



### C3.4: PARTICULAR SPECIFICATIONS

In addition to the Standardized and Project Specifications the following Particular Specifications shall apply to this contract and are bound in hereafter.

SECTION DWK      DAY WORKS

SECTION PB      BUILDING WORKS

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## SECTION DWK: DAY WORKS

This part of the Project Specifications deals with the provision for Day-works in the Schedule of Quantities. Rates for Dayworks shall be entered in Section DWK 6 of the Schedule of Quantities in accordance with the following specifications.

### DWK. 1 SCOPE

According to clause 6.5 of the *General conditions of contract for construction works, (3<sup>rd</sup> ed.), 2015*, certain work may be carried out using rates tendered in the daywork schedule. A schedule of personnel, plant and equipment which may be necessary to perform work on a daywork basis is included in the schedule of quantities. The quantities used in the schedule are for tender evaluation purposes only and the use or not of these items shall not constitute a variation in terms of Clause 6.5 of the *General conditions of contract for construction works, (3<sup>rd</sup> ed.), 2015*.

No work will be paid for as Dayworks without the written instruction or approval of the Engineer.

### DWK. 2 TYPE OF WORK

The Engineer may order daywork in certain cases where it is necessary to vary or to extend the works due to new or unforeseen circumstances to such an extent that the tendered rates for specific items of work are no longer applicable, or where no suitable combination of tendered rates can be used to pay for such work.

As a general rule, applicable rates for additional work items will be agreed between the Contractor and the Engineer. Dayworks will only be used in exceptional circumstances.

### DWK. 3 MATERIALS

Materials for use in works carried out under Daywork shall be purchased by the Contractor who shall also arrange for delivery to site and shall be responsible for any other requirements associated with specific materials. A Provisional Sum has been allowed in Section DWK 6 for Daywork materials. The Contractor shall enter a tendered percentage in the schedule to cover his handling costs and profit, as per other provisional and prime cost sums in this Contract.

Materials shall be paid for using the method described in the Pricing Data. No contract price adjustment will be applicable to materials.

The Contractor shall submit proof of ownership for any materials used in Dayworks with his dayworks claim to the Engineer. Further, if specific materials are required for Dayworks, quotations will be called for as per Clause 6.5.2 of *General conditions of contract for construction works, (3<sup>rd</sup> ed.), 2015*.

### DWK. 4 CONSTRUCTION PLANT HIRE

Where daywork is ordered, the tendered rates for plant hire in Section DWK 6 shall be used in calculating the payment due for any plant required to execute the daywork. If no rate is included in the schedule for a particular piece of equipment, and where no other rate or combination of rates would provide suitable compensation, then the daywork method of payment described in Clause 6.5.1.3 of the *General conditions of contract for construction works, (3<sup>rd</sup> ed.), 2015* will be used.

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The tendered rates for each item of constructional plant shall include for all operating costs associated with the said item of plant. Such costs are deemed to include fuel, re-fuelling costs, lubrication and routine servicing / maintenance, breakdowns and spares, all overhead costs, site management costs and administration costs. The tendered rates shall also include the plant operator and the general supervision of the plant while it is engaged in the dayworks.

#### **DWK. 5 SALARIES AND WAGES OF WORKMEN**

The salaries and wages of workmen executing daywork shall be paid for using the tendered rates in Section DWK 6. The tendered rates shall include for all costs associated with the employment of personnel, including salaries, wages, allowances, workmen's compensation, medical aid and pension contributions, government levies and taxes, training costs and any costs associated with living on the site. The tendered rates shall also include for the transportation of the workmen to the site of the dayworks.

All overhead costs, administration costs, site management costs and the Contractor's profit are deemed to be covered by the Dayworks rates and no additions or mark ups will be made to the tendered rates.

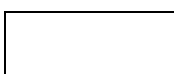
The tendered rates shall also include any hand tools normally associated with the workmen's job description e.g. picks, shovels, hammers, saws, spirit levels, etc. The tendered rate for labourers shall also include for the casual supervision by a gang boss or foreman. Only when specifically called for by the Engineer, will payment be made for the use of a gang boss or foreman supervising on a continuous basis.

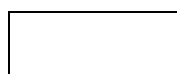
#### **DWK. 6 MEASUREMENT AND PAYMENT**

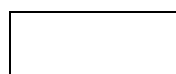
The following principles shall also apply to the measurement and payment of Dayworks.

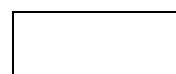
The unit of measurement for plant shall be the number of vibroclock hours worked and each item of plant shall be fitted with a vibroclock, the cost of which shall be included in the rates. Excessive non-productive time when the engine is idling will not be paid for. Where there is ambiguity between the flywheel horsepower and mass of the machine, the flywheel horsepower shall govern the measurement category. Where width and mass are specified, mass shall govern the measurement category.

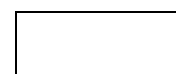
The Contractor's attention is drawn to the requirements of Sub-clauses 6.5.3 and 6.5.4 of the General Condition of Contract 2010 edition with regard to the submission of Dayworks claims.

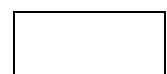
  
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## SECTION PB: BUILDING WORK


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## **PB 1 SCOPE**

This section specifies the general requirements for the construction of buildings.

## **PB 2 INTERPRETATIONS**

### **PB 2.1 SUPPORTING SPECIFICATIONS**

- (a) Project Specification;
- (b) SABS 1200 A or SABS 1200 AA as applicable;
- (c) SABS 1200 C;
- (d) SABS 1200 D or SABS 1200 DA as applicable;
- (e) SABS 1200 G or SABS 1200 GA or SABS 1200 GB as applicable.

### **PB 2.2 GENERAL**

Building work shall be carried out in accordance with the National Building Regulations and Building Standards Act, 1977, and these specifications.

References to specifications and codes of practice of the South African Bureau of Standards shall be taken to be references to the latest edition of such specifications and codes of practice as amended. Where possible the SABS mark shall appear on all articles, materials or items where it is required to comply with such SABS specification.

### **PB 2.3 COMMERCIAL PRODUCTS**

In all instances where the Contractor handles, stores, uses, applies or fixes commercial products, the work shall be strictly carried out according to the instructions of the manufacturer of such products.

### **PB 2.4 SAMPLES**

The Contractor shall furnish without delay, such samples as called for or may be called for by the Engineer. Materials or workmanship not corresponding with approved samples, may be rejected by the Engineer and shall be removed from the works at the cost of the Contractor.

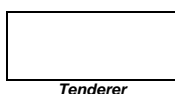
## **PB 3 MATERIALS**

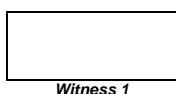
### **PB 3.1 CEMENT**

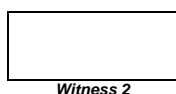
Cement shall be ordinary Portland cement complying with the requirements of SABS 471.

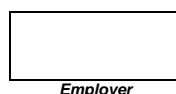
### **PB 3.2 WATER**

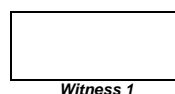
Water shall be clean and free from clay, silt, oil, acid, alkali, organic or other matter which would impair the required strength and durability of mortar, plaster or floor screed.

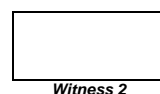
  
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### **PB 3.3 LIME**

Lime shall be hydrated bedding mortar lime complying with the requirements of SABS 523.

### **PB 3.4 AGGREGATE**

Sand for plaster and mortar shall comply with the requirements of SABS 1090, whereas the aggregates for normal and granolithic floor creeds shall comply with the requirements of BS1199 and BS1201 respectively.

### **PB 3.5 BURNT CLAY BRICKS**

Burnt clay bricks shall comply with the requirements of SABS 227 and shall also be equal in all respects to the three samples of each type of brick furnished by the Contractor prior to commencement of the works and as approved by the Engineer.

General purpose (special) bricks shall be used in foundation walls and lintels.

The colour and texture of face bricks shall be as specified in the project specifications. Care shall be taken to avoid damage to arisses and faces during transport and handling.

Fire bricks shall be of well burnt refractory fire clay, resistant to spalling and cracking and of same size as the ordinary bricks.

### **PB 3.6 CONCRETE MASONRY UNITS**

Pre-cast concrete masonry units shall comply with the requirements of SABS 1215 and shall be solid unless specified otherwise in the project specifications.

### **PB 3.7 CALCIUM SILICATE MASONRY UNITS**

Calcium silicate masonry units shall comply with the requirements of SABS 285.

### **PB 3.8 WALL TIES**

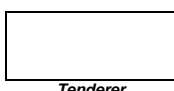
Wall ties shall comply with the requirements of SABS 28.

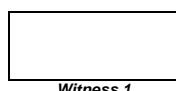
### **PB 3.9 AIR BRICKS**

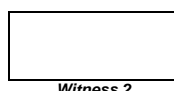
Air bricks shall be well-burnt terra-cotta air bricks in external faces of walls and 250 mm x 150 mm rectangular gypsum air bricks covered with copper mosquito gauze in internal faces.

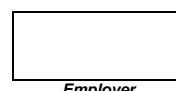
### **PB 3.10 BRICK REINFORCEMENT**

Brick reinforcement shall be hard drawn mild steel comprising two 3,15 mm diameter wires spaced 75 mm apart and 2,8 mm diameter cross wires spaced at not exceeding 300 mm apart welded to main wires.

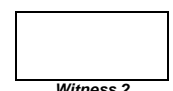
  
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### **PB 3.11 QUARRY TILES**

Quarry tiles shall be of approved quality, even in thickness, truly square, free from cracks, twists and blemishes and uniform in colour and unless otherwise specified, shall be of approved red colour.

### **PB 3.12 CERAMIC TILES**

Glazed ceramic tiles for walls shall comply with the requirements of SABS 22 and, unless otherwise specified, shall be white, size 150 mm x 150 mm x 6,5 mm thick.

Ceramic tiles for floors shall comply with the requirements of SABS 1449 and, unless otherwise specified, shall be unglazed, size 240 mm x 115 mm x 20 mm thick and of approved colour.

### **PB 3.13 CONCRETE PAVING SLABS**

Concrete paving slabs shall be precast units of grade 25 MPa/13 mm concrete and shall be of approved manufacture, at least 50 mm thick and sizes 250 mm x 250 mm minimum and 600 mm x 600 mm maximum.

Concrete slabs shall be even in thickness, truly square, free from cracks, twists and blemishes, with a uniform natural cement colour and surface finished smoothly in the mould and shall also be equal in all respects to the samples furnished by the Contractor prior to commencement of the works and as approved by the Engineer.

### **PB 3.14 DAMP-PROOF MEMBRANE**

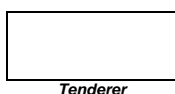
Damp-proof membrane under floors, unless otherwise specified, shall be of polyethylene sheeting complying with the requirements of SABS 952 as Type C-plain surfaces specified therein, 250 microns in dry areas and 375 microns in wet areas.

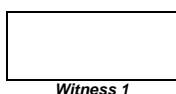
### **PB 3.15 DAMP-PROOF COURSE IN WALLS**

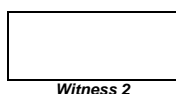
Horizontal and vertical damp-proof course, unless otherwise specified, shall be of bituminous sheeting complying with the requirements of SABS 248 and as Type FV (Fibre Base) sheeting or as Type GH (Hessian Base) sheeting specified therein, or of polyethylene sheeting complying with the requirements of SABS 952 and as Type A-plain surfaces 450 microns or as Type B-embossed surfaces 375 microns as described therein.

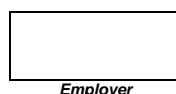
### **PB 3.16 TREATMENT OF TIMBER**

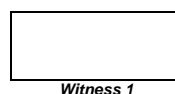
All timber shall be given a preservative treatment suitable for the duty for which the timber is intended in accordance with SABS code of practice 05, and no untreated timber shall be used. The preservative treatment shall not impair the final finish. The timber shall be impregnated throughout. When surface coating is specified, the compounds applied on the surfaces of the timber shall form an unbroken film.

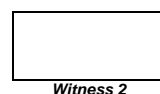
  
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### **PB 3.17 STRUCTURAL TIMBER**

Structural timber, unless otherwise specified, shall be of South African softwood (pine) complying with the requirements of SABS 563 or SABS 1245 and, unless otherwise specified or shown on the drawings, shall be of Grade 4 and shall be marked as laid down in the specification.

