

Blackley Crematorium Specification

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ASHP COMPOUND

New walls to ASHP compound to be Red/Brown facing Clay bricks to BS EN 771-1. 215mm x 102mm x 65mm common bricks to match existing walls. Laid stretcher bond in 1:4 mortar mix. Wall to be double skin 215mm thick overall.

Top of wall to be capped with smooth faced Class A engineering brick, laid header course and in 1:1:5 mortar.

Vertical movement joints at 9m centres and not more than half that spacing from a corner

EXECUTION

Workmanship generally Standard: To BS 5628-3.

Avoidance of suction in concrete bricks/ blocks: Do not wet.

Use of water retaining mortar admixture: Submit details.

Laying generally

Mortar joints: Fill vertical joints. Lay bricks, solid and cellular blocks on a full bed. Bond where not specified: Half lap stretcher.

Vertical joints in facework: Even widths. Plumb at every fifth cross joint along course.

Height of lifts

General: Rack back when raising quoins and other advance work. Walling using cement gauged or hydraulic lime mortar:

Lift height: 1.2 m (maximum) above any other part of work at any time.

Daily lift height: 1.5 m (maximum) for any one leaf. Walling using thin joint mortar glue:

Lift height: 1.3 m (maximum) above any other part of work at any time.

Levelling of separate leaves using cement gauged or hydraulic lime mortar

Locations for equal levelling of cavity wall leaves: As follows:

Every course containing vertical twist type ties or other rigid ties.

Every third tie course for double triangle/ butterfly ties.

Courses in which lintels are to be bedded.

Coursing brickwork

Gauge for new work with bricks of 65 mm work height: Four brick courses including bed joints to 300 mm. Tying in to existing brickwork: Line up with existing brick courses.

Laying frogged bricks

Single frogged bricks: Frog uppermost. Double frogged bricks: Larger frog uppermost.

Frog cavity: Fill with mortar.

Support of existing work

Joint above inserted lintel or masonry: Fully consolidated with semidry mortar to support existing structure.

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Jointing

Struck joints consistent in appearance.

Accessible joints not exposed to view: Struck flush as work proceeds.

Pointing

Joint preparation: Remove debris. Dampen surface.

Adverse weather

General: Do not use frozen materials or lay on frozen surfaces. Air temperature

requirements: Do not lay bricks/ blocks:

In cement gauged mortars when at or below 3°C and falling or unless it is at least 1°C and rising.

In hydraulic lime: sand mortars when at or below 5°C and falling or below 3°C and rising.

In thin joint mortar glue when outside the limits set by the mortar manufacturer.

Temperature of walling during curing: Above freezing until hardened.

Newly erected walling: Protect at all times from:

Rain and snow.

Drying out too rapidly in hot conditions and in drying winds.

Facework

Colour consistency of masonry units:

Methods to ensure that delivered units are consistent and of an even colour range within deliveries: Submit proposals.

Conformity: Check each delivery for consistency of appearance with previous deliveries and with approved reference panels; do not use if variation is excessive.

Finished work: Free from patches, horizontal stripes and racking back marks.

Appearance:

Brick/ block selection: Do not use units with damaged faces or arrises.

Cut masonry units: Where cut faces or edges are exposed cut with table masonry saw.

Quality control: Lay masonry units to match relevant reference panels.

Setting out: To produce satisfactory junctions and joints with built-in elements and components.

Coursing: Evenly spaced using gauge rods.

Lifts: Complete in one operation.

Methods of protecting facework: Submit proposals.

Ground level: Commencement of facework: Not less than 150 mm below finished level of adjoining ground or external works level. Putlog scaffolding: Not permitted in facework.

Toothed bond: New and existing facework in the same plane: Bond together at every course to achieve continuity of bond and coursing.

Cleanliness:

Facework: Keep clean.

Mortar on facework: Allow to dry before removing.

Removal of marks and stains: Rubbing not permitted.

Removal of marks and stains: Rubbing not permitted.

Mortar Pointing

Brickwork joints to be neatly struck off and flush with bricks, using a 1:1:5 mortar mix made up with matching colour mortar. A test panel should be carried out on site prior to commencement of main works which is to be approved by the Employer

MORTARS

Admixtures for site made cement gauged and hydraulic lime: sand masonry mortars
Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.

Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.

CEMENTS FOR MORTAR

Cement: To BS EN 197-1 and CE marked.

Type: Portland cement, CEM I. Portland limestone cement, CEM II/A-L or CEM II/A-LL.

Portland slag cement, CEM II/B-S,

Portland fly ash cement, CEM II/B.

Strength class: 32.5, 42.5 or 52.5.

White cement: To BS EN 197-1 and CE marked.

Type: Portland cement, CEM I.

Strength class: 52.5.

Sulphate resisting Portland cement.

Type: To BS 4027 and Kitemarked. To BS EN 197-1 fly ash cement, CEM II/B-V and CE marked.

- Strength class: 32.5, 42.5 or 52.5.

Masonry cement: To BS EN 413-1 and CE marked, class MC 12.5.

Lime: sand for cement gauged masonry mortars

Ready mixed:

- Standard: To BS EN 998-2.
- Lime: Nonhydraulic to BS EN 459-1, type CL 90S.
- Pigments for coloured mortar: To BS EN 12878.

Site made:

- Permitted use: Where a special colour is not required and in lieu of factory made ready-mixed material.

- Lime: Nonhydraulic to BS EN 459-1, type: CL 90S.

- Mixing: Thoroughly mix lime with sand, in the dry state. Add water and mix again.

Allow to stand, without drying out, for at least

16 hours before using.

Retarded ready to use cement gauged masonry mortars

Standard: To BS EN 998-2.

Lime for cement:lime:sand mortars: Nonhydraulic to BS EN 459-1.

- Type: CL 90S.

Pigments for coloured mortars: To BS EN 12878.

Time and temperature limitations: Use within limits prescribed by mortar manufacturer.

- Retempering: Restore workability with water only within prescribed time limits.

Sand for lime: sand masonry mortars

Type: Sharp, well graded.

- Quality, sampling and testing: To BS EN 13139.

Sand for site made cement gauged masonry mortars

24598 MCC Equans PSDS - Decarbonisation Scheme of Blackley Crematorium

Standard: To BS EN 13139.

- Grading: 0/2 (FP or MP). Fines content where the proportion of sand in a mortar mix is specified as a range (e.g. 1:1: 5 – 6):

Lower proportion of sand, use category 3 fines. Higher proportion of sand, use category 2 fines.

Sand for facework mortar: Maintain consistent colour and texture. Obtain from one source.

EXECUTION

Making cement gauged mortars

Batching: By volume. Use clean and accurate gauge boxes or buckets.

- Mix proportions: Based on dry sand. Allow for bulking of damp sand.

Mixing: Mix materials thoroughly to uniform consistency, free from lumps.

- Mortars containing air entraining admixtures: Mix mechanically. Do not overmix.

Working time (maximum): Two hours at normal temperatures.

Contamination: Prevent intermixing with other materials.

DPC

IKO Hyload Permabit DPC to Agrément Certificate 88/1966 IKO PLC, Appley Lane North, Appley Bridge, Wigan, Lancashire, WN6 9AB t: 01257 256 864
technical.uk@iko.com www.ikogroup.co.uk

COMPOSITION

Material: Bitumen Polymer

Form: Roll

Colour: Black

General Dimension Data

Thickness: 1.25mm

Weight: 1.6kg/m²

Roll Length: 20m

Roll Width: 100mm – 1000mm

Surface Finishes: (upper) Smooth/ rubbery (lower) Smooth/ rubbery

DPC laid in continuous lengths on full even bed of fresh mortar, with 100 mm laps at joints and full laps at angles.

Width to be at least full width of leaf unless otherwise specified. Edges of dpc's not covered with mortar or projecting into cavity.

Overlying construction: Immediately cover with full even bed of mortar to receive next masonry course.

Overall finished joint thickness: As close to normal as practicable.

Movement joints

Locate movement joint against existing build, as NO fixings into the existing Crematorium walls.

Use Polyjoint Strip White 10mm x 100mm expansion joint filler a flexible, lightweight, non-staining, polypropylene, closed-cell expansion joint filler. It is a chemical-resistant, ultraviolet stable, non-absorbent, low density, cost-effective, compressible foam that offers an extended service life in both interior and exterior applications.

