

- Bond: Flemish bond (215 mm) to manholes **and to outer leaf of cavity walling below ground level (Library Extension).**
Refer to 597-14620, 597-14621, 597-14622, 597-14623, 597-14624, 597-14625
- Joints: Flush.
 - Width: 10 mm nominally.

Rev C4

Rev C5

- 380A CLAY COMMON BRICKWORK TO UKPN SUBSTATION (INNER SKIN OF EXTERNAL WALLS AND INTERNAL WALLS):
- Bricks: To BS EN 771-1.

**Ensure that the starter course is fully adhered to its base.
Ensure that adjacent Foamlas blocks are fully adhered to one another,
placed without steps in the internal and external vertical faces, and without
gaps.**

- Mortar as F10/380.
- Cut blocks to length with a hand saw.
- Do not tamp or tool with trowel.

WORKMANSHIP GENERALLY

- 410 RELATED WORK is specified in the following sections:
F30 Accessories/ Sundry items for brick/ block walling.
F30 Masonry support system for brickwork.
F30 Lintels.
- 420 SITE STORAGE: Store bricks/blocks in stable stacks clear of the ground and clearly identified by type, strength, grade, etc. Protect from adverse weather and keep clean and dry.
- 430 CONDITIONING OF CLAY BRICKS (CEMENT/SAND MORTAR):
- Bricks and blocks delivered warm from manufacturing process: Do not use until cold.
 - Absorbent bricks in warm weather: Wet to reduce suction. Do not soak.
- 430A CONDITIONING OF CLAY BRICKS (HYDRAULIC LIME/SAND MORTAR)::
- Do not use clay bricks or calcium silicate bricks when still warm from the manufacturing process.
 - In most weather conditions wet the surfaces of high porosity bricks slightly to reduce suction.
 - If the bricks are dry the amount of pre-wetting will vary from dipping the unit into a bucket of water to spraying the units with a hose.
 - Do not over wet. Water should be absorbed into the brick and not run off of the face.
- 440 CONDITIONING OF CONCRETE BRICKS/ BLOCKS
- Autoclaved concrete bricks/ blocks delivered warm from manufacturing process: Do not use.
 - Age of nonautoclaved concrete bricks/ blocks: Do not use until at least four weeks old.
 - Avoidance of suction in concrete bricks/ blocks: Do not wet.
 - Use of water retaining mortar admixture: Submit details.
- 470 TESTING – MORTAR STRENGTH:
- The following is subject to current Standards relating to hydraulic lime:sand mortars.
 - Have tests carried out to determine compressive strength of mortars listed below. Preliminary and site tests to be carried out in accordance with BS 5628-1, Appendix A, BS 4551-1 and the following requirements by a UKAS accredited laboratory.
 - Submit results to CA immediately they are available.
 - A provisional sum for testing is included elsewhere.
 - Preliminary tests: Six specimens of 25 x 25 x 100 mm prisms or 40 x 40 x 160 mm prisms or 70.7 mm cubes or 100 mm cubes to be prepared at least six weeks before walling commences, using materials from the source(s) from which the site will be supplied. Half of the specimens to be tested at seven days and the remainder at 28 days. For retarded mortar mixes the curing periods are to be extended to include the retardation period. For any walling type, if the mean compressive strength of mortar at 28 days is not within the range given below then repeat the tests using either a more suitable sand or the next higher designation of mortar.
 - Site tests: During construction, six specimens to be prepared for every 150 m² of each walling type, or for every storey of the building, whichever is the more frequent. Half of the specimens to be tested at seven days and the remainder at 28 days. For retarded mortar mixes the curing periods are to be extended to include the retardation period.
 - Type of specimen used for site tests to be same as that used for preliminary tests.
 - Mean compressive strength of mortar at 28 days to be within the following range:

Walling type	Preliminary tests		Site tests	
	Min. (N/mm ²)	Max. (N/mm ²)	Min. (N/mm ²)	Max. (N/mm ²)
F10/ 110A, 110B	3.6	5.0	2.5	3.5

F10/ 350	3.6	5.0	2.5	3.5
F10/ 380	6.5	10.0	4.5	8.0

500 LAYING GENERALLY:

- Lay bricks/blocks on a full bed of mortar; do not furrow. Fill all cross joints and collar joints; do not tip and tail.
- Build walls in stretching half lap bond when not specified otherwise.
- Plumb perpend of facework every third or fifth cross joint along a course and even out the joint widths in between.