Roof battens and other structural timbers not less than 50 mm or more than 65 mm in width and not less than 38 mm or more than 50 mm thickness, shall be of South African softwood (pine) complying with the requirements of SABS 65PB 3.

All structural timber shall bear the full standardization mark of the South African Bureau of Standards.

The tolerance by which "actual" dimensions may vary from the "nominal" dimensions specified or stated on drawings of South African sawn structural softwood, shall be as laid down in SABS 563, SABS 653 and SABS 1245 where relevant.

### **PB 3.18 STRUCTURAL LAMINATED TIMBER**

(a) **Stock glued laminated timber of S.A. pine**

Stock glued laminated timber of S.A. pine shall comply with the requirements of SABS 1089 and shall be marked as laid down in the specification and shall also bear the standardisation mark of the SABS.

(b) **Designed glued laminated timber**

Structural glued laminated timber shall comply with the requirements of SABS 876 and shall be marked as laid down in the specification and shall also bear the standardisation mark of the SABS.

The timber shall be of -

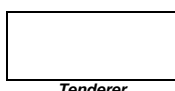
- (i) softwood or hardwood;
  - (ii) the density group and grade;
  - (iii) the exposure category;
  - (iv) moisture content; and
  - (v) of Class A or Class B appearance;
- as specified and, in services having timbers treated against infestation by insect pests, shall be treated against pests as laid down in the specification for laminated timber.

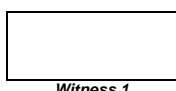
### **PB 3.19 GALVANISED STEEL ROOFING SHEETS**

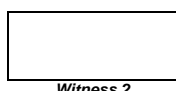
Galvanised steel roofing sheets shall be of the profile as scheduled or shown on the drawings, of 0,60 mm thick mild steel (before galvanising) and shall be galvanised on both sides to the requirements of SABS 934 for a Class Z250 coating, unless a Class Z600 coating is specified, and shall be passivated.

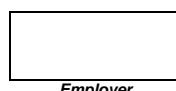
### **PB 3.20 METAL RIDGING FOR STEEL COVERED ROOFS**

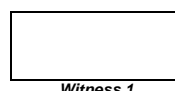
Galvanised iron ridging for ridges and hips of steel covered roofs shall be of 0,60 mm thick flat mild steel (before galvanising), galvanised as specified for roofing sheets in clause PB 3.19.

  
Tenderer

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2



### **PB 3.21 FIBRE CEMENT ROOFING SHEETS**

Fibre cement roofing sheets shall be of the profile scheduled or shown on the drawings and shall comply with the requirements of SABS 685. The sheets shall be not less than 6 mm thick.

### **PB 3.22 ADJUSTABLE FIBRE CEMENT RIDGING**

Adjustable fibre cement ridging for ridges of fibre cement covered roofs, shall be of same manufacture as the roofing sheets, of not less than 6 mm thick material, with overlapping end joints and shall suit the profile of the roofing sheets. Width of wing shall be not less than 300 mm measured from the centre of roll.

### **PB 3.23 FASCIAS AND BARGE BOARDS**

Fascias and barge boards shall be, unless otherwise specified, of pressed fibre cement boards of section described in long lengths.

### **PB 3.24 FIBRE CEMENT FLASHINGS**

Fibre cement flashing for horizontal top edges of roofs butting against vertical wall or other surfaces, shall be of same manufacture as the roofing sheets of not less than 6 mm thick material and with overlapping end joints. The flashings shall suit the profile of the roofing sheets and shall extend not less than 300 mm onto the roof sheeting, shall have plain upstands against the vertical surfaces and shall be flashed over with metal as described.

### **PB 3.25 FIBRE CEMENT GUTTERS**

Fibre cement gutters shall be of approved manufacture, of not less than 6 mm thick material and with spigot and socket ends.

Gutter brackets shall be heavy quality galvanised steel or non-ferrous metal brackets as supplied by the manufacturers of the gutters.

### **PB 3.26 FIBRE CEMENT RAIN-WATER DOWN PIPES**

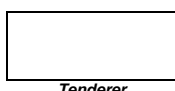
Fibre cement rainwater downpipes shall be of approved manufacture, with spigot and socket ends. The material in circular rainwater downpipes 75 mm diameter shall be not less than 6 mm thick, and in circular pipes over 75 mm diameter and in all sizes of square and rectangular pipes, shall be not less than 8 mm thick.

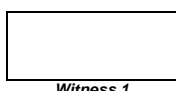
Holderbats for rainwater downpipes shall be heavy quality galvanised steel or non-ferrous metal holderbats.

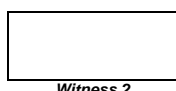
### **PB 3.27 CONCRETE ROOFING TILES**

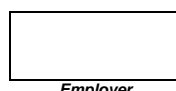
Concrete roofing tiles shall comply with the requirements of SABS 542, except that the concrete in the body of the tile need not be coloured where tiles have natural stone granular finish, and shall be of pattern and colour specified.

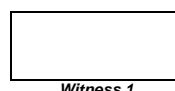
Unless otherwise specified, the tiles shall have natural stone granular finish.

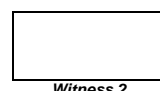
  
Tenderer

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2



### **PB 3.28 COVERING TO CEILINGS**

(a) **Gypsum plasterboard ceilings with plaster finish**

Gypsum plasterboard for ceilings shall be 6,4 mm thick gypsum ceiling board, complying with the requirements of SABS 266.

The cover strips shall be galvanised or lacquered wire gauze not less than 60 mm wide. The plaster shall be a retarded semi-hydrate wood-fibre plasterboard bonding gypsum plaster.

(b) **Fibre cellulose board ceilings**

Fibre cellulose board for ceilings shall comply with the requirements of SABS 803 and, unless otherwise specified, shall be 6 mm thick and of flat (unpressed) type.

### **PB 3.29 COVE CORNICES TO CEILINGS**

(a) **Gypsum plasterboard cornices**

Cove gypsum plasterboard cornices to ceilings shall comply with the requirements of SABS 622 and shall be of 82 mm or 120 mm girth as specified.

(b) **Timber cornices**

Timber cornices to ceilings shall be 32 mm hardwood Scotia's.

### **PB 3.30 FLAT FIBRE CEMENT SHEETS**

Flat fibre cement sheets other than fibre cellulose boards described in subclause PB 3.28(b), shall comply with the requirements of SABS 685.

### **PB 3.31 TIMBER FOR JOINERY**

Softwood for joinery shall comply with the requirements of SABS 1359 and hardwood with the requirements of SABS 1099.

Timber for joinery shall be of clear grade, unless otherwise specified. Counter tops and other tops, where only one face side is visible, shall be of semi-clear grade timber.

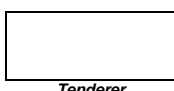
### **PB 3.32 FRAMED AND LEDGED BATTEN DOORS**

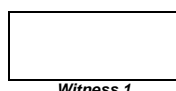
(a) **Softwood doors**

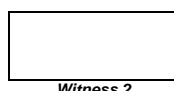
To be 44 mm thick framed and ledged batten doors complying with the requirements of SABS 545, but the timber shall comply with the requirements of SABS 1359 and shall be of clear grade.

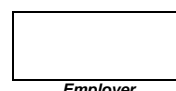
(b) **Hardwood doors**

To be 44 mm thick framed and ledged batten doors complying with the requirements of SABS 545, but the timber shall comply with the requirements of SABS 1099 and shall be of clear grade. The hardwood shall be solid without any laminations.

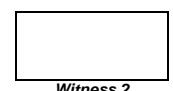
  
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Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2



### **PB 3.33 FLUSH DOORS**

Flush doors shall be solid laminated, chip core or hollow-core as specified and shall comply with the requirements of SABS 545. All glue used in the manufacture of the doors shall comply with the requirements of the above specification.

Unless otherwise specified, face veneers shall be rotary cut, and shall be of timber specified or where doors are to be painted shall be of timber suitable for painting.

Edge-strips to conceal the vertical edges of doors shall be not less than 10 mm thick and of the same timber as face veneers; edge strips to meeting edges of doors in two leaves where edges are to be rebated, shall be not less than 20 mm thick.

Faces of doors shall be machine-sanded to a smooth and even surface.

All glueing together of core strips and glueing on of veneers, edge-strips, etc. shall be done under hydraulic pressure.

The top and bottom edges of doors showing end grain, shall be sealed with lacquer, or other suitable material, before leaving the manufacturer's works, and similarly sealed after doors are fitted into frames if the edges of doors are disturbed during fitting.

### **PB 3.34 IRONMONGERY**

All ironmongery shall be of best quality and shall be approved by the Engineer, before fixing.

Screws for fixing of articles shall be of similar metal than the articles.

Locks shall comply with the requirements of SABS 4 and shall be supplied with two keys each.

Unless otherwise specified, interior and exterior doors shall be fitted with two and four lever heavy-duty mortice locks respectively, which shall be master-keyed.

No key shall pass a second lock. On no account shall the keys be delivered with the doors or locks to the building site. Failure to observe these instructions may entail the provision of new locks and keys.

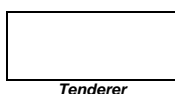
### **PB 3.35 HOT-DIP GALVANISING TO STEELWORK**

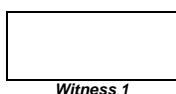
Where prescribed, all steelwork built in as the work proceeds, shall be hot-dip galvanised after fabrication and before leaving the manufacturer's works, in accordance with SABS 763.

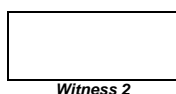
Where they occur, site welds shall be zinc sprayed in order that the zinc coating be even and continuous over all surfaces.

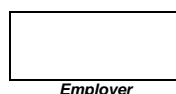
### **PB 3.36 PRESSED STEEL DOOR FRAMES**

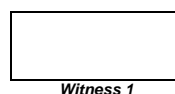
Pressed steel door frames shall comply with the requirements of SABS 1129 and shall be constructed of 1,6 mm thick mild steel sheeting, pressed or rolled to the required shapes, properly mitred, welded and reinforced.

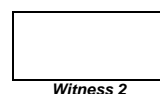
  
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Employer

  
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Frames shall be of widths required to suit the thickness of walls into which they are built and shall be fitted with suitable tie-bars and braces at bottom, and lugs for building in, three to each jamb of frames without fanlights and four to each jamb of frames with fanlights.

Where fanlights are shown over doors, the frames shall be fitted with transoms of pressed or rolled steel sheet as above and rebate for fanlights and for doors if required.

The rebates in frames and transoms for doors and fanlights shall be of width required to suit the thickness of doors and fanlights.

Frames shall each be fitted in the rebate of one jamb with a pair of approved 100 mm steel butt hinges, and transom to opening fanlights hung at bottom shall each be fitted with a pair of approved 75 mm steel butt hinges, all set flush into recesses in frames and either fixed with countersunk screws or securely welded on.

Frames shall be holed as and where required for screws fixing fanlight openers, keeps of spring catches, etc. Where fanlights are shown to be fixed into frames, the frames shall be holed in the rebates, for screws, securing the fanlights, four to each frame.

Frames shall each be fitted in one jamb, with approved chromium plated or stainless steel (unless otherwise specified) adjustable striking plate keep, boxed in at back of frame with sheet metal box welded on, and not less than two rubber buffers.

All welding shall be cleaned off smooth and flush on exposed faces and frames shall be cleaned and primed as described for steel windows before leaving the manufacturer's works.

### **PB 3.37 STEEL DOORS, SIDELIGHTS AND FANLIGHTS**

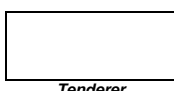
Steel doors, sidelights and fanlights shall, in the case of stock types, comply with the requirements of SABS 727, and in the case of purpose made types with the constructional and other requirements of the above specification wherever applicable, and shall in addition be equipped with the following:

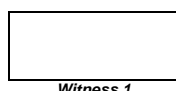
- (a) Suitable weather bars where required to render doors, etc., perfectly watertight;
- (b) Suitable lugs, or holes at the same spacing as the standard fixing lugs, for screwing frames to plugs in the concrete, where frames of doors, etc. are to be fixed to concrete columns, beams, etc.,
- (c) A primer as described for steel windows, except where hot-dip galvanising is prescribed.

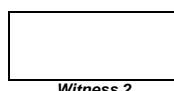
Doors, sidelights and fanlights, unless otherwise shown shall be of "one piece" construction, but where shown to be in two or more "one piece" units, the units shall be coupled together with standard coupling-mullions and/or transoms.