Resapol Ltd, D4, Walter Leigh Way, Moss Industrial Estate, Leigh, Lancashire, WN7 3PT
websales@resapol.com 01942 609001

Seal joint with ARBOKOL 1000

Joint Preparation

The joint surfaces must be clean, dry and free from all contamination. The surfaces should be degreased using the appropriate ARBO Cleaner. Primers may be required on some substrates. It is recommended that ARBO Technical Services should be consulted, and advice obtained regarding the choice of primer for specific purposes.

Joint Backing

Where applicable, appropriate joint filler e.g. closed cell polyethylene foam, should be used to provide the correct joint depth.

All joint preparation, priming, and sealant application should be carried out in accordance with BS 8000-16: 1997 + A1: 2010, the British Standard for the sealing of joints in buildings using sealants.

Application

Arbokol 1000 is applied into the joint using an ARBO Caulking Gun.

CARLISLE® Construction Materials Ltd.

CARLISLE®

Adshead Ratcliffe & Co Ltd., United Kingdom

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E info.arbo@ccm-europe.com

SPECIFICATION COMPLIANCE

BS EN ISO 11600 – F – 12.5 P Components

Backing strips, bond breakers, primers: Types recommended by sealant manufacturer.

EXECUTION

Suitability of joints

Presealing checks:

- Joint dimensions: Within limits specified for the sealant.
- Substrate quality: Surfaces regular,

Drees & Sommer 1.06, South Harrington Building, 182 Sefton St, Liverpool L3 4BQ

undamaged and stable. Joints not fit to receive sealant: Submit proposals for rectification.

Preparing joints

Surfaces to which sealant must adhere:

- Remove temporary coatings, tapes, loosely adhering material, dust, oil, grease, surface water and contaminants that may affect bond.
- Clean using materials and methods recommended by sealant manufacturer.

Vulnerable surfaces adjacent to joints: Mask to prevent staining or smearing with primer or sealant. Primer, backing strip, bond breaker: Types recommended by sealant manufacturer.

- Backing strip and/ or bond breaker installation: Insert into joint to correct depth, without stretching or twisting, leaving no gaps. Protection: Keep joints clean and protect from damage until sealant is applied.

Applying sealants

Substrate: Dry (unless recommended otherwise) and unaffected by frost, ice or snow.

Environmental conditions: Mix and apply primers and sealants within temperature and humidity ranges recommended by manufacturers. Do not dry or raise temperature of joints by heating.

Sealant application: Unless specified otherwise, fill joints completely and neatly, ensuring firm adhesion to substrates. Sealant profiles:

- Butt and lap joints: Slightly concave.
- Fillet joints: Flat or slightly convex.

Protection: Protect finished joints from contamination or damage until sealant has cured.

Use ARBO® Cleaner No.17 Xylene based cleaner suitable for the effective cleaning and degreasing of many different construction products.

Brickwork Ties

Wall ties should have a maximum horizontal spacing is 750 mm and maximum vertical spacing is 450 mm. Around openings, vertical spacing is reduced to a maximum of 225 mm.

Ancon Double Triangle 150mm long stainless steel.

Leviat, President Way, President Park, Sheffield, S4 7UR Tel: +44 (0) 114 275 5224
tech.ancon.uk@leviat.com

Standard	To EN 845-1 and PD 6697.
Tie type	PD 6697 Type 2 (Masonry – general purpose). Guidance for specification option: (150, 200 and 225 mm long). PD 6697 Type 3 (Masonry – basic). Guidance for specification option: (250 and 300 mm long).
Material	Stainless steel, grade 1.4301 (304).
Length	150 mm.
End types	Double triangle.

FOUNDATIONS

Walls to be constructed on concrete foundations to structural engineers sizing with reinforcement mesh to BS 4483, to be placed, using suitable spacers at not more than 1 m centres or closer spacing as necessary to support in position and maintain 40mm minimum cover. Depth to suit ground conditions and depth and size may vary to suit site conditions and Building Inspectors requirements

Ensure that excavations and areas to be filled are free from loose soil, rubbish and standing water. Do not use frozen materials or materials containing ice. Do not place fill on frozen surfaces. Place and compact fill against structures, membranes or buried services in a sequence and manner, which will ensure stability and avoid damage. Plant employed for transporting, laying and compacting must be suited to the type of material.

SLAB TO COMPOUND

Slab to be constructed in concrete to structural engineers sizing with reinforcement mesh to BS 4483, to be placed, using suitable spacers at not more than 1 m centres or closer spacing as necessary to support in position and maintain 40mm minimum cover. Depth to suit ground conditions and depth and size may vary to suit site conditions and Building Inspectors requirements

Ensure that area to be filled are free from loose soil, rubbish and standing water. Do not use frozen materials or materials containing ice. Do not place fill on frozen surfaces. Place and compact fill against structures, membranes or buried services in a sequence and manner, which will ensure stability and avoid damage. Plant employed for transporting, laying and compacting must be suited to the type of material.

CONCRETE

Concrete to BS EN 206-1.

Complimentary British Standard:

- Method of specifying and guidance: To BS 8500-1.
- Specification: To BS 8500-2.

Aggregates

Aggregates for concrete: To BS EN 12620.

Aggregates for exposed visual concrete:

- Limitations on contaminants: Free from absorbent particles which may cause 'popouts', and other particles such as coal and iron sulphide which may be unsightly or cause unacceptable staining.

- Colour: Consistent.

- Supply: From a single source and maintained throughout the contract.

- Samples: Submit on request.

Lightweight aggregates for concrete: To BS EN 13055-1.

EXECUTION

Ready mixed concrete

Production plant to be certified by a body accredited by UKAS to BS EN 45011 for product conformity certification of ready mixed concrete.

Source to be obtained from one source if possible, otherwise submit proposals.

Delivery notes to be retained for inspection.

Declarations of nonconformity from concrete producer: Notify immediately.

Substitution of standardized prescribed concrete for designated concrete:

Conform to BS 8500-2, clause 8.

In accordance with BS 8500-1, table A.7. Submit proposals for each substitution, stating reasons.

Site mixed concrete

Application to be used where neither strength nor appearance is critical.

Water to used mains water. Protect from contamination.

Batching by mass to be allowed for water content of aggregates.

Site made standardized prescribed concrete mixes: Conform to BS 8000-2.1, sub sections 2, 3 and 4.

Calcium chloride and admixtures containing calcium chloride are not permitted.

Construction (daywork) joints

.

While concrete is still green, remove surface laitance and expose aggregate finish.

Condition of surface immediately before placing fresh concrete: Clean and damp.

Premature water loss

Prevent water loss from concrete laid on absorbent substrates. Lay underlay and Lap edges 150 mm.

Placing

Cleanliness of surfaces immediately before placing concrete: Clean with no debris, tying wire clippings, fastenings or free water.

Pours: Maintain records for time, date and location.

Timing: Place as soon as practicable after mixing and while sufficiently plastic for full compaction.

Temperature limitations for concrete: 5–30°C.

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Continuity of pours: Place in final position in one continuous operation up to construction joints.

Placing of concrete must not:

- cause uneven dispersal, segregation or loss of ingredients;
- adversely affect the formwork or formed finishes;
- be carried out against frozen or frost covered surfaces; or
- form cold joints.

Thickness: To suit method of compaction and achieve efficient amalgamation during compaction.

Compacting

General: Fully compact concrete to full depth. Continue until air bubbles cease to appear on the top surface.

Consecutive batches of concrete: Amalgamate without damaging adjacent partly hardened concrete.

Methods of compaction: To suit consistence class and use of concrete.

Surface regularity

Sudden irregularities: Not permitted.

Measurement: Use slip gauges to BS 8204-1 or -2.

Curing

Keep surface layers of concrete moist throughout curing period, including perimeters and abutments, by either restricting evaporation or continuously wetting surfaces of concrete.

Surfaces covered by formwork: Retain formwork in position and, where necessary to satisfy curing period, cover surfaces immediately after striking.

Top surfaces: Cover immediately after placing and compacting.

- Removal of covering for finishing operations: Replace immediately thereafter.

Surface temperature: Maintain above 5°C for four days.

Records: Maintain details of location and timing of casting of individual batches, removal of formwork and removal of coverings.

Keep on site, available for inspection.

Coverings for curing: Suitable impervious sheet materials.

- Curing compounds: Do not use without consent.

Interim covering to top surfaces of concrete: Until surfaces are in a suitable state to receive coverings in direct contact, cover with waterproof sheeting held clear of the surface and seal against draughts.