510 OVERHAND LAYING must not be used without approval.

520 ACCURACY

- Courses: Level and true to line.
- Faces, angles and features: Plumb.
- Permissible deviations:
 - Position in plan of any point in relation to the specified building reference line and/ or point at the same level ± 10 mm.
 - Straightness in any 5 m length ± 5 mm.
 - Verticality up to 3 m height ± 10 mm.
 - Verticality up to 7 m height ± 14 mm.
 - Overall thickness of walls ± 10 mm.
 - Level of bed joints up to 5 m (brick masonry) ± 11 mm.
 - Level of bed joints up to 5 m (block masonry) ± 13 mm.

521 ACCURACY: Notwithstanding clause 520, comply with any critical dimensions given in Preliminaries or on the drawings.

535 HEIGHT OF LIFTS IN WALLING:

- Rack back when raising quoins and other advance work. Do not use tooting.
- Raise no portion of the work more than 1.2 m above another at any time.
- Do not carry up any one leaf more than 1.5 m in one day unless permitted by the CA.

545 LEVELLING OF SEPARATE LEAVES

- Locations for equal levelling of cavity wall leaves: As follows:
 - Every course containing vertical twist type ties or other rigid ties.
 - Every third tie course for double triangle/ butterfly ties.
 - Courses in which lintels are to be bedded.

560A COURSING BRICKWORK (FLEMISH BOND WITH HALF BRICKS):

- Bricks: F10/110A.
- Gauge: Four brick courses including bed joint to 312 mm.
- Joint width: Consistent.

560B COURSING BRICKWORK (FLEMISH BOND):

- Bricks: F10/110B.
- Gauge: Four brick courses including bed joint to 300 mm.
- Joint width: Consistent.

560C COURSING BRICKWORK (STRETCHER AND FLEMISH BOND):

- Bricks: F10/380.
- Gauge: Four brick courses to suit Imperial dimension - 312 mm nominal.
- Joint width: Consistent.

580 FROGGED BRICKS: Lay single frogged bricks with frog uppermost; lay double frogged bricks with deeper frog uppermost. In either case completely fill frogs with mortar. Where frogged bricks are laid vertically, lay with frogs facing the same direction, but reverse the last brick at opening reveals, to give a flat reveal. Completely fill frogs with mortar.

595 LINTEL BEARINGS: Carefully predetermine setting out to ensure that full length masonry units occur below lintel ends.

- 610 SUPPORT OF EXISTING WORK: Where new lintels or walling are to support existing structure, completely fill top joint with semidry mortar, hard packed and well rammed to ensure full load transfer after removal of temporary supports.
- 615 FORMING / RECONSTRUCTING BRICK ARCHES (FACING BRICKWORK):
- Generally: To Structural Engineer's drawings and specifications.
 - Materials:
 - Dismantled facing bricks for reuse as C25/316 or new bricks to match existing as F10/110A.
 - Mortar as F10/110A.
 - Arch construction:
 - Segmental three-ring rough arches to traditional construction methods on temporary centring with lagging pieces.
 - Alternative prefabricated arch units may be considered. Submit proposals.
- 620 BLOCK BOND new walls to existing, unless specified otherwise by cutting pockets into existing walls, not less than 100 mm deep, the full thickness of the new wall, and vertically as follows:
Brick to brick: 4 courses high at 8 course centres.
Block to block: Every other course.
Bond new walling into pockets with all voids filled solid with mortar.
- 635 JOINTING: When not specified otherwise, finish joints neatly to the specified profile(s) as the work proceeds, consistent in appearance.
- 645 UNEXPOSED JOINTS: As the work proceeds, strike off joints that will not be exposed to view in the finished work.
- 671 FIRE STOPPING
- Avoidance of fire and smoke penetration: Fit tightly between cavity barriers and masonry. Leave no gaps.
- 680 HOLES, RECESSES AND CHASES IN BRICK/BLOCK WALLING: Comply with the relevant clause in section P31.
- 690A ADVERSE WEATHER (HYDRAULIC LIME/SAND MORTAR):
- Do not use frozen materials and do not lay on frozen surfaces.
 - Do not lay bricks/blocks:
 - In hydraulic lime:sand mortars when the air temperature is at or below 5°C and falling or below 3°C and rising.
 - Maintain temperature of the work above freezing until mortar has fully hardened. If, after application of hydraulic lime mortars, snow and/or frost are forecast or the temperature is expected to fall below 8°C protect the area of work with dry layers of hessian or bubble pack to avoid the risk of frost damage during the curing process for as long as recommended by the mortar manufacturer. Further protect with plastic sheeting with sealed joints to prevent rain and snow ingress.
 - Protect from rain with plastic sheeting with sealed joints.
 - In direct sunlight and high summer temperatures drape a damp hessian sheet over the brickwork/blockwork.. Maintain with mist spray to dampen down the surface.
 - In drying winds drape a damp hessian sheet over the brickwork/blockwork..Maintain with mist spray to dampen down the surface.
 - Generally for newly erected walling, repair work or re-pointing: Protect at all times from as mortar manufacturer's recommendations::
 - Rain, snow and frost.
 - Drying out too rapidly in hot conditions and in drying winds.
 - Rake out and replace cement gauged or hydraulic lime mortar damaged by frost. When instructed by the CA, rebuild damaged work.
- 690B ADVERSE WEATHER (CEMENT GAUGED MORTARS):
- General: Do not use frozen materials or lay on frozen surfaces.
 - Air temperature requirements: Do not lay bricks/ blocks:
 - In cement gauged mortars when at or below 3°C and falling or unless it is at least 1°C and rising.