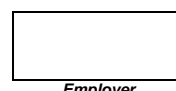
Bottom openings in doors and sidelights shall be fitted with kicking plates of one thickness of 1,6 mm thick mild steel sheet fixed with metal beads.

Frames of outward opening doors shall be fitted at bottom with sills of door framing section (stepped sills) and of inward opening doors with metal ties, welded to frames, for embedding in thresholds (flush sills).

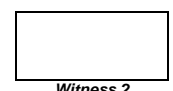
  
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Employer

  
Witness 1

  
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Stock doors, sidelights and fanlights shall be of the types shown on drawings and purpose made doors, sidelights and fanlights shall be constructed to the forms and sizes shown on drawings.

Unless otherwise specified, the doors shall be of not less than 33 mm universal sections and the sidelights and fanlights of standard 25 mm sections.

Fanlights shall be hung and fitted as described for steel windows in clause PB 3.39.

#### **PB 3.38 STEEL WINDOWS**

Stock residential and industrial type steel windows shall comply with the requirements of SABS 727 and all other types both stock and purpose made shall comply with the constructional and other requirements of the above specification wherever applicable, and shall in addition be equipped with the following:

- (a) Suitable weather bars where required to render the windows perfectly watertight;
- (b) Suitable lugs, or holes at the same spacing as the standard fixing lugs, for screwing frames to plugs in the concrete where frames of windows are to be fixed to concrete columns, beams, etc.;
- (c) Windows and components, except where specified to be hot-dip galvanised, shall before leaving the manufacturer's works, be cleaned by acid pickling rinsing and drying, as laid down in SABS code of practice 064, or by other approved means, to remove all scale, rust, grease, oil and foreign matter and then primed with red oxide zinc chromate primer complying with the requirements of SABS 909, applied by dipping or by means of spray gun.

Ventilators hung at side to open out in windows above ground floors and not accessible for cleaning from an adjoining opening ventilator in the same window or from verandas, balconies and the like, shall be hung on projecting hinges.

Windows, unless otherwise specified, shall be of "one piece" construction, but where shown to be in two or more "one piece" units, shall be coupled together with standard coupling mullions and/or transoms.

Windows shall be fitted with solid brass handles, stays, catches and other fittings, those to windows constructed of universal sections having polished finish and to all other windows rumpled finish. The fittings shall be fixed in such a way as to be removable after windows are glazed.

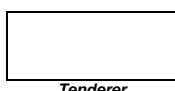
#### **PB 3.39 RESILIENT FLOOR FINISHINGS**

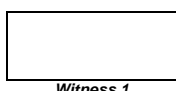
Semi-flexible vinyl (vinyl-fibre) floor tiles shall comply with the requirements of SABS 581; flexible vinyl (PVC) floor tiles and sheeting shall comply with the requirements of SABS 786 and thermoplastic (asphaltic) floor tiles shall comply with the requirements of SABS 586. Unless otherwise described, the flooring shall be of marbled pattern and of approved light colour and tiles shall be 230 mm x 230 mm or 250 mm x 250 mm in size.

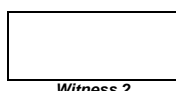
Vinyl cove skirtings shall be of approved manufacture and colour and unless otherwise stated, 70 mm in height.

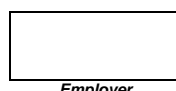
#### **PB 3.40 GLASS FOR GLAZING**

Glass for glazing shall comply with the requirements of CKS 55.

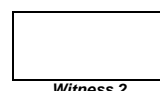
  
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Glass not exceeding 0,75 square metre surface area of glass pane, shall be flat drawn clear sheet glass of "QQ" quality (ordinary glazing quality) and of 3 mm thickness.

Glass exceeding 0,75 square metre and up to 1,5 square metres surface area of glass pane, shall be clear float glass of "GG" quality (glazing quality) and of 4 mm thickness.

Laminated safety glass for glazing shall be of "SQ" quality (selected glazing quality) and of 6 mm thickness unless otherwise specified. If high impact strength glass is used, whether cut to size or not, the stencil mark is to appear in a prominent place on the glass.

Toughened safety glass for glazing up to 3 square metres shall be, unless otherwise specified, of 4 mm thickness and must be ordered to the correct size as toughened glass can not be cut, and each piece of glass to be marked in a clear and permanent fashion. (For bigger sizes, manufacturer's instructions are to be followed).

Any pane of glass installed in any door shall, where not made of safety glass, be not more than 1 m<sup>2</sup> in area and shall have a nominal thickness of not less than 6 mm.

Obscure glass for glazing, unless otherwise specified, shall be Arctic or other similar approved figured rolled glass, of a nominal thickness of not less than 3 mm for glass panes up to a surface area of 0,75 square metre and not less than 5 mm over 0,75 square metre.

Putty for glazing shall comply with the requirements of SABS 680, of Type I for glazing in wood and of Type II for glazing in steel windows, doors, etc. Putty used for glazing in unpainted hardwoods, shall be tinted to match the colour of the wood.

#### **PB 3.41 PAINTS**

All materials for paint work for which South African Bureau of Standards specifications have been published, shall comply with the requirements of such specifications and shall bear the standardisation mark of the South African Bureau of Standards on the container or packing. Materials for paint work for which no SABS specifications have been published shall be of brand and manufacture approved by the Engineer.

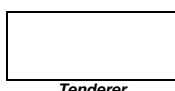
All materials for paint work must be brought on to the site in unopened containers and no adulteration will be allowed.

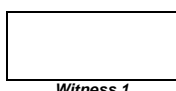
Undercoats for paint work shall be as supplied by the manufacturer of the paint being used for the finishing coat.

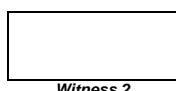
Paints shall be suitable for application on the surfaces on which they are to be applied, and those used externally shall be of exterior quality or suitable for exterior use.

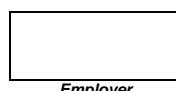
If necessary, paints shall be strained free from skins and similar impurities immediately before application.

The various primers, undercoats, paints and distempers shall comply with the requirements of the specifications quoted hereunder and shall be of the type of grade stated, viz:

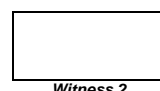
  
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Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2



(a) **Primers**

(i) For wood:  
SABS 678. Type I shall be used on exterior woodwork and Type III on interior woodwork.

(ii) For metal:

**Dip or spray application (red oxide zinc chromate).** For steel windows, doors, door jambs, and other articles normally dip or spray primed in the manufacturer's works: SABS 909.

**Brush application (zinc chromate).** For all metal surfaces primed on site and then painted: SABS 679, Type I.

(iii) For structural steel (red lead)  
SABS 312, Type II, Grade I.

(iv) For galvanised iron  
SABS 912.

(v) For galvanised metal surfaces and surfaces of non-ferrous metals  
Wash primer (metal etch primer) : SABS 723.

(b) **Undercoats**

For all surfaces under HIGH GLOSS, OIL GLOSS, FLAT and EGGSHELL finishing paints : SABS 681, Type II.

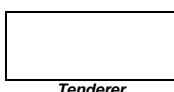
(c) **Paints**

- |        |                           |   |  |
|--------|---------------------------|---|--|
| (i)    | High gloss                | : | SABS 630   |
| (ii)   | Oil gloss                 | : | SABS 631   |
| (iii)  | Flat and eggshell         | : | SABS 515   |
| (iv)   | Emulsion paint (interior) | : | SABS 633, Grade I  |
| (v)    | Emulsion paint (exterior) | : | SABS 634, Synthetic Polymer Base Type, but pure acrylic resin base for fibre cement surfaces |
| (vi)   | Aluminium paint           | : | SABS 682, Grade II   |
| (vii)  | Roof paint                | : | SABS 683, Type B   |
| (viii) | Structural steel paint    | : | SABS 684, Type B   |
| (ix)   | Epoxy tar                 | : | SABS 801 (types as specified)  |

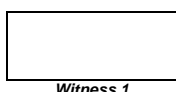
(d) **Distemper**  
SABS 322

(e) **Varnish for interior use**  
SABS 887, Type I with eggshell finish.

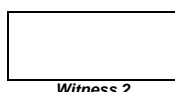
**PB 4 PLANT**



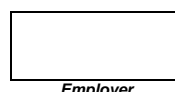
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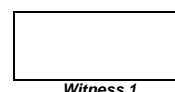
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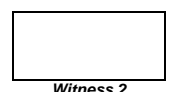
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Employer



Witness 1



Witness 2



#### **PB 4.1 GENERAL**

The Contractor shall have at his disposal the normal plant necessary for the proper and neat completion and rounding off of all facets of the building work.

#### **PB 5 CONSTRUCTION**

##### **PB 5.1 BRICKLAYER**

##### **PB 5.1.1 Cement Mortar**

Cement mortar shall, unless otherwise specified, be composed of four parts by volume of sand and one part by volume of cement for normal brickwork, and three parts by volume of sand and one part by volume of cement for reinforced brickwork.

The ingredients for cement mortar shall be measured in proper gauge boxes on a boarded platform and thoroughly mixed. Alternatively mixing may be by means of an approved mechanical batch mixer. Only when the dry ingredients have been thoroughly mixed and a mixture of uniform colour has been obtained may the water be added in sufficient quantity to obtain mortar with the required consistency.

Care shall be taken in mixing cement mortar to remove from the mixing machine or platform any old mortar that has already set, as such mortar must not be incorporated in any new batch.

Cement mortar shall be produced in such quantities as can be used before commencing to set, as no cement mortar that has once commenced to set shall be used in any way.

##### **PB 5.1.2 Brickwork**

Brickwork, wherever practicable and not otherwise specified, shall be built in English bond. No false headers shall be used, and none but whole bricks employed, except where legitimately required to form bond.

The brickwork, unless otherwise specified, shall be built in 4:1 cement mortar. Brick arches and brick lintels shall be built in 3:1 cement mortar.

The bricks shall be laid on a solid bed of mortar and all joints thoroughly grouted up solid throughout the whole width of each course.

The brickwork shall be carried up in a uniform manner, no portion being raised more than 1,2 m above an adjacent portion.

The bricks shall be well saturated with water, in the stack or dump, approximately two hours before being used. The tops of walls left off, shall be well wetted before work is recommenced.

All rough and fair cutting and cutting of splays, skew backs, chamfers, etc., shall be properly performed.

All necessary openings for pipes, etc., shall be formed or left and made good after pipes, etc., are fixed in position.

*Tenderer*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*



Walls generally shall be taken up two courses above paneled ceilings in the same mortar as the wall below and cut between ties, etc.

Where hollow concrete masonry units are used brick-force shall be built into the walls every third course. Mortar for hollow concrete masonry units shall consist of one part cement, two parts lime and nine parts sand by volume. All cavities below floor level shall be filled with Grade 15 MPa/19 mm concrete.

#### **PB 5.1.3 Mortar Joints**

Mortar joints to brickwork generally shall be 10 mm in thickness.

The joints in brickwork receiving plaster, tiling or similar finishings, shall be raked out whilst the mortar is soft to form key for the plaster or mortar backing. The depth of the raking out will depend on the condition of the bricks; the rougher the bricks on face the shallower the raking out and the smoother the bricks the deeper the raking out.

The joints in brickwork shall be flushed off where walls are to be bagged, in readiness for the bagging.

#### **PB 5.1.4 Brickwork In Thicknesses**

Walls built in two or three thicknesses shall be tied together with and including metal ties of sufficient length to allow not less than 75 mm of each end to be built into brickwork and shall be spaced not more than 1 m apart to every third course and staggered.

#### **PB 5.1.5 Brickwork In Linings**

Linings to concrete shall be tied with and including 4 mm diameter galvanised crimped wire ties of necessary length to allow 75 mm to be bedded into concrete and 75 mm of the other end to be built into brickwork and evenly spaced 1 m apart to every third course and staggered.

#### **PB 5.1.6 Half Brick Thick Walls**

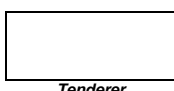
Half brick thick walls shall be built in 4:1 cement mortar and reinforced with 75 mm wide brick reinforcement, one row to every eighth course in height, and built 100 mm into main connecting walls. The reinforcement shall be lapped 150 mm at end joints, where these are necessary, and 75 mm at angles.