Curing periods (minimum):

- Surfaces which will be exposed in the finished work, and wearing surfaces of floors and pavements: 10 days.
- Other structural concrete surfaces: 5 days.

Protection

Prevent damage to concrete, including:

- Surfaces generally: From rain, indentation and other physical damage.
- Surfaces to exposed visual concrete: From dirt, staining, rust marks and other disfiguration.
- Immature concrete: From thermal shock, physical shock, overloading, movement and vibration.
- In cold weather: From entrapment and freezing expansion of water in pockets, etc.

REINFORCEMENT FOR IN SITU CONCRETE

Reinforcement to structural engineers sizing

Ribbed weldable steel reinforcement to BS 4449.

Plain, indented and ribbed steel wire reinforcement to BS 4482.

Stainless steel bar reinforcement to BS 6744.

Fabric reinforcement to BS 4483.

EXECUTION

Cutting, bending and labelling

Standard to BS 8666.

Site bending/ reshaping is not permitted for Grade 500 bars. Obtain instructions for other grades.

Cleanliness

Clean and free of substances which may adversely affect the reinforcement, concrete or bond between the two.

Laps and splices

For details not shown on structural engineers' drawings:

- Laps in bar reinforcement (minimum): Tension lap length to BS 8110-1, table 3.27 appropriate to the concrete strength.
- Laps in fabric reinforcement (minimum): Tension lap length to BS 8110-1, table 3.27 for the same grade bar reinforcement and appropriate to the concrete strength. Avoid four layer build-up at corners.

Fixing

Before placing concrete, fix reinforcement in position.

Provide adequate support, tie securely and maintain the cover. Prevent contact between ordinary carbon steel and stainless or galvanized reinforcement

Spacers: To BS 7973-1 and -2.

Tying: Tie with 16 gauge black annealed tying wire. Do not intrude tying wire into the concrete cover. Remove loose ends.

- Stainless steel reinforcement: Tie with 16 gauge annealed stainless steel wire.

Finish to be smooth steel trowelled level laid to 1:200 falls to gates

BRICKWORK

PRODUCTS

New bricks to match existing bricks: To BS EN 771-1.

EXECUTION

Workmanship generally

Standard: To BS 5628-3.

Bricks delivered warm from manufacturing process: Do not use until cold.

Absorbent bricks in warm weather: Wet to reduce suction. Do not soak.

Conditioning concrete bricks/ blocks

Use of water retaining mortar admixture: Submit details.

Laying generally

Mortar joints: Fill vertical joints. Lay bricks, solid and cellular blocks on a full bed.

Bond where not specified: Half lap stretcher.

Vertical joints in facework: Even widths. Plumb at every fifth cross joint along course.

Adverse weather

General: Do not use frozen materials or lay on frozen surfaces.

Air temperature requirements: Do not lay bricks/ blocks:

- In cement gauged mortars when at or below 3°C and falling or unless it is at least 1°C and rising.

Temperature of walling during curing: Above freezing until hardened.

Protect face work at all times from:

- Rain and snow.
- Drying out too rapidly in hot conditions and in drying winds.

Facework

Colour consistency of masonry units:

- Methods to ensure that delivered units are consistent and of an even colour range within deliveries: Submit proposals.

- Conformity: Check each delivery for consistency of appearance with previous deliveries and with approved reference panels;

do not use if variation is excessive.

- Finished work: Free from patches, horizontal stripes and racking back marks.

Appearance:

- Brick/ block selection: Do not use units with damaged faces or arrises.
- Cut masonry units: Where cut faces or edges are exposed cut with table masonry saw.

- Quality control: Lay masonry units to match relevant reference panels.

- Setting out: To produce satisfactory junctions and joints with built-in elements and components.

- Coursing: Evenly spaced using gauge rods.

- Lifts: Complete in one operation.

- Methods of protecting facework: Submit proposals.

Ground level: Commencement of facework: Not less than 150 mm below finished level of adjoining ground or external works level.

Putlog scaffolding: Not permitted in facework.

Toothed bond: New and existing facework in the same plane: Bond together at every course to achieve continuity of bond and

coursing.

Cleanliness:

- Facework: Keep clean.
- Mortar on facework: Allow to dry before removing.
- Removal of marks and stains: Rubbing not permitted.

External leaf to match existing facing brick, laid in stretcher bond in 1:1:5 natural coloured mortar, for ½ bond in flush face construction and toothed into existing wall with 100mm nominal cavity, tied with 250mm long Ancon ST1 Type 1 Tie with Heavy Duty Clip or Hemax 82 Tie with Universal Retaining Clip Stainless steel wall ties located at 750mm horizontal and 450mm vertical centres, bedded at not less than 50 mm into bed joint of each leaf. Ties set in 250mm at all opening reveals. Slope slightly downwards towards outer leaf with drip centred in the cavity and pointing downwards.

Do not bend ties to suit coursing. After each section of the leading leaf is built, all excess mortar should be removed from the cavity face and mortar droppings cleaned from exposed edges of the installed slabs, before installation of the next run of slabs. Use of a cavity board or a cavity batten will protect the installed slabs and help to keep the cavity clean as the following leaf is built. Do not install the wall ties directly on the damp-proof course

Cavity to be insulated to provide a U-value 0.17 (W/m².K) with 90mm thick KINGSPAN Kooltherm K106 (Polypropylene fleece (grey facing) to face outward) manufactured to BS EN ISO 9001: 2000 by Kingspan Insulation Limited Pembroke, Leominster, Herefordshire HR6 9LA, UK Castleblayney, County Monaghan, Ireland Tel: +44 (0) 870 850 8555, Fax: +44 (0) 870 850 8666, email: commercial.uk@insulation.kingspan.com

Inner leaf of cavity wall to be 215mm x 140mm x 440mm Thermalite "Shield" blocks, to have a mean compressive strength: not less than 3.6 N/mm², a designed thermal conductivity (λ) of 0.15 W / (m.K) and a specified gross dry density of 600 kg/m³, all to be laid stretcher bond in 1:1:5 mortar.

Blocks to be secured to existing building with Catnic Stronghold/Solo wall starter kits, reference SWC/GWC/CWC/SWS positioned at junctions of existing and new masonry as detailed in drawings. Install in accordance with the manufacturer's instructions with ties fully embedded in mortar joints.

Secure the new cavity wall to the existing walls with Catnic Stronghold wall starter kits in Stainless Steel, type SWC. CATNIC Pontypandy Industrial Estate, Caerphilly CF83 3GL Tel 029 2033 7900, 0870 024 1809, email catnic.technical@corusgroup.com. Ensure that the bottom edge of the wall starter is above the damp proof course.

When more than 2 starters are used (i.e., for heights exceeding 2.4m) slot additional starters in to the lower starters and continue the fixing procedures. The vertical joint between the existing wall and the outer leaf of the new wall should be weather sealed either by: i) A pre-compressed sealing strip or polymer based sealant applied behind the wall connector, or ii) The junction perpend should be sealed with a pre-

compressed sealing strip or polymer-based sealant. The design shear strength of the Stronghold system is 4kN (3.5kN for Solo) over the height of two wall starters (2.4 metres) when used with 3.5kN/mm² blockwork in situations up to 3 storeys high (8 metres maximum). Install Catnic Stronghold in accordance with the manufacturer's instructions with ties fully embedded in mortar joints.

Mortar Pointing

Brickwork joints as indicated in DWG24606.104 require deep cut pointing are to be mechanically raked out using a brick mortar router to a depth of 40mm and repointed using a 1:4 mortar mix made up with matching colour mortar. A test panel should be carried out on site prior to commencement of main works which is to be approved by the Employer

MORTARS

Admixtures for site made cement gauged and hydraulic lime: sand masonry mortars
Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.

Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.

CEMENTS FOR MORTAR

Cement: To BS EN 197-1 and CE marked.

- Type: Portland cement, CEM I. Portland limestone cement, CEM II/A-L or CEM II/A-LL. Portland slag cement, CEM II/B-S, Portland fly ash cement, CEM II/B.

- Strength class: 32.5, 42.5 or 52.5.

White cement: To BS EN 197-1 and CE marked.

- Type: Portland cement, CEM I.
- Strength class: 52.5.

Sulphate resisting Portland cement.

- Type: To BS 4027 and Kitemarked. To BS EN 197-1 fly ash cement, CEM II/B-V and CE marked.

- Strength class: 32.5, 42.5 or 52.5.

Masonry cement: To BS EN 413-1 and CE marked, class MC 12.5.