- In hydraulic lime:sand mortars when at or below 5°C and falling or below 3°C and rising.
- In thin joint mortar glue when outside the limits set by the mortar manufacturer.
- Temperature of walling during curing: Above freezing until hardened.
- Newly erected walling: Protect at all times from:
 - Rain and snow.
 - Drying out too rapidly in hot conditions and in drying winds.

ADDITIONAL REQUIREMENTS FOR FACEWORK

- 710 THE TERM FACEWORK, where used in this specification, applies to all brick/block walls finished fair. Where any facework is to be painted, the only specification requirement to be waived is that relating to colour.
- 720 ADVANCE REGISTRATION: Obtain materials registered in advance by the Employer from the supplier(s) scheduled below. Supersede the Employer's registration and take over responsibility by an order to the supplier covering price, supply and delivery to suit the progress of the work.
- Type: F10/110A and F10/110B facing bricks.
 - Manufacturer: As F10/110A.
- 730 BRICK/ CONCRETE BLOCK SAMPLES
- General: Before placing orders with suppliers submit for approval of appearance labelled samples of the following: F10/110A selection of four standard bricks to show range of colour.
 - F10/110B selection of four standard bricks to show range of colour.
 - F10/350 block.
 - Selection of samples: Representative of the range in variation of appearance.
- 740 REFERENCE PANEL: Prepare panel as set out below and, after drying out, obtain approval of appearance before proceeding. Construct panels in an approved location using randomly sampled bricks/blocks but rejecting any that are damaged .
- Walling type: F10/110A, tied to blockwork inner skin, with wall ties as F30/233.
 - Size of panel: 1750 x 1750 mm approx.
 - Mortar: Allow for re-pointing of reference panel twice to enable Architect to select and approve the mortar colour (based on the colour of the sand).
 - Location: On site, within contractor's compound, outside of footprint of building with good natural light and allowing viewing from close up and from at least 3m away.
- REV C4** - Refer to RMA drawing 597-SK-0434
- 750 COLOUR CONSISTENCY:
- Agree with manufacturer and CA methods for ensuring that the supply of facing bricks/blocks is of a consistent, even colour range, batch to batch and within batches.
 - Check each delivery for consistency of appearance with previous deliveries and with approved samples or reference panels; do not use if variation is excessive.
 - Mix units from different packs and deliveries which vary in colour to avoid patches, horizontal stripes and racking back marks in the finished work.
 - Cut-and-bond specials where required are to be produced from colour matched bricks so that each corner unit has a monolithic appearance.
- 760 APPEARANCE:
- Select bricks/blocks with unchipped arrises. Cut with a masonry bench saw where cut edges will be exposed to view.
 - Set out and lay bricks to match appearance of relevant approved reference panel(s).
 - Keep courses evenly spaced using gauge rods. Set out carefully to ensure satisfactory junctions and joints with adjoining or built-in elements and components.
 - Complete each lift in one period of operation.
 - Ensure that at the end of each lift, bricks laid vertically are adequately supported to prevent slump or lean of the bricks.
 - Protect facework against damage and disfigurement during the course of the works, particularly arrises of openings and corners.
- 780 GROUND LEVEL

- Commencement of facework: Not less than 150 mm below finished level of adjoining ground or external works level.
- 790 PUTLOG SCAFFOLDING to facework will not be permitted.
- 800 TOOTHED BOND
- New and existing facework in same plane: Bonded together at every course to achieve continuity of bond and coursing.
- 820 BRICK SILLS/CAPPINGS: Bed solidly in mortar with vertical joints completely filled. Press mortar firmly into exposed joints and finish neatly.
- 830 CLEANLINESS: Keep facework clean during construction and thereafter until Practical Completion. Turn back scaffold boards at night and during heavy rain. If, despite precautions, mortar marks are deposited on the face of masonry units, leave to dry then remove with a stiff bristled brush. Rubbing to remove marks or stains will not be permitted.