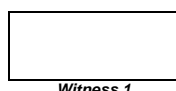
#### **PB 5.1.7 Cavity Walls**

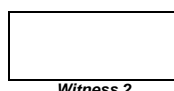
Cavity walls, unless otherwise specified, shall be built with two half brick thicknesses of brickwork in stretcher bond with 50 mm cavity between, and the two thicknesses tied together with 200 mm long metal wall ties of the butterfly type, spaced at not more than 1 m centres alternately to every third course of brickwork.

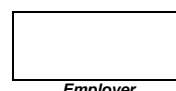
Unless otherwise specified, the brickwork shall be built in 4:1 cement mortar.

The cavities shall be carried up from one course of brickwork below damp course level up to two courses below wall plate level, unless otherwise shown or specified. The brickwork above cavities

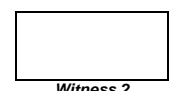
  
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Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2



shall be built solid, and where 270 mm thick shall be cut and well bonded where possible. Cavities in foundation walls of cavity walls shall be filled with Grade 15 MPa/19 mm up to 150 mm below the damp-proof course level.

The cavities shall be kept free of all rubbish, mortar droppings and projecting mortar.

The tops of walls shall be covered with planks or sacking during wet weather to prevent rain from entering the cavities.

The cavities shall not be ventilated.

At door, windows and other openings, the cavities shall be stopped 110 mm back from jambs of openings with the inner thickness of brickwork returned and stopped against the outer thickness and not bonded to same. A 110 mm wide strip of damp-proof sheeting as described for damp-proof course in clause PB 3.15 shall be built in between the two thicknesses in the joint formed by the return and the outer thickness. The damp-proof strip shall be lapped at least 50 mm on to the sheeting between the two thicknesses of sills and between the two thicknesses of lintels.

Sills to windows shall be divided into external and internal thicknesses with strips of damp-proof sheeting as above, built in line with the damp-proof sheeting in jambs and extending 100 mm beyond the jambs of openings.

The lintels shall be provided with damp-proof sheeting as described under lintels.

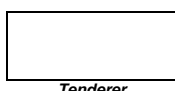
Unless otherwise specified, cavities shall be stopped one course below and one course above and 110 mm from sides of openings for air bricks and the like.

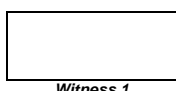
#### **PB 5.1.8 Reinforced Brick Lintels**

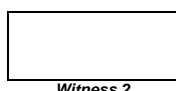
Reinforced brick lintels shall be built with sound machine made bricks, in 3:1 cement mortar, with all vertical and horizontal joints filled solid with mortar throughout the required number of courses and to a distance of at least 330 mm on either side of the clear opening.

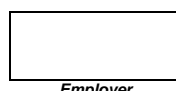
The number of courses in lintels over the various size openings shall be as specified in table hereunder, and reinforcing steel wires or rods shall be built into the first horizontal joint over the bottom course as laid down therein, viz.:

LINTEL SPAN	NUMBER OF COURSES	REINFORCEMENT
Not exceeding 1 m	4	One row of 75 mm wide brick reinforcement for each half brick width soffit.
Over 1 m tot 1,5 m	6	One row of 75 mm wide brick reinforcement for each half brick width soffit.
Over 1,5 m tot 2,1 m	7	Three 6,3 mm diameter mild steel rods for each half brick width of soffit.

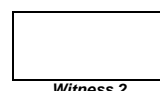
  
Tenderer

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2



The reinforcing wires and rods shall be of length at least equal to the width of the clear opening plus 330 mm at each end. The reinforcement shall be evenly spaced in the brick joints, with the outer wires or rods having at least 20 mm cover from face of brickwork.

Brick lintels in 270 mm thick cavity walls shall be built in two half brick thicknesses in stretcher bond, with inner face of outer thickness for a depth of three courses above soffit, covered with sheeting as for damp-proof course, the full length of lintels, and space between the two thicknesses for the depth of the sheeting filled in solid with Grade 15 MPa/19 mm concrete. Where cavities continue above lintels, the sheeting shall be taken up and turned on to top of first course of brickwork to inner thickness of wall, above the concrete filling in lintels.

The lintels, except where built over pressed steel door frames and the like, shall be supported on temporary formwork left in position for at least fourteen (14) days.

#### **PB 5.1.9 Beam Filling**

Beam filling, unless otherwise specified, shall be half brick thick, built in similar mortar as used in the walls below, cut in between roof timbers and carried hard up to underside of roof covering, and flushed up in mortar.

#### **PB 5.1.10 Bagged Finish To Brickwork**

Bagged finish to brickwork, if done whilst the mortar in joints is still soft, shall be formed by rubbing over the wall surfaces with wet rough sacking, until all joints and crevices are filled up and an even surface is obtained. Mortar, as used for building the brickwork, shall be added as may be necessary.

If bagging to walls is done after the mortar in joints has set the wall surfaces shall be rubbed over with wet rough sacking as above, but cement grout shall be added as necessary to fill up the joints and crevices and to obtain an even surface.

#### **PB 5.1.11 Building In Inbrick Work**

Ends of timbers, hold-fasts, cramps, gratings, air bricks, dowels, etc., shall be built-in in cement mortar.

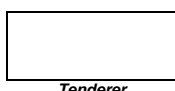
Door and window frames and the like shall be set up in positions for building in and securely strutted to prevent distortion whilst the brickwork, lintels, etc., are being built.

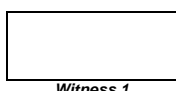
Pressed steel door frames shall be grouted in solid at back with cement mortar as the work proceeds.

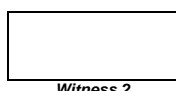
Wood slips, fixing bricks, hoop iron, roof ties, etc., shall be built in as the work proceeds.

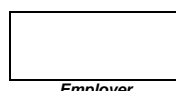
Ventilators shall be built into openings formed in the walls, in 3:1 cement mortar, and grouted in solid with similar mortar and wall finishes made good if disturbed.

Wood frames to doors, windows, etc., shall be set up in position for building in as described and built in as the work proceeds with cramps to jambs of 1,6 mm thick galvanised hoop iron, 32 mm wide, with ends turned 50 mm up against stiles of frames and each twice screwed to frame, and built 450 mm into wall with end turned up into brickwork joint. Cramps shall be built in approximately 0,3 m up from bottom and approximately 0,3 m down from head of frames and intermediately at not

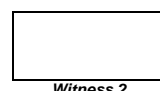
  
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Witness 2

  
Employer

  
Witness 1

  
Witness 2



exceeding 0,85 m apart. No frame shall have less than two cramps to each jamb irrespective of height.

Cramps to frames in 270 mm thick cavity walls shall be cranked as necessary and built into inner and outer thicknesses of walls alternately.

The stiles of wood door frames, and similar frames not having sills framed in, shall be doweled to concrete, brick, stone and similar thresholds with 10 mm diameter mild steel dowels 75 mm long, one to each stile.

#### **PB 5.1.12 Securing Of Roofs**

Roof trusses shall be fixed at each support to walls with ties of 1,2 mm thick galvanised hoop iron, 30 mm wide, built 750 mm deep into brickwork or embedded 300 mm deep into concrete or wrapped around bottom layer of reinforcing in a reinforced concrete beam and, unless otherwise specified, wrapped over truss and fixed with four galvanised nails, 60 mm long and taken up to and lapped round the nearest purlin and well spiked thereto.

#### **PB 5.1.13 Bedding And Pointing**

All door, window and similar frames shall be bedded and pointed in 3:1 cement mortar. All wall plates shall be set true and level and bedded in 4:1 cement mortar.

Steel door and window frames shall be carefully pointed all round and made perfectly watertight.

Where steel door and window frames are specified to be pointed with mastic compound they shall be pointed all round externally with an approved waterproof compound, of such composition that it will not stain surrounding surfaces, and that it will adhere tenaciously, remain plastic without sagging or running, be capable of accommodating any normal movement of the joint sealed, and will receive paint without "bleeding". The pointing material shall be forced into the joints, which shall have been previously prepared to receive same, by means of a pressure gun, or by other suitable method, all in accordance with the manufacturer's instructions.

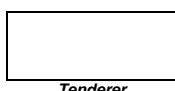
#### **PB 5.1.14 Faced Brickwork**

Faced brickwork shall be built fair and the joints shall be square recessed to a depth of approximately 6 mm, formed with a square jointing tool well pressed into the joints as the work proceeds.

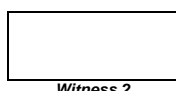
The Contractor shall construct a test section of 10 m<sup>2</sup> which shall be approved by the Engineer, before continuing with faced brickwork.

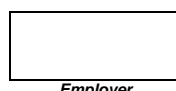
Face bricks shall be sorted by the brick manufacturer at his yard or by the Contractor on the site, to ensure that proper mixing of the bricks within the colour range of each type of facing brick being used is obtained; sudden changes in the general colour of face work in any one type of facing brick will not be acceptable.

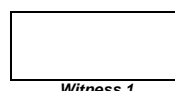
Sand in mortar for all faced brickwork shall all be from one source.

  
Tenderer

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2



Faced brickwork shall be kept perfectly clean and rubbing down of the brickwork shall not be allowed. Scaffold boards shall be turned back during rain to avoid splashing. Soiled brickwork shall be cleaned at the Contractor's expense, and the cleaning method shall be approved by the Engineer.

#### **PB 5.1.15 Fibre Cement Sills**

Sills shall be in single lengths cut between reveals, fitted with fixing lugs and solidly bedded in 3:1 cement mortar with a slight projection beyond the finished wall face below.

Internal sills shall be level. External sills shall be set sloping on cut brickwork or on fine concrete filling under.

#### **PB 5.1.16 Laying Of Quarry Tiles**

Joints to paving shall be continuous in both directions.

Tiles shall be solidly bedded and jointed in 3:1 cement mortar with joints, unless otherwise specified, 6 mm wide and slightly pointed with a round jointing tool. Tiles shall be well soaked in water before fixing and thoroughly cleaned off after fixing.

Tiles in sills, copings, etc., shall be set with slight projection over finished wall face, and where full tiles do not fit into the length, two cut tiles shall be used, symmetrically placed as directed.

#### **PB 5.1.17 Installation Of Electrical Service**

The Contractor shall embed in the concrete and/or brickwork, as the work proceeds, all conduits, boxes, etc., which will be fixed in position by the electricians, and must cut all necessary chases and holes in walls for conduits and form recesses in walls for distribution boards, all in the positions directed, notwithstanding whether the installation of the electrical service is carried out by the Contractor or under a separate contract. Alternatively, distribution boards may be built into walls as the work proceeds, providing prior approval is obtained from the Engineer.

The Contractor shall afford every facility and shall render reasonable assistance to the electricians in carrying out their work, and shall make good where necessary, in all trades, after installation has been completed.

#### **PB 5.1.18 Installation Of Mechanical Equipment**

Where the installation of mechanical equipment is carried out under a separate contract the Contractor shall arrange for the building in of special fittings, leaving holes and openings or forming chases in floors, walls, etc., for pipes, cables etc., and for the building in of pipes, sleeves, pipe clips, bolts, etc., as required or directed.

All cutting of holes through finished floors, walls, etc., after the concrete or mortar has set, must be avoided as far as possible, and the Contractor must give ample notice to the Engineer who will ascertain the exact positions where pipe sleeves, pipes, pipe clips, etc., are to be built in.

#### **PB 5.1.19 Protect And Clean Down Brickwork, Etc.**

Tenderer

Witness 1

Witness 2

Employer

Witness 1

Witness 2





Angles of face brickwork, reveals, steps, etc., liable to damage shall be covered up and protected during the progress of the remaining work, and any damage done shall be made good at the Contractor's expense and to the satisfaction of the Engineer.

Face brickwork and brick and tile sills, copings, etc., shall be cleaned down as the work proceeds, and surfaces liable to be soiled by mortar or plaster splashes during the progress of the remaining work shall be covered with paper, pasted on, or by other approved means. At completion of the works the coverings shall be removed and the surfaces again cleaned down to the satisfaction of the Engineer.

Any detergent or other materials used in the cleaning down of face brickwork, etc., shall be of such nature that will not harm adjoining paint and other finishings in any way.

All tile and other pavings shall be thoroughly cleaned off after laying to remove all traces of mortar and other substances, covered up and protected from damage during the progress of the works, and again cleaned off at completion.