Lime: sand for cement gauged masonry mortars

Ready mixed:

- Standard: To BS EN 998-2.
- Lime: Nonhydraulic to BS EN 459-1, type CL 90S.
- Pigments for coloured mortar: To BS EN 12878.

Site made:

- Permitted use: Where a special colour is not required and in lieu of factory made ready-mixed material.

- Lime: Nonhydraulic to BS EN 459-1, type: CL 90S.

- Mixing: Thoroughly mix lime with sand, in the dry state. Add water and mix again.

Allow to stand, without drying out, for at least 16 hours before using.

Retarded ready to use cement gauged masonry mortars

Standard: To BS EN 998-2.

Lime for cement:lime:sand mortars: Nonhydraulic to BS EN 459-1.

- Type: CL 90S.

Pigments for coloured mortars: To BS EN 12878.

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Time and temperature limitations: Use within limits prescribed by mortar manufacturer.

- Retempering: Restore workability with water only within prescribed time limits.

Sand for lime: sand masonry mortars

Type: Sharp, well graded.

- Quality, sampling and testing: To BS EN 13139.

Sand for site made cement gauged masonry mortars

Standard: To BS EN 13139.

- Grading: 0/2 (FP or MP). Fines content where the proportion of sand in a mortar mix is specified as a range (e.g. 1:1: 5 – 6):

Lower proportion of sand, use category 3 fines. Higher proportion of sand, use category 2 fines.

Sand for facework mortar: Maintain consistent colour and texture. Obtain from one source.

EXECUTION

Making cement gauged mortars

Batching: By volume. Use clean and accurate gauge boxes or buckets.

- Mix proportions: Based on dry sand. Allow for bulking of damp sand.

Mixing: Mix materials thoroughly to uniform consistency, free from lumps.

- Mortars containing air entraining admixtures: Mix mechanically. Do not overmix.

Working time (maximum): Two hours at normal temperatures.

Contamination: Prevent intermixing with other materials.

BUILDING REGULATIONS APPROVAL

The Contractor shall ascertain and comply with the current requirements of the Building Regulations, Constructional Standards 1997, Government Codes and Regulations, Fire Regulations, Safety Regulations CDM Regulations and any other statutory requirements relating to the work.

The Contractor must prepare the necessary documentation, details, calculations, drawings etc. to ensure that all Building Regulations / Environmental Health Officer's approvals are obtained for the works. This documentation is to be handed to the client at the completion of all works and weekly site meeting.

Submit if requested, by the Building Control Officer / Environmental Health Officer an original signed copy of each test report upon components and/ or materials.

Prepare and submit if required by the Building Control Officer / Environmental Health Officer, additional information / documentation.

Report to the client all submissions / dates / revisions / approvals, relevant to the statutory approval.

The Contractor is entirely responsible for achieving or surpassing the performance and installation criteria of all components, assemblies and workmanship described in this specification. The Contractor is fully responsible for the design and for obtaining all necessary approvals in the design criteria of all components. The Contractor is accepting the same responsibility in respect of indemnities as any professional architect or designer of a building. The Contractor is responsible for ensuring the system achieves or surpasses the water tightness, air tightness and integrity specified and for the thermal and acoustic performance of the completed installation.

Ground water level (if any) on the site is not known. Make all necessary enquiries concerning ground water level and allow for variations from that level. Verify with which existing fences, gates, walls, roads, paved areas and other site features are to be removed. Materials arising are to be removed from site.

Excess excavations that are wider than required with material specified for backfilling and deeper than required with well graded granular material or lean mix concrete.

Do not import or use fill materials which would, either in themselves or in combination with other material or ground water, give rise to a health hazard, damage to building structures or instability in the filling?

Soluble sulphate content of imported materials for filling must not exceed 1 g/litre when tested to BS 1377: Part 3, clause 5, using a 2:1 water-soil extract.

Keep excavations free from water until foundations and below ground constructions are completed.

A completion certificate is to be obtained by the main contractor to prove that all conditions have been satisfied, each stage of inspection has been notified to the building inspector who is satisfied that the work complies with the Building Regulations.

Inspection Regime

Agreement to undertake the following inspections, (subject to receiving confirmation), All site works require a site visit at the stage listed and the site is open and accessible for inspection.

Contact the designated Building Control Officer to discuss or amend the inspection regime.

Completion certificates

One of the most important documents issued by Building Control is the Completion Certificate. This is the final stage in the application procedure, completing the process.

Building Control Surveyors carry out on-site inspections at various stages of construction. On satisfactory completion of the works, a Completion Certificate is issued. This Certificate gives the date of the final inspection carried out and states that, as far as can be reasonably ascertained, the work carried out conforms to the Building Regulations.

As the final part of the process, a Completion Certificate is forwarded to the applicant and all interested parties following a satisfactory final inspection. Further copies may be issued on request which may be subject to a charge.

The importance of a Completion Certificate cannot be over-emphasised. It verifies that a property complies with legal guidelines and has been subject to Building Regulations inspections carried out by independent and impartial professionals. For this reason, it reassures all those with interests in the conveyancing process such as house owners, solicitors, banks, building societies and purchasers.

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Site Inspection	Works to be assessed	Period of notice required
Commencement	To enable the proposed works to be discussed	Same day when requested before
Excavation	To ensure foundations are excavated to a satisfactory depth	Same day when requested before
Concrete in foundations	To ensure that the concrete has been laid correctly	Same day when requested before
Damp-proof course	To ensure that the DPC has been laid correctly	Same day when requested before
Concrete oversite	To check the preparation for the oversite concrete	Same day when requested before
Drains	Drains laid and before covering	Same day when requested before
Drains inspection and test	Testing of drains for water tightness after covering	Same day when requested before
Occupation of building	Check prior to occupation	24 hours
Final completion	Final check	Within 5 days of completion
Before covering any structural timbers, steelwork or concrete	This is not a mandatory inspection but is recommended	Same day when requested before 10.00am, otherwise 24 hours
Before covering electrical installation (only required if electrics are not installed by a Competent Electrician)	To check correct installation of cables in walls, floors and ceilings	48 hours

FINISHES

MAIN WALLS AND CEILINGS

All walls and ceilings to receive two coats of Dulux Quick Dry Eggshell applied in 2 coats, creates a low-sheen finish. It is self-undercoating, apply 2 coats with a brush, leave at least 6 hours between coats

Paint manufacturer Dulux Trade paints, Wexham Road, Slough, Berkshire SL2 5DS
Tel. 08444 817 818 www.dulux.trade-decorating.co.uk. An alternative to be before commencement of any coating work. All painting to be carried out in accordance with manufacturer's instructions

All Nibs, trowel marks and plaster splashes to be scraped off.
Over trowelled 'polished' areas to be lightly abraded
Depressions around fixings to be filled with stoppers/ fillers.
Plasterboard to have all joints filled over tape and feather out with materials recommended by textured coating manufacturer.

EXECUTION

Handling and storage of paint. Deliver in sealed containers, labelled clearly with brand name, type of material and manufacturer's batch number. Paint from more than one batch: Give notice. Store separately and allocate to distinct parts or areas of the work. Protection 'Wet paint' signs and barriers: Provide where necessary to protect other operatives and client and to prevent damage to freshly applied coatings.

Preparation generally to BS 6150.

Remove all dirt, grease and oil provide notice if contamination of surfaces/substrates has occurred.

Surface irregularities: Abrade to a smooth finish.

Joints, cracks, holes and other depressions: Fill with stoppers/ fillers. Work well in and finish off flush with surface. Abrade to a smooth finish.

Remove all dust, particles and residues from abrasion.

Water based stoppers and fillers to be applied before priming unless recommended otherwise by manufacturer.

Junctions of walls and ceilings with architraves, skirtings and other trims to be filled with 5-6mm bead of water based acrylic caulk filler.

Doors to be eased, if necessary, before coating.

Prime resulting bare areas.

INTERNAL TIMBER

Existing MDF and Softwood to be reprimed in Dulux Quick Dry Eggshell if they were altered or modified .

Do not use any degraded or weathered surface woodwork.

Exposed resinous areas and knots: Apply two coats of knotting.

New MDF and Softwood to be fully factory applied primer in White

Pre-primed wood:

All areas of defective primer, to be abraded back to bare wood and re-prime.

Thinning and intermixing of coatings is not permitted unless recommended by manufacturer.

Overpainting: Do not paint over intumescent strips or silicone mastics.

Priming coats: Thickness to suit surface porosity. Apply as soon as possible on same day as preparation is completed.