## **PB 5.2 TILER**

### **PB 5.2.1 Laying Of Glazed Ceramic Wall Tiles**

The tiles shall be fixed direct to walls in 3:1 cement mortar with horizontal and vertical joints continuous, and shall have all joints rubbed in solid with neat white cement grout. Tiles shall be well soaked in water before fixing and thoroughly cleaned off after fixing.

Unless otherwise specified, the wall tiling shall project approximately 4 mm beyond face of adjoining plaster with all exposed edges finished with glazed rounded edge tiles.

Tiling shall be returned into reveals of openings and on to window sills, and shall be butted at internal angles and provided with glazed rounded edged tiles to external angles, unless otherwise specified.

All necessary cutting to tiles shall be properly performed.

Walls shall be well wetted before tiling is commenced.

### **PB 5.2.2 Laying Of Ceramic Floor Tiles**

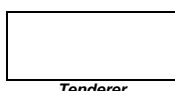
Ceramic tiles shall be bedded to a true and even surface on 3:1 cement mortar and with joints not exceeding 2 mm wide.

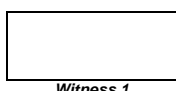
After the tiles have been allowed to set for a period of not less than twenty four hours the joints shall be grouted in to with approved epoxy compound, or acid proof cement mortar.

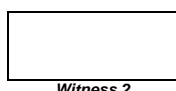
## **PB 5.3 PLASTERER AND PAVIOR**

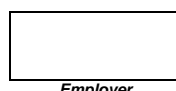
### **PB 5.3.1 Cement Plaster**

Cement plaster for one coat work on walls shall be composed of four parts of sand and one part of cement for internal work, and five parts of sand and one part of cement for external work, all by volume, and mixed as described for cement mortar in clause PB 5.1.1.

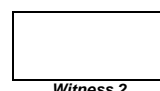
  
Tenderer

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2



Cement plaster on concrete surfaces shall be composed of three parts by volume of sand and one part by volume of cement.

#### **PB 5.3.2 Forming Key To Concrete For Plaster Finish**

All surfaces of concrete receiving plaster, or similar finishings, shall be well wetted and wire brushed immediately after the formwork is removed and slushed over with 2:1 cement grout to form key for the finish, to the approval of the Engineer. The slushing to be allowed to set hard before the finish is applied.

Other methods may be used if approved by the Engineer.

Particular care shall be taken in forming the key for plaster where steel shuttering is used, and if considered necessary the surface of the concrete shall be hacked.

#### **PB 5.3.3 Thickness Of Plaster**

Plaster on walls shall be not less than 12 mm or more than 20 mm in thickness, and plaster on concrete ceilings and beams shall be not less than 9 mm or more than 16 mm in thickness, unless otherwise specified.

#### **PB 5.3.4 Application Of Plaster**

Walls shall be well wetted before plastering is commenced.

The surfaces of internal plaster shall be steel trowelled to a smooth, even and true finish. External plaster shall be finished to a true and even surface with a wood float. All plaster surfaces shall be free from blemish.

Plaster shall be returned into reveals and soffits of openings, and all angles shall be true and straight with salient angles slightly rounded.

The rendering coat of plaster in two coat work shall be approved by the Engineer before the setting coat is applied, and notice shall be given to the Engineer when it is ready for inspection.

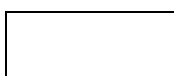
All cracks, blisters and other defects shall be cut out and made good and the whole left perfect at completion.

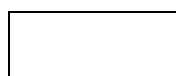
**NB** - See clause PB 5.3.2 for forming key for plaster on concrete.

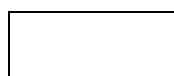
#### **PB 5.3.5 Normal Screeds To Floors**

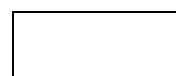
Concrete sub-floors finished with wood mosaic, vinyl sheeting and tiles, and similar finishings, shall be screeded with 3:1 cement mortar, of thickness required, but in no case less than 12 mm, and steel trowelled to a true and smooth surface suitable to receive finishings.

The screeding shall be laid before the concrete sub-floors have matured otherwise the exposed surfaces of concrete shall be thoroughly cleaned with a wire brush, and a coat of neat cement grout applied immediately before the screeding is laid.

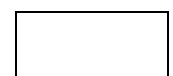
  
Tenderer

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2



The screeding shall be laid in good time to allow of it being perfectly dry when the finishings are laid.

No traffic shall pass over nor shall any building operations take place on the screeding without proper covering first being provided.

#### **PB 5.3.6 Granolithic Screeds**

Granolithic screeds shall be composed of two parts by volume of cement and three parts by volume of aggregate with sufficient water added to obtain a consistency as dry as may be practicable. The screed shall be rendered with a wood float and struck off with a steel trowel after set has commenced.

Granolithic screeds to floors, treads of steps, thresholds, and similar horizontal surfaces unless otherwise specified, shall be not less than 25 mm thick. Granolithic screeds to stair risers, sides of kerbs, and other vertical surfaces, shall, unless otherwise specified, be not less than 20 mm thick. Exposed salient angles of granolithic screeds shall be neatly rounded to approximately 20 mm radius, unless otherwise specified.

The granolithic screeds shall be laid before the concrete sub-floor has matured otherwise the exposed surface of concrete shall be thoroughly cleaned with a wire brush, and a coat of neat cement grout applied immediately before the granolithic screed is laid.

The granolithic screeds shall be laid in panels not exceeding 9 m<sup>2</sup> in area, and joined to lines of panels and lined into smaller squares as directed with sunk V-joints. The joints between the panels shall coincide with joints in the concrete sub-floor where possible.

Where granolithic screed is to be tinted it shall be laid in two layers, a lower layer laid to within 6 mm of the finished level, and an upper layer into which the requisite quantity of approved colouring pigment shall have been mixed. **No dusting on of colouring material will be allowed.**

All granolithic work shall be done by experienced workmen, and shall be protected from injury caused by rain or other extreme weather for twelve hours after being laid, and against too rapid drying whilst hardening, by being covered with wet sacks, or other suitable material, and shall be protected from injury and discolouration during the progress of the remaining work.

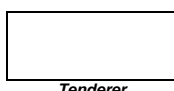
Edges of granolithic floors butting against different floor finishings, and edges of margins, etc. shall be true and sharp, and shall be protected by fixing temporary wood strips, which shall remain, in position until the commencement of the laying of the adjoining flooring material.

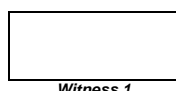
#### **PB 5.3.7 Reedings To Steps, Etc.**

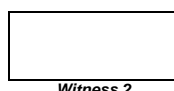
The treads of granolithic finished steps and upper surfaces of granolithic finished external thresholds shall be rendered non-slip by reeding same near front edges for a width of 100 mm stopped 100 mm from ends.

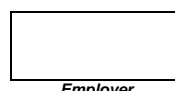
#### **PB 5.3.8 Power Floated Finish**

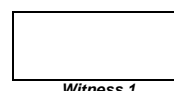
Power floated finish to floors etc., unless otherwise specified, shall be floated mechanically to smooth and even surfaces before the concrete has set. Small surfaces and inaccessible places to be floated

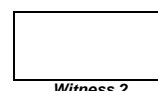
  
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by hand in a similar way. Under no circumstances is cement mortar to be added while floating the concrete.

#### **PB 5.3.9 Laying Of Concrete Paving Slabs And Paving Bricks**

Concrete paving slabs and paving bricks shall be bedded and jointed on a layer of 30 mm clean dry river sand. Joints shall be 6 mm wide, continuous in both directions, filled solidly with 3:1 cement mortar and slightly pointed with a round jointing tool. Lengths in excess of 10 metres shall be provided with expansion joints.

#### **PB 5.4 WATERPROOFING**

##### **PB 5.4.1 Damp-Proof Course In Walls**

The damp-proof course shall be the full thickness of walls above foundations and shall be laid without longitudinal joints. At end joints, angles and intermediate junctions the sheeting shall be lapped 150 mm.

Where so specified all laps in the damp-proof course shall be sealed over the whole area of laps, to an approved method. Care shall be taken not to tear or otherwise damage the sheeting.

##### **PB 5.4.2 Damp-Proof Membrane**

The damp-proof membrane under floors, etc., shall be laid in the widest practical widths to minimise joints and shall be turned up, dressed to load bearing walls and if applicable lapped with the damp-proof course in the walls. All joints shall be sealed with pressure sensitive tape applied over the leading edge of the joint.

##### **PB 5.4.3 Expansion Joints**

Expansion joints shall be at least 10 mm wide and filled in with approved bitumen impregnated soft board or closed cell expanded polyethylene strip. Expansion joints shall be sealed with a two component poly-sulphide joint sealer, 12 mm deep, according to instructions of the manufacturers.

#### **PB 5.5 CARPENTER AND JOINER**

##### **PB 5.5.1 Protection Of Timber On Site**

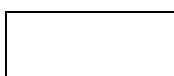
Timber stored on site shall be properly stacked when received, and adequately protected against extremes of weather and exposure to the sun, until required for use.

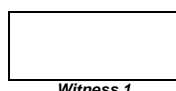
##### **PB 5.5.2 Wrought Faces**

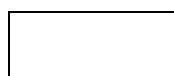
Exposed woodwork, unless otherwise specified, shall be wrought to a smooth surface, and properly sand-prepared to remove all machine or other tool marks.

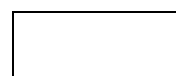
For each wrought face on structural timber, an allowance will be made off the "nominal" dimensions specified or stated on the drawings, as follows:

- (a) 2,5 mm for "nominal" dimensions up to and including 76 mm;

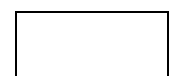
  
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Witness 1

  
Witness 2



- (b) 3,5 mm for "nominal" dimensions over 76 mm.

For each wrought face on joinery timber, an allowance will be made off the "nominal" dimensions specified or stated on the drawings, as follows:

- (a) 3 mm for "nominal" dimensions up to and including 76 mm;  
(b) 5 mm for "nominal" dimensions over 76 mm.

The above will be the nett allowances permitted off the "nominal" dimensions specified or stated on the drawings and will not be additional to the tolerances specified for sawn timbers.

All exposed angles of wrought woodwork, unless otherwise specified, shall be arris rounded. The term "arris rounded" denotes that the angles shall be rounded off to approximately 3 mm radius.

Angles of wrought woodwork specified to be angle rounded shall be rounded off to 6 mm radius, unless otherwise shown on the drawings, and shall include, in framed joinery, for housed and mitred joints.

### **PB 5.5.3 Lengths Of Timbers And Methods Of Jointing**

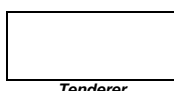
Plates, purlins, battens, laths, slats, etc., shall be in single lengths, but where this is not possible the end joints will be formed as described below. The jointing of plates, battens, etc. at junctions and angles shall also be formed as stated hereunder, viz:

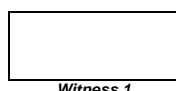
- (a) Wall plates shall be halved at joints and well spiked together, and also at junctions and angles;  
(b) Purlins shall be splayed or spliced at joints and, unless otherwise specified, using timber side plates of the same dimensions as purlins, not less than 600 mm long and four times bolted with M10 mild steel bolts, with two washers each. Adjacent purlins shall not be splayed or spliced in the same bay or on the same rafter;  
(c) Sawn battens, laths, slats, etc., shall be butt jointed at heading joints and angles, and wrought battens, laths, slats, etc., shall be splayed at heading joints and mitred at angles, all over points of support and where adjacent, shall not be jointed on the same rafter.

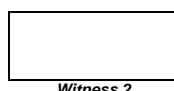
### **PB 5.5.4 Joints In Roof Trusses**

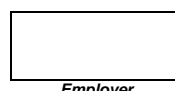
- (a) The number of connecting devices to be used at each intersection between two members at any heel joint or any splice in a truss shall be determined from the following table:

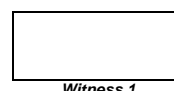
SPAN m	3 (90 x mm) NAILS PLUS M10 BOLTS AS SPECIFIED BELOW	M16 BOLTS ONLY	50 mm TOOTHED RING CONNECTIONS
3	2	2	1
4	3	2	1
5	3	2	2
6	4	3	2
7	5	3	2
8	5	3	2
9	6	4	3
10	6	4	3

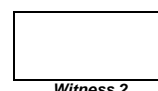
  
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Witness 2

  
Employer

  
Witness 1

  
Witness 2



- (b) In the case of any joint other than a heel joint or splice, one M10 bolt plus three 90 x 4 mm nails shall be used.