Finish is to be even, smooth and of uniform colour and free from brush marks, sags, runs and other defects. Cut in neatly.

Prime/ seal and coat bottom edges of external doors before hanging doors.

Before assembly, seal end grain of all timber with primer or sealer, as appropriate and allow to dry.

Apply all stains as recommended by manufacturer and apply in flowing coats and brush out excess stain to produce uniform appearance.

Bead glazed coated wood: Before glazing, apply first two coats to rebates and beads. Allow glazing compound to set for seven days.

Within a further 14 days, seal with a primer as recommended by the glazing compound manufacturer. Fully protect glazing compound with coating system as soon as it is sufficiently hard.

Extend finishing coats on to glass up to sight line.

Apply two coats of Dulux gloss to all woodwork after priming undercoating

Paint manufacturer Dulux Trade paints, Wexham Road, Slough, Berkshire SL2 5DS
Tel. 08444 817 818 www.dulux.trade-decorating.co.uk. An alternative to be before commencement of any coating work. All painting to be carried out in accordance with manufacturer's instructions

EXTERNAL TIMBER

Contractor is to decorate existing soffit and Fascia with White and Black Satin Ronseal 10 Year Weatherproof Paint or similar approved products.

Do not use any degraded or weathered surface woodwork.

Exposed resinous areas and knots: Apply two coats of knotting.

Pre-primed wood:

All areas of defective primer, to be abraded back to bare wood and re-prime.

Thinning and intermixing of coatings is not permitted unless recommended by manufacturer.

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Overpainting: Do not paint over intumescent strips or silicone mastics.

Priming coats: Thickness to suit surface porosity. Apply as soon as possible on same day as preparation is completed.

Finish is to be even, smooth and of uniform colour and free from brush marks, sags, runs and other defects. Cut in neatly.

Prime/ seal and coat bottom edges of external doors before hanging doors.

Before assembly, seal end grain of all timber with primer or sealer, as appropriate and allow to dry.

Apply all stains as recommended by manufacturer and apply in flowing coats and brush out excess stain to produce uniform appearance.

Bead glazed coated wood: Before glazing, apply first two coats to rebates and beads. Allow glazing compound to set for seven days.

Apply two coats of Ronseal 10 Year Weatherproof Paint to all woodwork after priming undercoating

Paint manufacturer Ronseal, Thorncliffe Park, Chapeltown, Sheffield, S35 2YP, United Kingdom Tel. 0114 240 9469. An alternative to be before commencement of any coating work. All painting to be carried out in accordance with manufacturer's instructions

FIRE RESISTANT OPENINGS/PENTRATIONS

Where pipework, Cables, building structure passes through the various walls.

The installation of ROCKWOOL's Firestop Compound provides up to six hours' fire protection to provide a fire-resisting seal around service penetrations through all fire-rated walls and floors.

<https://www.rockwool.com/uk/products-and-applications/product-overview/fire-stopping-products/firestop-compound-en-gb/>

Independent tests have shown, when reinforced, Firestop Compound offers masonry and concrete walls or concrete floors with up to 360 minutes' protection for both integrity and insulation, and when un-reinforced, it offers up to 240 minutes' protection.

Existing compound installations can be easily drilled to allow the provision of additional or replacement services which can subsequently be re-sealed. The ROCKWOOL Firestop product is easy to use as it's a specially formulated gypsum-based compound, which is mixed with water to be trowelled or poured around service penetrations.

Features and benefits:

- Smoke seal.
- Suitable for sealing around most types of service.
- Load-bearing capability.
- Simple installation.
- No smoke emission.
- Unaffected by humidity.

EXECUTION

Workmanship generally

Gaps: Seal gaps between building elements and services, to provide fire resistance and resist the passage of smoke.

Adjacent surfaces: Prevent overrun of sealant or mortar onto finished surfaces.

Intumescent foam

New joints: Remove builder's debris, mortar droppings, grease, and the like.

Old joints: Clean and remove existing sealant from the joint.

Priming: Lightly moisten substrate with water.

Application: Fill joint to approximately half its depth, allowing foam to expand to face of joint.

Trimming: Do not trim or cut the face of the cured foam.

Intumescent mortar

Sequence: Install mortar after services are permanently installed.

Loose dust and combustible materials: Remove from the opening.

Shuttering: Install suitable shuttering panels to the faces of the opening.

Temperature: Do not apply mortar when it could be damaged by frost.

Mortar cure: Do not disturb mortar before final set has taken place.

Shuttering: Remove after mortar has cured.

FirePro® Ablative Coated Batt

Fit tight Batts into void between the floor or wall and the penetrating services.

Face of batts: Flush with the surface of wall, floor or soffit.

Gaps between services and batts: Seal with fire resisting sealant.

Hidden gaps can leave buildings vulnerable to the spread of fire, particularly following the creation of voids for the passage of services. The ROCKWOOL Ablative Coated Batt provides a tested, fire resistant seal which can also improve sound attenuation.

FirePro 50mm Ablative Coated Batt INSTALLATION

1. Make sure that the area within the aperture is clean of any debris and remove any dust from the edges.
2. Cut ROCKWOOL Ablative Coated Batt to the size and shape required to fit the aperture ensuring that batt will make a tight fit with all edges of the aperture.
3. Cut rectangular holes from the coated batt to accommodate cable trays or ladders containing cables.
4. Cut the Coated Batt across its width at the mid-point of each rectangular hole to enable the Batt to be fitted into the aperture.
5. Apply ROCKWOOL Acoustic Intumescent Sealant to all edges of the Batt ensuring that an even cover is achieved over the entire thickness of the Batt. This should include the outer edges of the Batt and the edges of the cuts made across the Batt to allow fitting into the aperture.
6. Insert the Batt into the aperture.
7. Apply a bead of ROCKWOOL Acoustic Intumescent Sealant approximately 15mm wide around the perimeter of the Batt ensuring that all gaps between the Batt and surrounding edges are fully filled.
8. Apply a bead of ROCKWOOL Acoustic Intumescent Sealant approximately 15mm wide where cables pass through the Batt. Ensure that the sealant fully enclosed each cable within the tray or ladder and that all gaps are fully filled.
9. Repeat step 7 and 8 on the other side of the Batt.

Other installation information: FirePro Ablative Coated Batts are not intended for use as load-bearing seals.

Pipe collars

Integrity: Fit tightly and accurately to structure and pipe. Fill gaps between collar and structure and/or pipe with intumescent material.

Fixings: Plastics free.

Clearance around service pipe: Minimum possible, pipe in contact with sleeve.

Installation: Bed solid.

Exposed to view: Finish bedding and sealing neatly.

COMPLETION

Cleaning

Masking tapes: Remove.

Cleaning: Clean off splashes and droppings. Wipe down finishes.

Seal all pipes cables ducts etc with Intumescent Sealant

ROCKWOOL FirePro® High Expansion Intumescent Sealant

ROCKWOOL FirePro® High Expansion Intumescent Sealant is a water-based acrylic sealant containing graphite, developed for sealing various penetrations. When exposed to fire and heat, the high expansion intumescent sealant expands to seal voids that form around building services, preventing the passage of fire and smoke between compartment elements.

FBC system compatible for use with cPVC pipework. "FBC™ System Compatible indicates that this product has been tested, and is monitored on an ongoing basis, to assure its chemical compatibility with FlowGuard Gold®, BlazeMaster® and Corzan® piping systems and products made with TempRite® Technology." "The FBC System Compatible Logo, FBC™, FlowGuard Gold®, BlazeMaster®, Corzan®, and TempRite® are trademarks of Lubrizol Advanced Materials, Inc. or its affiliates."

Not only does this product have flexible use but is suitable for a range of materials. Approved for use on LUL surface and sub-surface premises having been tested and achieves low smoke and toxicity.

Accreditations:

- Tested to EN 1366-3 & 4 standards and classified to EN 13501-2
- CE Marked to EAD 350454-00-1104 - ETA-20/1131
- FBC Approved
- The product has been authorised for use in LUL surface and sub-surface premises (LUL Ref: 2454) when installed in accordance with the data sheet.
- 3rd party certified through UL-EU
- ROCKWOOL High Expansion Intumescent Sealant offers up to 4 hours* of fire resistance for a range of combustible pipes, metal pipes, cables and other permanent services.
- Versatile – this sealant can be used to protect various permanent services, such as single cables, bunches and insulated pipes.
- Appropriate for LUL surfaces and sub surface premises but must be installed in accordance with ROCKWOOL guidelines.

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- Low maintenance – this High Expansion Intumescent Sealant requires no ancillaries, which makes it a cost-effective solution to fire protection.

Use Rockwool FirePro® Insulated Fire Sleeves Fire stopping and thermal insulation solution for pipework

Many combustible pipe systems are often retro-fitted through walls and floors, compromising the fire performance of the compartment. FirePro® Insulated Fire Sleeves are comprised of stone wool fibres and graphite intumescent that can resist fire, reduce heat loss and provide acoustic insulation.

Contact ROCKWOOL Limited, Pencoed, Bridgend, CF35 6NY

Email: technical.solutions@rockwool.com

Telephone: [01656 868 490](tel:01656868490)

<https://www.rockwool.com/uk/products-and-applications/product-overview/fire-stopping-products/firepro-high-expansion-intumescent-sealant-en-gb/>

FIXINGS AND ADHESIVES

GENERAL

Definitions

In this section the following definitions are used:

- Fixing: The act of securing an object to another object or background, e.g. Fix A to B with screws at 200 mm centres.
- Fixings: Systems that fix objects together, composite connection items comprising, e.g. nuts, bolts, washers, spacers, cover caps.
- Fasteners: Components that fix objects together, e.g. screws, nails..

PRODUCTS

Fasteners generally

Materials: To have bimetallic corrosion resistance and atmospheric corrosion resistance appropriate to fixing location.

Appearance: Submit samples on request.

Packings

Material: Noncompressible, corrosion resistant, rot proof.

Area of packings: Sufficient to transfer loads.

Masonry fixings

Light duty: Plugs and screws.

Heavy duty: Expansion anchors or chemical anchors.

Pelleted countersunk fixings

Pellets: Cut from matching timber, grain matched.

Plugs

Type: Proprietary types to suit substrate, loads to be supported and conditions expected in use.

Adhesives generally

Standards:

- Hot-setting phenolic and aminoplastic: To BS 1203
- Thermosetting wood adhesives: To BS EN 12765.
- Polyvinyl acetate thermoplastic adhesive: To BS 4071.

Pelleted countersunk fixings

Pellets: Cut from matching timber, grain matched.

Powder actuated fixing systems

Types of fastener, accessories and consumables: As recommended by tool manufacturer.

Tools: To BS 4078-2, Kitemark certified.

Operatives: Trained and certified as competent by tool manufacturer.

EXECUTION

Fixing generally

Types, sizes and quantities of fasteners/ packings and spacings of fixings: Selected to retain supported components without distortion and loss of support.

Integrity of supported components: Select types, sizes, quantities and spacings of fixings, fasteners and packings to retain supported components without distortion or loss of support.

Components, substrates, fixings and fasteners of dissimilar metals: Isolate with plastics washers/ sleeves to avoid bimetallic corrosion.

Penetration of fasteners and plugs into substrate: To achieve a secure fixing.

Appearance: Fixings to be in straight lines at regular centres.

Fixing packings

Function: To take up tolerances and prevent distortion of materials/ components.

Limits: Do not use packings beyond thicknesses recommended by fixings and fasteners manufacturer.

Locations: Not within zones to be filled with sealant.

Fixing cramps

Cramp positions: 150 mm (maximum) from each end of frame sections and at 600 mm (maximum) centres.

Fasteners: Fix cramps to frames with screws of same material as cramps.

Fixings in masonry work: Fully bedded in mortar.

Pelleted countersunk fixings

Finished level of countersunk screw heads: 6 mm (minimum) below timber surface.

Pellets: Cut from matching timber, match grain and glue in to full depth of hole.

Finished level of pellets: Flush with surface.

Plugged countersunk screw fixing

Finished level of countersunk screw heads: 6 mm (minimum) below timber surface.

Plugs: Glue in to full depth of hole.

Finished level of plugs: Projecting above surface.

Powder actuated fixing systems

Powder actuated fixing tools, method of use: To BS 4078-1.

Operatives: Trained and certified as competent by tool manufacturer.

Applying adhesives

Surfaces: Clean. Adjust regularity and texture to suit bonding and gap filling characteristics of adhesive.

Support and clamping during setting: Provide as necessary. Do not mark surfaces or distort components being fixed.

Finished adhesive joints: Fully bonded. Free of surplus adhesive.

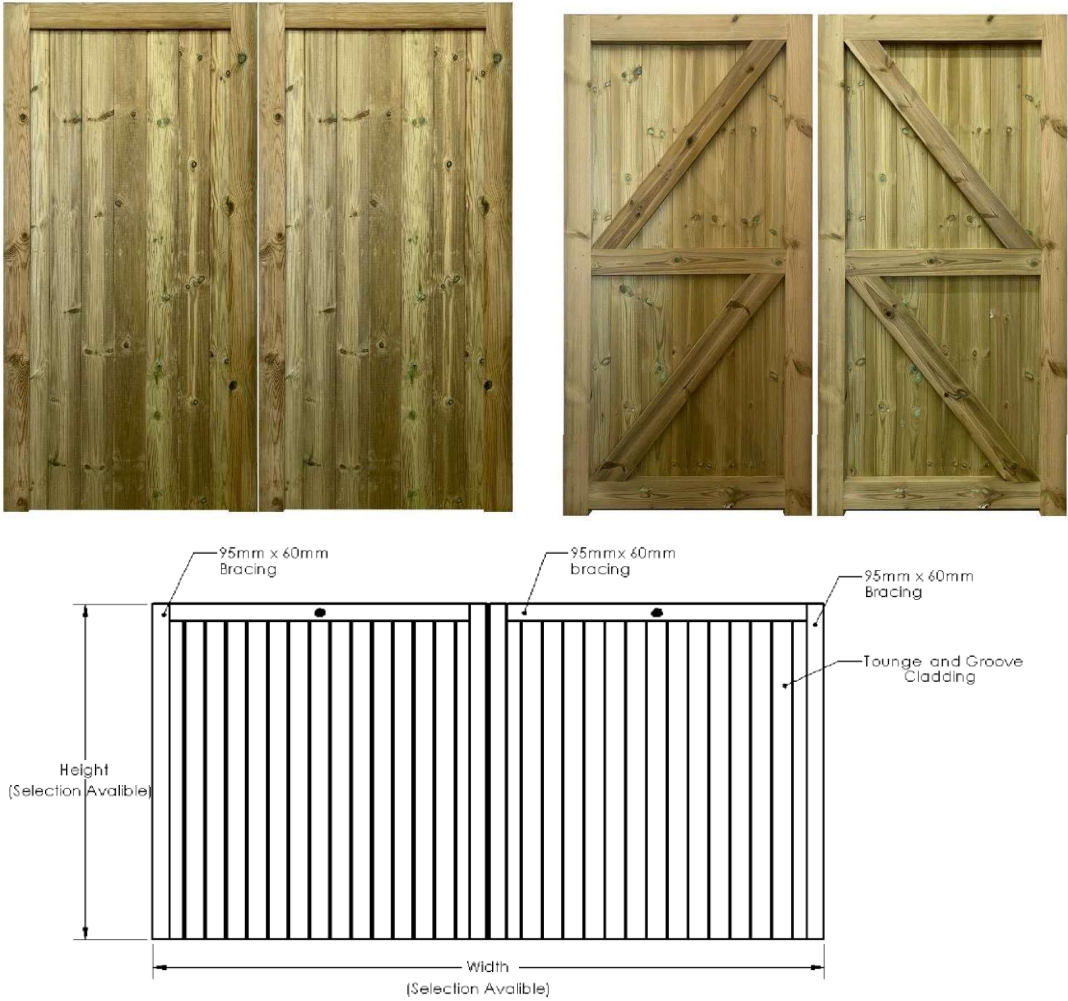
GATES TO ASHP COMPOUND

Specification data - Wood gates Dimensions

	1810mm wide opening
Height	2250 mm. Guidance for specification option: 2100 mm at highest point.
Posts	Standard Timber Posts
Gate leaves	Traditional crossed-braced timber gate.
Warranty description	25 year
Hardware	GateFix Heavy Duty BLACK 1200mm (48) Adjustable hook and bands hinges B.T (WIDE) pattern per pair Hasp Latch and Clasp for Padlock
Hinges	GateFix Heavy Duty BLACK 1200mm (48) Adjustable hook and bands hinges B.T (WIDE) pattern per pair
Securing	Hold backs.
Finish as delivered	Stained in Dark Oak
Treatment	pressure treated.
Panel toppings	Raised helve.
Fixing	
Configuration	90 °. Opening Double gate.
Timber material	Manufacturer's standard.