#### **PB 5.5.5 Prefabricated Roof Trusses**

Prefabricated timber roof trusses shall be constructed of South African pine as described in clause 3.17 to the designs shown on the detail drawings. The timber shall be of cross-sectional dimensions shown, cut to correct lengths with ends square or cut to the required angle, and shall be assembled in truss fabricating jigs with the truss having the proper camber, and tightly clamped together and joints secured with approved connector plates of galvanised steel sheet, pressed into the timber simultaneously on both sides of the truss with hydraulic press capable of exerting such pressure as will ensure complete penetration of the teeth into the timber. The connector plates shall be of such size as will ensure that the joints so made will adequately withstand the forces exerted on the joints, and to have at least two coats Epoxy Tar finish for coastal areas.

#### **PB 5.5.6 Valleys In Roofs**

Valleys in roofs covered with galvanised steel or fibre roofing sheets or with roofing tiles shall each be formed with two 228 mm x 25 mm sawn boards, spiked down to roof timbers, and purlins fixed along outer edges where in galvanised steel and fibre sheet covered roofs and battens along outer edges where in tile covered roofs.

#### **PB 5.5.7 Purlins**

Unless otherwise specified, purlins shall be 50 mm x 76 mm and shall be securely nailed to roof timbers at not exceeding 1,14 m centres, ranging perfectly straight and square to the roof with but joints at heading joints and angles and in the case of wrought purlins splayed joints at heading joints and mitred joints at angles.

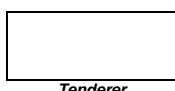
#### **PB 5.5.8 Brandering To Ceilings**

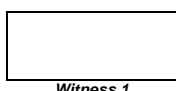
The brandering shall be 38 mm x 38 mm, securely spiked up to the supporting timbers with 88 mm wire nails at 380 mm centre-to-centre. Cross brandering shall be cut in between the longitudinal brandering and securely skew nailed to same with 75 mm wire nails at joints in ceilings and at edges where required for fixing of cornices.

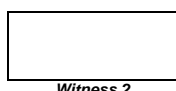
#### **PB 5.5.9 Steel Roofing Sheets**

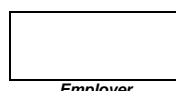
The sheets shall be secured to wood purlins with approved galvanised iron roofing screws each provided with a plastic or asphalt felt washer and a galvanised steel cup washer over the plastic or felt washer and secured to steel purlins with M6 galvanised hook bolts, provided with similar washers under nut.

Screws and bolts at ends of sheets and at end laps shall be spaced at not exceeding two corrugations apart wherever possible, but in no case more than three corrugations apart, and at intermediate purlins at not more than four corrugations apart; screws or bolts shall, in all cases, be provided in the outermost corrugations of the upper sheets.

  
Tenderer

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2



All necessary cutting to sheets shall be properly performed. Cut edges at sides of valleys, and elsewhere exposed, shall be perfectly straight.

At exposed verges of roofs the iron shall be finished with neatly formed rolls.

The sheets shall have side laps of not less than one and a half corrugations. The minimum roof slopes and sheet end laps shall be, unless otherwise specified, as prescribed in Table 2 of Schedule 2 of Part L of the National Building Regulations and Building Standards Act, 1977.

#### **PB 5.5.10 Metal Ridging For Steel Covered Roofs**

The ridging shall be 450 mm girth with roll top and bent down edges, and shall be lapped 225 mm at end joints, cut and properly lapped and fitted at intersections of ridges, hips and valleys, and close beaten into corrugations of roofing iron. Roll shall be closed at feet of hips and at end of ridging.

Ridging shall be fixed with screws to wood purlins and hook bolts to steel purlins, with washers under heads and nuts, respectively, all as described for fixing roofing sheets, and spaced at not exceeding 300 mm centres.

#### **PB 5.5.11 Fibre Cement Roofing Sheets**

The sheets shall be mitre-cut at corners as necessary and laid with smooth surface on top, and shall be secured to wood purlins with 7 mm diameter galvanised drive screws not less than 114 mm long, and to steel purlins with M8 galvanised hook bolts, each provided with a plastic or asphalt felt washer and a galvanised steel cupped washer over the plastic or felt washer.

Screw and bolt holes in sheets shall be drilled (not punched), and shall be 0,2 mm larger than the diameter of screws and bolts.

The fixing screws, and nuts on fixing bolts, shall not be tightened more than is necessary for the holding down of the sheets and for the proper seating of the washer over the corrugations, so as to allow for slight movement between the sheets and the supporting structure. On no account shall sheets be deflected at the intermediate purlins in an attempt to make the sheets bear on such purlins.

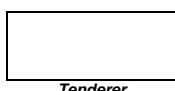
The side laps of sheets shall be sheltered from the prevailing wind by laying the sheets from left to right, or from right to left, depending on the direction of the prevailing wind, the sheets being laid in the opposite direction to that of the wind.

All necessary cutting to sheets shall be properly performed. Cut edges at sides of valleys, and elsewhere where exposed, shall be perfectly straight.

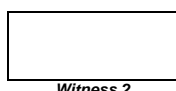
The minimum roof slopes and sheet end laps shall be, unless otherwise specified, as prescribed in Table 1 of Schedule 2 of Part L of the National Building Regulations and Building Standards Act, 1977.

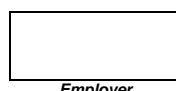
The manufacturer's instructions regarding laying and fixing of sheets, including side laps, mitring of corners and spacing of screws or bolts, shall be followed in all cases.

One month after fixing, the roof covering shall be thoroughly examined, any defects made good and loose screws or bolts tightened.

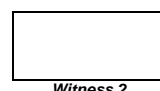
  
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Employer

  
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Roof boards shall be used by all workmen for safety and to avoid damage to the sheeting.

#### **PB 5.5.12 Adjustable Fibre Cement Ridging**

The ridging shall be secured to wood purlins with screws and to steel purlins with hook bolts, passed through the roofing sheets, and provided with plastic or felt and steel washers, all as described for fixing fibre cement roofing sheets.

The manufacturer's instructions regarding laying and fixing of the ridging, including spacing of screws or bolts, shall be followed in all cases.

#### **PB 5.5.13 Fascias And Barge Boards**

Fascias and barge boards of pressed fibre cement boards shall be butt jointed with 75 mm wide x 3 mm thick galvanised steel plates four times bolted with M6 galvanised bolts over joints.

#### **PB 5.5.14 Fibre Cement Flashings**

Fibre cement flashings shall be secured to wood purlins with screws and to steel purlins with hook bolts, passed through the roofing sheets, and provided with plastic or felt and galvanised steel cupped washers, all as described for fixing fibre cement roofing sheets.

The manufacturer's instructions regarding fixing of the flashings, including spacing of screws or bolts shall be strictly adhered to.

#### **PB 5.5.15 Fibre Cement Gutters**

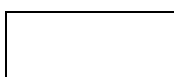
Fibre cement gutters shall be bedded in approved bituminous mastic compound and secured with M6 galvanised gutter bolts with heads of bolts on inside of gutters and each bolt provided with asphaltic felt and galvanised steel washer under head and nut, all in accordance with the manufacturer's instructions. The inside surfaces of sockets and the outside surfaces of spigot ends shall be coated with a thin solution of bitumen to enable the compound to adhere fast when applied, and surfaces of washers in contact with each other and with gutters shall be coated with bitumen. After tightening the bolts, all surplus compound from the joints shall be removed, and the joints externally finished with neatly trowelled fillets of 2:1 cement mortar.

The spigot ends of gutters shall be lapped on to the socket ends in the direction of the flow wherever possible.

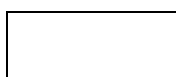
The gutters shall be fixed with proper falls on gutter brackets of the fascia type where fixed to fascia boards and of the purlin type where fixed to purlins. Brackets shall be securely screwed to the roof timbers, at not exceeding 1 m centres, and with extra brackets at angles and outlets.

Gutters shall be provided with all necessary angles, stopped ends, outlet nozzles, etc., jointed to gutters as described above.

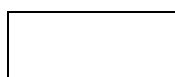
#### **PB 5.5.16 Fibre Cement Rainwater Down Pipes**



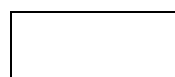
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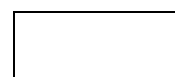
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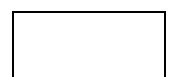
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Fibre cement rainwater downpipes shall be jointed with tarred hemp rope gasket caulked into each joint, and the joint filled with a suitable bitumen compound and finished off with neatly trowelled fillet of 2:1 cement mortar.

The pipes shall be fixed to walls with holderbats, bolted around pipes immediately below the socket, and with tails built into walls in 3:1 cement mortar.

Rainwater downpipes shall be provided with all necessary swan necks, branch pieces, plinth bends, radius bends, shoes, etc., jointed to pipes as described above.

#### **PB 5.5.17 Concrete Roofing Tiles**

Tiling shall be "straight or broken bond", and vertical joints between tiles and bottom edge of each course of tiles shall range perfectly straight. Unless otherwise specified, interlocking tiles shall be laid to a lap of at least 100 mm and plain tiles to a lap of at least 62 mm.

Half tiles in the case of interlocking tiles, and tile and a half in the case of plain tiles, shall be provided as required at abutments and at verges of roofs. Plain tile roofs shall be provided with double course at eaves.

Unless otherwise specified, each tile in every third course in the case of interlocking tiles, and in every fifth course in the case of plain tiles; all tiles in eaves courses and ridge courses; end tiles in every course at each side of hips and valleys; all tiles adjoining bonnet hip tiles in plain tile roofs; half tiles, full tiles and tile and a half at verges, and all tiles to open eaves and open overhanging verges, shall be fixed to the battens with galvanised nails of such length as will penetrate the battens to a depth of at least 25 mm.

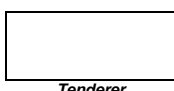
Tiling shall be carefully cut and dressed at hips and valleys and, where necessary at abutments, etc. Mitred portions of tiles at hips and valleys shall be holed and properly secured.

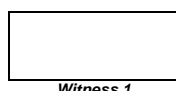
Hip and ridge tiles for interlocking tile roofs shall be socketed V-type, shall match general tiling, and shall be bedded solid in 3:1 cement mortar with strip of approved bituminous sheeting laid under the mortar bedding, of such width as will give a lap of at least 25 mm on to the roof tiling at each side, and lapped not less than 75 mm at end joints. Socketed joints of hip and ridge tiles shall be bedded in mortar as above and pointed with neatly recessed joints, and hip iron of 25 mm x 4,5 mm mild steel 300 mm long, suitably bent, twice holed and securely nailed to hip rafter, shall be provided at foot of each hip. The mortar bedding shall be trowelled smooth at open ends of ridges.

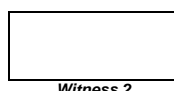
Ridge tiles for plain tile roofs shall be as above but half-round and but jointed and neatly pointed in tinted 3:1 cement mortar, and hip tiles shall be round pattern bonnet type, to course and bond in with general tiling, and with each tile bedded and neatly pointed in mortar as above and nailed to hip rafter with galvanised nail.

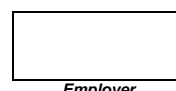
Hip and ridge tiles shall be neatly cut and fitted together at junctions between ridges and hips or valleys, and shall be bedded solid and neatly pointed in tinted 3:1 cement mortar with approved bituminous sheeting under the mortar bedding, cut to shape required and with lap of 25 mm on to the roof tiling.

#### **PB 5.5.18 Covering To Ceilings**

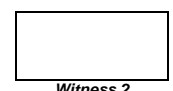
  
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(a) **Gypsum plasterboard ceilings with plaster finish**

The ceiling boards shall be in 900 mm or 1 200 mm widths, with board at ends of ceilings of widths required to suit length of ceilings. Ceiling board shall be in single lengths to the width of ceilings wherever possible.

The boarding shall be nailed to the brandering, with GREY surface to underside, with 2 mm diameter galvanised or cadmium plated clout headed nails, 38 mm long, spaced at not more than 100 mm apart at edges of boards and 150 mm apart along the intermediate brandering.

The joints between boards shall be loose butt joints and covered with wire gauze strips nailed through the boarding to the brandering at 400 mm centres with 38 mm galvanised clout headed nails.

The bonding plaster shall be applied in two layers by the trowel-float-method to a total thickness of not less than 6 mm, and well pressed into the wire scrim over the joints between the ceiling boards, and finished smooth, even and true.

(b) **Fibre cellulose board ceilings**

The ceiling boards shall be in the same widths, and fixed as specified for gypsum plasterboard ceilings in paragraph (a).

The joints between the boards shall be covered with 25 mm half-round wood cover beads fixed with 38 mm long nails spaced at not exceeding 300 mm.

**PB 5.5.19 Cove Cornices To Ceilings**

(a) **Gypsum plasterboard cornices**

Cove gypsum plasterboard cornices shall be nailed through the ceiling boards to the brandering and to wall plugs, at not exceeding 200 mm centres, with 2 mm diameter galvanised or cadmium plated clout headed nails, 38 mm long, or fixed to walls with hardened steel nails driven into the brickwork. Cornices shall be scribed at internal angles and mitred at external angles and shall be in long lengths with splayed heading joints where necessary.

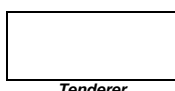
(b) **Timber cornices**

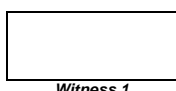
Scotia's shall be fixed to walls with hardened steel nails driven into the brickwork.

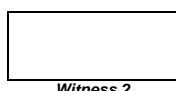
**PB 5.5.20 Trapdoors In Ceilings**

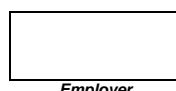
Openings for trapdoors in ceilings shall be formed with 38 mm x 38 mm brandering all around each opening, spiked together and to bottom edge of the supporting timbers. Size of opening, unless otherwise specified, shall be 650 mm x 650 mm.

Trapdoor shall be formed with skeleton frame of 50 mm x 38 mm brandering, covered on underside with boarding as for ceiling, and hung on a pair of 75 mm steel butts and fitted on underside near closing edge with 100 mm brass bow handle. Soffit of trapdoor shall be flush with soffit of ceiling when closed, and trapdoor shall flap back on to top of the brandering, between tie beams or ceiling joists when open.

  
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Employer

  
Witness 1

  
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When trapdoor is closed it shall rest on 50 mm x 19 mm fillets, fixed on soffit of ceiling all around opening, mitred at angles and securely screwed up to the trimmers. Fillets shall project 12 mm into the opening to carry the trapdoor.

Trapdoors larger than 650 mm x 650 mm shall each be provided with 38 mm x 38 mm banderling across centre, spiked to the skeleton frame.

#### **PB 5.5.21 Ceiling Insulation**

Ceilings shall be insulated, where so specified, with approved resin bonded or stitched fibre glass or mineral wool insulation blanket 38 mm thick, cut to size and laid over banderling between ceiling joists and tie beams, etc.

Where insulation is to be in two thicknesses a total thickness of 76 mm is required and the joints shall be staggered.

#### **PB 5.5.22 Framed Joinery**

Where the word "Framed" is used it is to include for all mortice and tenon joints, dovetail joints, grooves, stop grooves, rebates, stop rebates, housings, notchings, etc., including housing ends of shelves, divisions, etc.

#### **PB 5.5.23 Joinery**

Joinery work shall be put in hand immediately after the order has been given to commence work, or after the receipt of detail, where such are to be supplied, and shall not be wedged or glued up until just before fixing in the building.

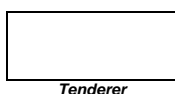
No framed joinery for services situated inland shall be manufactured in the humid coastal belt, and no framed joinery for the services situated in the coastal belt shall be manufactured inland. This applies to both purpose made and stock joinery.

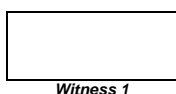
All exposed softwood timber in joinery which is not to be painted shall be free from large, loose or dead knots, knot holes, checks, splints, wane or other defects, and in joinery which is to be painted shall be free from all defects other than those which can be filled or otherwise made good in such a way as will not impair the paint finish. All exposed hardwood joinery timber shall be free from all knots, knot holes, checks, splints or other defects and, unless otherwise specified, shall also be free of sapwood.

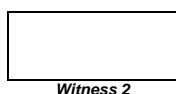
Purpose made joinery shall be manufactured strictly in accordance with detail drawings.

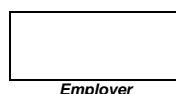
Stock joinery shall be of approved quality. Joinery shall not be primed until it has been inspected and approved.

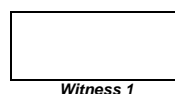
Skirting, rails and the like shall be in long lengths. Heading joints where necessary shall be splayed. Counter tops, table tops, drainers, and the like, shall be formed with wide boards, jointed with grooved, cross-tongued and glued joints or with grooved rebated and glued joints of approved type; cross-tongues shall be stopped 25 mm back from ends where ends are exposed to view. The boards

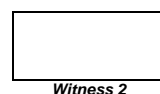
  
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shall be in single lengths to top, etc., but where this is not possible the heading joints shall be staggered and jointed as above.

Skirting, rails, angle moulds and beadings of all kinds, shall be close fitted, mitred or scribed at angles, and securely fixed; skirtings, rails and the like shall be fixed with hardened steel or other suitable nails driven into the brickwork or shall be nailed to wall plugs spaced at not more than 700 mm apart. Glazing beads and the like shall be mitred at angles and, unless otherwise specified, shall be fixed with panel pins.

## **PB 5.6 METALWORK**

### **PB 5.6.1 Manufactured Steelwork Generally**

Welding is to be done electrically in the most up to date manner by skilled workmen and cleaned off on completion.

All welds are to be welded with welding rods of the same chemical composition as the tubes, rods, bars, etc., to be welded and all external welds are to be filed clean and smooth.

Welding to be continuous fillet welding to all exposed edges unless otherwise described.

No scaffolding shall be allowed to rest on or fixed to steel windows, doors, frames, etc., in any way.

## **PB 5.7 RESILIENT FLOOR FINISHINGS**

### **PB 5.7.1 Laying And Fixing**

Vinyl sheeting and tiles and such like floor finishings shall be laid in strict accordance with the manufacturer's instructions, on a perfectly dry and clean screeded surface, using an adhesive supplied or recommended by the manufacturer of the flooring material, and rolled with a suitable roller to ensure complete adhesion of the material. The flooring shall be cut where required and neatly fitted against adjoining floors, thresholds, etc. Vinyl skirtings shall be close fitted to floors and walls, butted at end joints, neatly mitred at internal angles and dressed round external angles, and fixed with adhesive as for flooring.

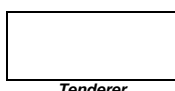
Unless otherwise described, sheet flooring shall be in standard widths with cut sheets at sides of floors as necessary.

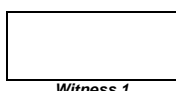
## **PB 5.8 GLAZIER**

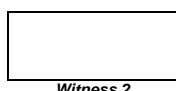
### **PB 5.8.1 Fixing Of Glass**

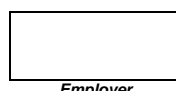
Glass fixed with glazing beads in unpainted hardwood doors shall be bedded on strips of rubber, velvet, leather, or felt turned over on to both sides of glass in the rebates to form a soft packing between the glass and the woodwork. In all other cases the glass shall be well bedded in back putty in the rebates.

Glass rebates, other than in unpainted hardwood doors, shall be primed before glazing.

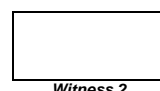
  
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Employer

  
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Glass panes exceeding 0,5 m<sup>2</sup> in surface area and fixed with putty only in wood doors, sashes and the like shall be secured in addition with glazing sprigs, and in steel windows and doors with glazing pegs or clips inserted in holes in the steel framing.

Glass panes shall have adequate clearance between the edges of glass and the rebates.

Putty shall be carefully trimmed and cleaned off with front putty worked to within 3 mm of the sight lines.

## **PB 5.9 PAINTER**

### **PB 5.9.1 Preparatory Work**

#### **(a) General**

All floors must be swept clean and walls dusted down, and surfaces not being painted such as face brickwork, sills, floors and stained woodwork covered up and protected against spotting, before any painting is commenced.

No sweeping or dusting shall be done whilst painting is in progress or whilst paint is still wet.

#### **(b) On woodwork**

Woodwork being painted shall be well brushed down, knots treated with knotting, and all surfaces primed, stopped with hard stopping and rubbed down to an even surface ready to receive the paint. Woodwork being oiled or stained shall have all plaster stains, pencil marks and other surface discolourations and blemishes carefully removed, and stopped with tinted stopping and well rubbed down.

#### **(c) On metalwork**

All metal surfaces being painted, except steel structures shall be cleaned of all rust, scale and dirt by scraping or by means of steel wire brushes; also all oil and grease shall be removed and a perfectly clean surface obtained. If necessary the surface shall be decreased immediately before applying the priming coat, by the use of a suitable grease-removing solvent; any salt deposits on the metal surfaces as may occur in industrial and marine atmospheres shall be removed by the use of a suitable detergent and the surface then thoroughly rinsed and allowed to dry.

New galvanised metal surfaces and surfaces of all non-ferrous metals, which are to be painted, shall be cleaned down as above and given one coat of wash primer (metal etch primer).

Protective coatings on new galvanised metal surfaces, applied by the manufacturers to prevent storage stain and white rust, shall be completely removed by the use of a suitable cleaning agent and the surfaces thoroughly rinsed and allowed to dry, before the surfaces are primed or painted.

After cleaning off rust on metalwork those portions so affected shall be treated with an approved rust inhibitor.

#### **(d) On plaster**

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*Employer*

*Witness 1*

*Witness 2*



All plastered wall, ceiling and such like surfaces being painted or distempered shall be filled where necessary with suitable stopping or patching plaster and the whole rubbed down ready to receive the finishings.

(e) **On ceilings**

Boarded ceilings, cover strips and cornices being painted or distempered, shall be filled where necessary with suitable stopping and all nail heads in ceilings, cover strips and cornices being distempered shall be primed with flat paint.

**PB 5.9.2 Surfaces To Be Dry**

All plastered wall, ceiling and similar surfaces shall be perfectly dry and in a fit state to receive the finishings, before the work is put in hand.

**PB 5.9.3 Priming**

Wood, metal and other surfaces normally primed before being painted shall be prepared and primed as before described in readiness to receive the specified paint system.

Backs of wood door and similar frames and surfaces of other new or re-fixed joinery in contact with brickwork, etc., and built in as the work proceeds, shall be primed before building in whether the articles are to be painted or not, to prevent moisture seeping into the wood from the mortar bedding.

Wood surfaces shall be knotted, primed and stopped before being coated with emulsion paint or distemper.

Tongued and grooved and rebated edges of boards in batten doors, and other suchlike inaccessible parts of joinery shall, before the joinery is assembled, be primed or where the joinery is to receive a finish other than paint, be given one coat of such other finishing material.

Priming to external structural timbers shall be applied before the timbers are fixed in position and shall include all wrought surfaces, such as backs of fascia and barge boards.

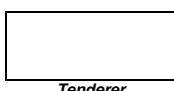
**PB 5.9.4 Application Of Paint**

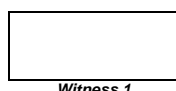
All coats of paint shall be thoroughly dry before subsequent coats are applied and rubbed down where necessary.

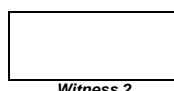
All work shall be finished to colour approved by the Engineer. The tints of undercoats shall approximate those of the finishing colour and in order to indicate the number of coats applied and to avoid misses when applying a succeeding coat, a slight difference shall be made in tint of each coat.

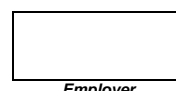
Priming on wood surfaces shall be by brush application. Priming on surfaces other than wood shall be by brush application or if in the opinion of the Engineer, the primer and the surfaces are considered suitable for roller application, the primer may be so applied. Priming applied by brush application shall be well brushed in to obtain maximum penetration.

Undercoat and finishing coats may be applied by brush or roller.

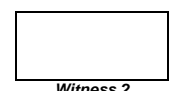
  
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The use of spray gun on site for application of paint will not be permitted, except in the case of cellulose and other special cases where spraying is the accepted method of application; in cases where spraying is permitted all surrounding surfaces shall be properly masked.

The finishing coat on woodwork and metalwork, unless otherwise specified, shall be of high gloss paint. All materials shall be used in strict accordance with the manufacturer's instructions.