Sustainability data

Contains Red List materials	No
Country of product manufacture	United Kingdom



GateFix Heavy Duty BLACK 1200mm (48) Adjustable hook and bands hinges B.T (WIDE) pattern per pair



Ladders denoted A,B,C,D and E on plan

Sö II PivotLoc folding ladders with arrest system, manufactured and supplied by Safety at Height Limited, Unit 1 Pennine View, Marple, Stockport, Greater Manchester, SK6 7JW

Phone: 0161 449 5615

Mobile: 07810 885323

Email: craig@safety-height.co.uk

Website: www.safety-height.co.uk

Ladders are manufactured to have an Open Width 500 mm and when closed 195 mm

Rung distance 280mm

It must be locked open or shut with the padlock

The brackets must be fixed on the pivot points of the rungs

The foldable ladder can be used combined with all type of ladders

The ladder is complete with arresting device, end-stop, recess, connector and side handles

The system also includes a stainless steel clamp that is used to insert a padlock

The ladders can be opened or folded closed. When the ladder is closed, it has a slim and unobtrusive profile. When open, the result is a high-quality ladder with Miller® fall protection.

The foldable ladder system prevents unauthorised use of the system in the same way as the cover plate. '

Connection to aluminium ladders Material: Anodised aluminium Weight: 1 ♦.0 kg/each Part no. 23193 Connection to steel ladders Material: Anodised aluminium Weight: 1 ♦.0 kg/each Part no 23281 (not shown)

PivotLoc Fall Arrest Folding Ladder System

Fall Arrest Access System Design

vertical fall arrest access systems are covered by BS EN 353-1:2014 "Guided Type Fall Arresters on a rigid line."

All such systems must be designed specifically for fall protection, must carry a CE Mark and bear identification of the year of manufacture, manufacturer's trademark and the batch or serial number of the component.

All systems should also be clearly marked by pictogram, or other clearly seen and understood markings, on or near the anchorage device clearly stating that the device is designed exclusively for the use of personal protective equipment.

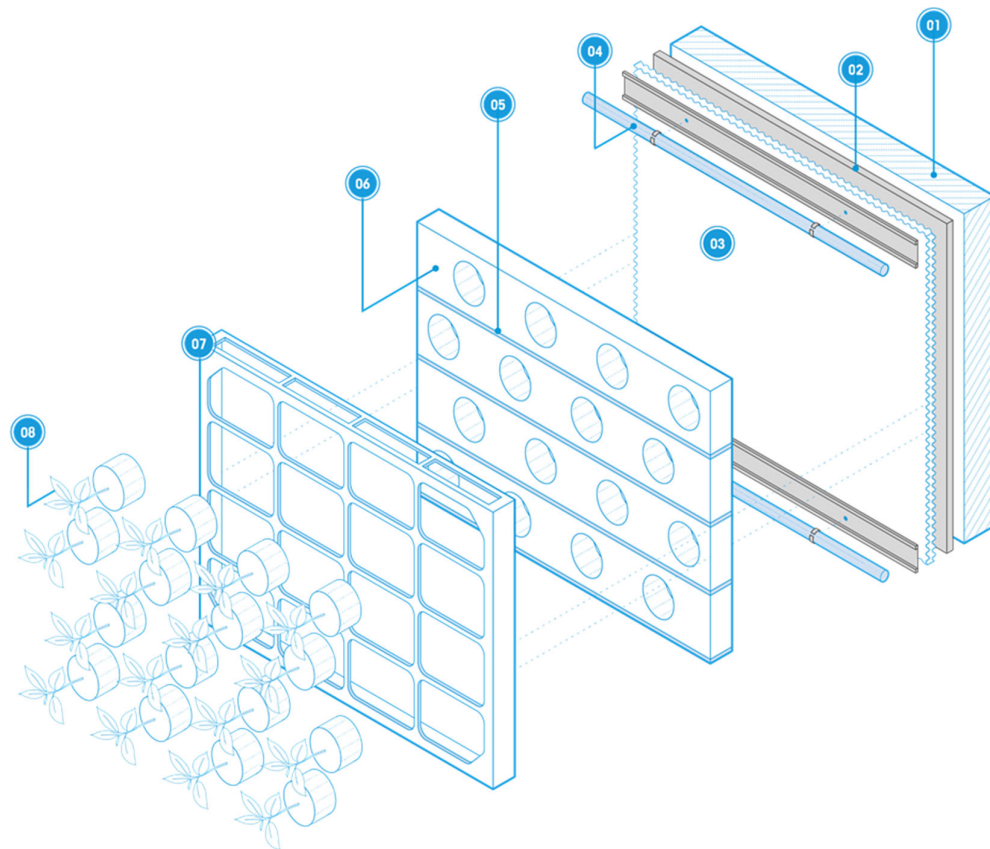
Söll-Pivot Loc folding ladder to be fitted with a reinforced Söll-Curve Over Rail approx. 1.1m above the step off point, removing the need to fix at roof level and allow the Users safe access on and off the system.

GlideLoc Body Control 1 Fall Arrester and Full Body harness is to be supplied for each user (2 Nr. required).

System to be installed in accordance with EN 353-1 and Manufacturers Recommendations by an installer approved by Safety at Height Limited. Systems installed by non-approved installers or sub-Installers shall not be covered by Manufacturer Warranty.

External Living Wall Outline Specification

1.0 General description



1. Support System
2. Waterproof Backing Board
3. Rear Drainage Layer
4. Aluminium Rails and Dripline
5. Capillary Breaks
6. Growing Medium
7. Panel Box
8. Plants

Living vertical artificially irrigated and fertigated 'backless' vegetated cladding panels complete with inorganic growing medium fixed through a void former and waterproof backing board to cladding rails. Saturated weight of panels, growing medium and plants = max 75kgs per m2

2.0 Support structure

See Wall Specification

3.0 Living wall system

3.1 Waterproof backing board

Durable water-resistant board 12mm thickness – Versapanel Eco sheet or similar fixed to the support structure

3.2 Aluminium rail

'T' profile rail carrier system to carry the BioWall panels (vegetated cladding panels)

3.3 BioTile® panel (vegetated cladding panels)

Injection moulded panel box to support the growing medium, formed using black colour general purpose polypropylene compound manufactured from recycled polymer

Standard panel module dimension 600mm wide x 450mm high x 62mm depth (actual dimensions 598mm wide x 403.5mm high x 62mm depth)

3.4 Growing medium

Inorganic, chemically inert and dimensionally stable growing medium with a nominal dry density of 16.8kg/m³. Material 'stonewool' – high alumina, low silica wool product reference Grodan PP 100/100 or similar approved

Within a standard panel - 4no. strips of Grodan with capillary break between each section

Each tile to have 16no. planting holes (4no. per Grodan strip) with 50mm diameter to the planting hole

Capillary breaks - geocomposite drainage layer formed using extruded high-density polyethylene (HDPE) net drainage core with nonwoven polypropylene (PP) geotextile filter/ separator bonded to one side and an extruded (PE/EVA) geomembrane bonded to the other

3.5 Rear drainage layer (void former)

Geocomposite drainage layer comprising a high-performance single cusped HDPE (High density polyethylene) core with a geotextile filter thermally bonded to one side to provide a drainage layer to the rear of the vegetated planted panels and a waterproof layer in front of the backing board

4.0 Planting

4.1 Planting density

Plant spacing to be 60 plants per sq m

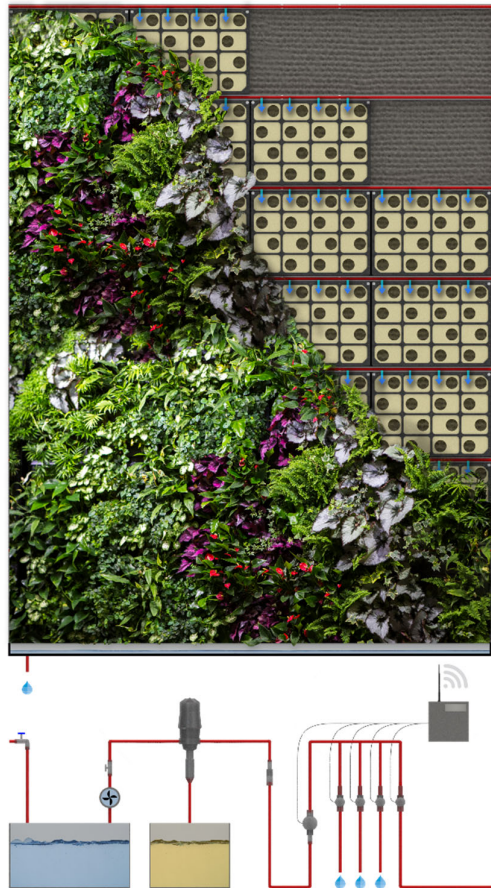
4.2 Plant species

All plants to be selected from the Biotope plant database to suit the local climatic conditions, including aspect, wind conditions and shade