#### **PB 5.10 PROTECTION AND CLEANING OF WORKS**

The Contractor shall provide all necessary dust sheets, covers, etc., and shall exercise all necessary care to prevent marking surfaces of walls, floors, ceilings, glass, electrical fittings, etc., and shall keep all parts of the works perfectly clean and free at all times from spotting, accumulation of rubbish, debris or dirt arising from the operations. Any surface disfigured or otherwise damaged shall be completely renovated or replaced as necessary, to the Engineer's approval, by the Contractor at his own expense.

The Contractor shall test all doors, fanlights and windows and all other fittings for proper operation and effect the required rectification prior to the handing over of the building.

The premises shall be left clean and fit for occupation at the completion of the work.

#### **PB 6 TOLERANCES**

##### **PB 6.1 BASIS OF MEASUREMENT**

###### **PB 6.1.1 General**

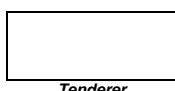
Permissible deviations will apply in the case of linear dimensions, position, and level. The Contractor shall construct each of the various parts of the works within the limits of the applicable permissible deviations set out in clause 6.2 unless some other degree of accuracy is required in terms of the project specification or is shown on the drawings.

###### **PB 6.1.2 Methods Of Measurement Of Deviations**

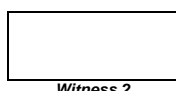
Certain deviations will be measured as set out below:

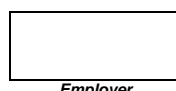
- (a) Any deviation from flatness of a plane surface, will be measured as the maximum deviation of the surface from any straight line of length 3 m joining two points on the surface, determined by means of a straight edge the ends of which are supported on identical blocks of suitable thickness placed one over each of the points.
- (b) Any abrupt change in a continuous surface, including a local depression or peak in a floor or wall, will be measured as specified in (a) above.
- (c) Out-of-squareness of a corner or an opening or an element such as a column will be measured by taking the longer of two adjacent sides as the base line, and determining any departure from the perpendicular of the side at either end of this base line.

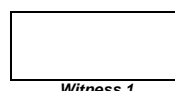
##### **PB 6.2 PERMISSIBLE DEVIATIONS**

  
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The permissible deviations for elements or components shall be as follows:

- (a) Position on plan of any edge or surface measured from the nearest grid line or agreed centre line .....  $\pm 25$  mm
- (b) Linear (other than cross-section) dimensions .....  $\pm 30$  mm
- (c) Cross-section dimensions .....  $-10 + 20$  mm
- (d) Level (deviation from designed level with reference to the nearest transferred datum (TD) of the upper or lower surface, as may be specified, of any slab or other element or component) .....  $\pm 10$  mm
- (e) Out-of-squareness of a corner or an opening or an element such as a column (See clause 6.1.2(c)) for short side of length:
  - (i) up to and including 0,5 m .....  $\pm 5$  mm
  - (ii) over 0,5 m up to and including 2 m .....  $\pm 15$  mm
  - (iii) over 2 m up to and including 4 m .....  $\pm 20$  mm
- (f) Exposed surface (including floor slabs and paving):
  - (i) Flatness of plane surface .....  $\pm 5$  mm
  - (ii) Abrupt changes in a continuous surface .....  $\pm 5$  mm
- (g) Exposed surface to be plastered or receive normal or granolithic screeds:
  - (i) Flatness of plane surface .....  $\pm 10$  mm
  - (ii) Abrupt changes in a continuous surface .....  $\pm 5$  mm
- (h) Surface of plaster and normal or granolithic screeds .....  $\pm 5$  mm

## **PB 7 TESTS**

### **PB 7.1 GENERAL**

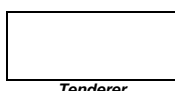
The Engineer shall have free access to the works for taking samples and carrying out tests. The Contractor shall render any assistance necessary. If so required, the Contractor shall provide storage and protection of such samples on site.

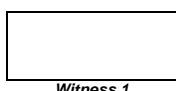
## **PB 8 MEASUREMENT AND PAYMENT**

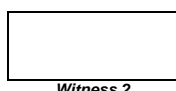
### **PB 8.1 GENERAL**

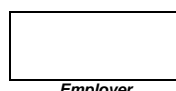
PB 8.1.1 All items in this section will be measured by number, square metre or linear metre completed and the tendered rates shall include full compensation for the supply, delivery, handling and installation of all materials, the provision of all necessary labour and supervision, transport, plant, equipment and incidentals necessary to complete, protect and maintain the works as specified or as shown on the drawings.

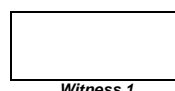
PB 8.1.2 Where a lump sum is required for a complete structure the tendered rate shall include all items and contingencies, as specified in this section or as shown on the drawings.

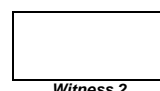
  
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## **PB 8.2 SCHEDULED ITEMS**

### **PB 8.2.1 Brickwork ..... Unit : m<sup>2</sup>**

Brickwork will be measured on the centre line of the walls. Areas occupied in walls by windows and doors will be excluded from the areas measured, and corners and intersections common to more than one brick wall will be measured once only.

The rate shall cover the cost of brickwork complete as specified, including test sections where specified, pointing, providing brick lintels, brick reinforcement and ties, etc., the building in of conduits, beams, pipe sleeves, doors and windows, the raking out of joints and the filling of cavities in cavity walls and walls constructed of hollow concrete masonry units, below floor level and elsewhere where specified.

The test section for faced brickwork as specified in clause 5.1.14 shall only be paid for if approved by the Engineer and, if rejected, shall be removed at the Contractor's expense.

### **PB 8.2.2 Air Bricks**

(a) External air bricks ..... Unit : No

(b) Internal air bricks ..... Unit : No

The rate shall cover the cost of providing and building in the air bricks as specified.

### **PB 8.2.3 Bagged Finish To Brickwork ..... Unit : m<sup>2</sup>**

The rate shall cover the cost of providing rough sacking, additional cement grout as required and finishing the bagging as specified.

### **PB 8.2.4 Window Sills**

(a) External (describe) ..... Unit : m

(b) Internal (describe) ..... Unit : m

The rate shall cover the cost of providing and building in face bricks, fibre cement sheets or any other material prescribed, as well as all accessories specified.

### **PB 8.2.5 Tiling ..... Unit : m<sup>2</sup>**

The rate shall cover the cost of providing all material and the laying and grouting of tiles, complete as specified.

### **PB 8.2.6 Plaster Work ..... Unit : m<sup>2</sup>**

The rate shall cover the cost of the construction of the plaster work, including the supply of all materials, mixing, applying, finishing, forming reveals, joints, etc., complete as specified.

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#### **PB 8.2.7 Floor Screeds**

(a) Normal screeds ..... Unit : m<sup>2</sup>

(b) Granolithic screeds ..... Unit : m<sup>2</sup>

The rate shall cover the cost of the construction of the floor screeds, including the supply of all materials, mixing, laying, finishing, the forming of nosings, reedings, skirtings, etc. and, where the concrete sub-floor has matured, of the brushing and applying a cement grout, complete as specified.

#### **PB 8.2.8 Paving ..... Unit : m<sup>2</sup>**

The rate shall cover the cost of providing paving slabs or bricks, sand bedding and joint filling and expansion joint material and of constructing the paving.

#### **PB 8.2.9 Waterproofing**

(a) Damp-proof course in walls ..... Unit : m

(b) Damp-proof membrane under floors ..... Unit : m<sup>2</sup>

The unit shall be the net length or area of waterproofing installed. The length or area of overlaps shall not be measured for payment.

The rate shall cover the cost of providing and laying all material as specified, including the sealing of all laps and joints, complete as specified.

#### **PB 8.2.10 Expansion Joints ..... Unit : m**

The rate shall cover the cost of providing and installing all filling and sealing material and of the forming of expansion joints, complete as specified.

#### **PB 8.2.11 Structural Timber**

(a) Wall plates (indicate size) ..... Unit : m

(b) Beams (indicate size) ..... Unit : m

(c) Joists (indicate size) ..... Unit : m

(d) Rafters (indicate size) ..... Unit : m

(e) Purlins (indicate size) ..... Unit : m

(f) Branderling (indicate size) ..... Unit : m

(g) Roof trusses complete (indicate drawing number) ..... Unit : No

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\_\_\_\_\_  
Witness 2

\_\_\_\_\_  
Employer

\_\_\_\_\_  
Witness 1

\_\_\_\_\_  
Witness 2



The rate shall cover the cost of the supply of all materials, manufacture, cutting, waste, laps, joints and fixing of the timber as indicated, including nails, bolts, nuts, washers, hoop irons, ties and other fixtures required, complete as specified.

**PB 8.2.12 Roof Covering ..... Unit : m<sup>2</sup>**

The rate shall cover the cost of providing and fixing all roof covering material as prescribed, including all flashings, soakers, valleys, ridge coverings, roofing screws and all other fixtures required to complete the work, as specified.

**PB 8.2.13 Fascias And Barge Boards ..... Unit : m**

The rate shall cover the cost of providing and fixing of all material, fixtures, screws, bolts, nuts, washers and other accessories required to complete the work, as specified.

**PB 8.2.14 Gutters And Rain-Water Down pipes**

(a) Gutters .....Unit : m

(b) Rainwater downpipes ..... Unit : No

The rate shall cover the cost of supply and building in of all material including angles, stopped ends, outlet nozzles, gutters, gutter brackets, etc. for gutters and swan necks, branch pieces, plinth bends, radius bends, shoes, brackets, etc. for rainwater downpipes, including all bolts and sealants, complete as specified.

**PB 8.2.15 Ceilings**

(a) Ceilings ..... Unit : m<sup>2</sup>

(b) Cornices to ceilings ..... Unit : m

The rate shall cover the cost of supply and installation of all material including cover strips to joints, nails, trapdoors and gypsum plaster where prescribed, complete as specified.

**PB 8.2.16 Ceiling Insulation ..... Unit : m<sup>2</sup>**

The rate shall cover the cost of supply and installation of all material, as specified.

**PB 8.2.17 Joinery**

(a) Doors (type and size indicated) ..... Unit : No

(b) Skirtings (size indicated) ..... Unit : m

(c) Other items (describe or indicate drawing number) ..... Unit : No or m

The rate shall cover the cost of the supply of all material, manufacture, cutting, waste, fixing and installation of the joinery items, complete as specified.

Tenderer

Witness 1

Witness 2

Employer

Witness 1

Witness 2



The rate for doors shall also cover the cost of the door frames and all accessories, such as hinges, hooks, bolts, locks, latches, etc., and of damp-proof course on both sides and above door frames in cavity walls, as specified.

**PB 8.2.18 Metalwork ..... Unit : No**

The rate shall cover the cost of supplying all material, manufacture, applying priming coat of paint or galvanising, as specified, delivery and building in of units, including burglar proofing where specified, locks, catches, glazing, etc., and of damp-proof course under all windows and on both sides and above frames in cavity walls, as specified.

**PB 8.2.19 Resilient Floor Finishings**

(a) Vinyl-fibre, PVC, or thermoplastic floor tiles (specify) ..... Unit : m<sup>2</sup>

(b) Vinyl cove skirting ..... Unit : m

The rate shall cover the cost of supplying all material and adhesives required and the laying of the floor finishings.

**PB 8.2.20 Painting ..... Unit : m<sup>2</sup> or Sum**

Only the surface covered by the final finishing coat shall be measured.

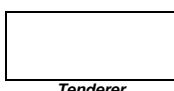
The rate shall cover the cost of surface preparation, supplying and applying all the coats of paint, repairing any damaged surfaces, and all materials necessary for completing the work.

**PB 8.2.21 Electrical Installation ..... Unit : Sum**

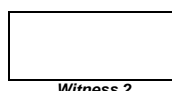
The rate shall cover the cost of supplying and building in of all equipment such as switchboards, conduits, wires, cables, sockets, light fittings, etc., cutting recesses, chases and holes in walls as required and repairing any damaged surfaces after installation, including testing of the installation.

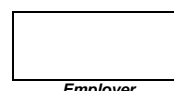
**PB 8.2.22 Miscellaneous ..... Unit : No, Sum or m**

The rate shall cover the cost of all workshop detail drawings, where prescribed, material, plant, tools and labour to complete the scheduled items complete, as detailed, including corrosion protection and/or painting, as specified, and building in.

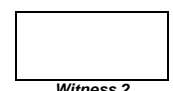
  
Tenderer

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2