Plant species to be included in the living wall to be included as a series of plant matrices to create an overall planting pattern presented for sign off by the client prior to plant orders and planting in the nursery. Planting design to be based on client design discussions and the selection of species to suit the local climatic conditions

Plants are to be planted into the BioTile® panels a minimum of twelve weeks prior to installation. The twelve-week period must be sometime between March and November

5.0 Irrigation



5.1 General description

A suitably sized WRAS approved break tank to hold 24 hours of irrigation water supply. Pumping is to be via a reliable pump set capable of delivering the correct pressure at all drip locations. Water is to be distributed from the pump through zoned solenoid valves via a ring main and header pipes with control being via a remote sensing computer controller. System is to include a fail-safe pump start relay

Irrigation water is to be precisely applied via irrigation driplines of no less than 16mm diameter. The drippers are to be in-line, self-flushing and self-cleaning pressure compensated drippers each operating at minimum of 1.6 litres per hour. The system will include the ability for each dripline to be easily flushed on a regular basis

Biotecture irrigation to be located in a weathertight plant enclosure - see 'services' section for the services requirements. Plant enclosure sizes will vary depending on the size of the living wall and the irrigation design

5.2 Break tank

WRAS approved high density polyethylene break tank with integral submersible pump

5.2 Irrigation fittings

Wall/array fittings all barbed, Couplers, elbows and T pieces with non-return valves if required, to suit the installation

5.3 Water feed pipework and irrigation pipework

20/25mm LDPE water feed pipe (pipe diameter varies according to the distance between the plant room and the living wall)

Irrigation pipework – 20mm HDPE hose with barbed fittings

5.4 Dripline

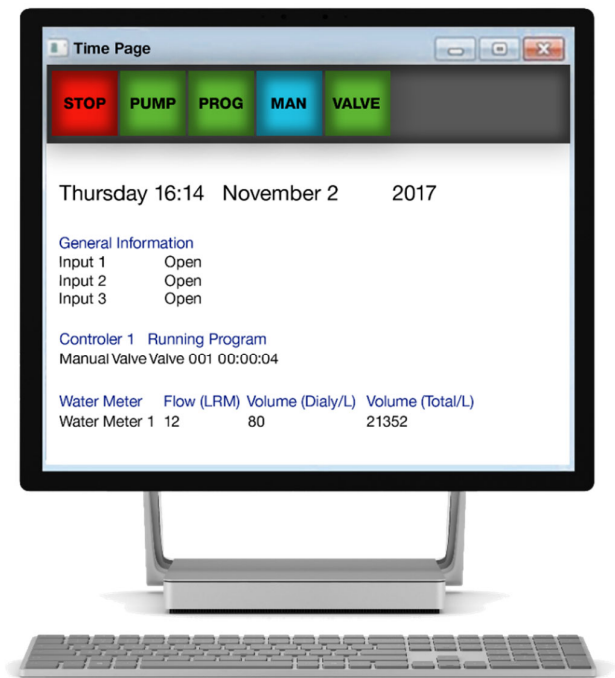
Polypropylene round dripline, 16mm diameter, with flat pressure compensating drippers (4no. drippers per standard Biotile) giving dripper flow rate of not less than 1.6 l/h. Dripline fixed to the carrier rails using proprietary injection moulded polypropylene clips

Rigid PVC extrusion cover strip to provide improved visual appearance and solar protection to reduce solar gain to the dripline, clipped to irrigation lines using proprietary clips

5.5 Irrigation controls

Multi wire controller to operate the solenoid valves. Manufacturer: Heron or similar approved

The controller will be programmed with flow-rate parameters for each zone and will be set to monitor the flow-rate at prescribed intervals (usually 30 seconds). It will also be set with a deviation percentage. When the controller monitors a flow-rate that deviates from the expected flow rate by more than the input deviation percentage it responds by, firstly shutting off the pump and secondly sending an alert by email



GPRS signal or LAN connection required in order for the controller to communicate with remotely with the Biotecture server

5.6 Rainwater harvesting

Rainwater harvesting plant will typically consist of the following:

Rainwater harvesting tank	Size dependant on the rainwater to be collected	
Sump tank	Size to suit WRAS requirements	By the main contractor
Nutrient tank		

The rainwater harvesting plant will vary depending on the specific requirements of the project

6.0 Fertigation

Nutrients are to be added to the water flow by means of a Dosatron or similar impeller device. Essential macro and micro nutrients added at a rate of between 0.2% and 0.5% by volume. The nutrient mix is to be as prescribed by Biotecture. Nutrients are to be stored in a separate tank and fully integrated with the irrigation system

7.0 Drainage

114mm wide plastic gutter to be installed at the base of the living wall to collect run off with 32mm outlet. Drainage connection by others to discharge to either the foul water or surface water drainage system

[Alternative gutter]

Pressed aluminium gutter 90x60x120mm with powder coat paint finish to agreed RAL colour with 32mm outlet. Drainage connection by others to discharge to either the foul water or surface water drainage system

8.0 Services

8.1 Mechanical and electrical services to the plant room

The following mechanical and electrical services are to be provided to the plant room by others:

	Location	Requirement
Mains water into plant room	Plant room	2-3 bar pressure
Drainage at irrigation rig for overflow	Plant room	50mm min
Electrical supply for irrigation rig	Plant room	13Amp single phase socket

Additional services required if rainwater harvesting is included:

	Location	Requirement
Rainwater feed to rainwater tanks	Plant room	TBC -location specific
Electrical supply to mains water top up controller	Plant room	13Amp single phase socket

8.2 Mains water

Mains water to be provided by others and to the following standard:

- The Water Supply (Water Quality) Regulations 2000] and the Drinking Water Inspectorate - 2000 No. 3184
- The Water Supply Regulations 2010 - 2010 No. 991

Water supplied from other sources (Rainwater Harvesting, Wells, Rivers, Boreholes, Ponds) to be to the following standard:

1. Allowable pH range – the limit is pH 5 to pH 8
2. Particle size – maximum particle size entering Biotecture irrigation system should be 120 microns (typical standard would be 400 microns)
3. All other chemicals to meet drinking water standards

8.3 Services outside the plant room

Following services to be provided outside the plantroom- by others

Irrigation pipes	Number to be confirmed	20 / 25 mm LDPE pipe	To be free issue by Biotecture – pipe runs by the main contractor
Drainage route from the living wall		100mm diameter – max size	Drainage connections from the gutter at the base of the living wall to either the foul or surface water systems
Aerial wire		5mm approx.	Free issue by Biotecture – install by the main contractor
Electrical supply for lighting	If required		

9.0 Riser covers, copings and window surrounds

- 9.1 Twice bent 2mm pressed aluminium to agreed RAL colour. Located top and sides of the planted panels inclusive of window head and reveals to conceal pipework. Fixings to be visible and at max 1,500mm centres using pre-painted head to RAL colour to match flashing / cover strip

10.0 Maintenance

10.1 Maintenance statement

- The living wall is to be designed and assembled to enable safe and easy access for cleaning, maintenance and parts exchange.
- The maximum frequency of inspection of the wall as part of any maintenance agreement is to be 28 days
- Wherever possible maintenance tasks shall be designed and engineered to be conducted from ground level
- Wherever possible natural biological controls are to be used
- Routine should be to replace individual plants rather than replacing whole panels

10.2 Key performance indicators

- Irrigation system function = at least 95% of the times when it should function
- Visual aspect of wall = minimum 90% wall coverage by alive plants at all times
- The actual irrigation flow rate is within 20% of the design flow rates at all times
- Water consumption requirements = a maximum fresh water consumption of 2 litres per m² per day as an annual average
- Wastewater = a maximum waste water discharge of 0.2 litres per m² as an annual average

For further details see the Biotope maintenance specification

11.0 Fire

11.1 Fire testing

See the IFC Group Engineering Assessment Report Reference PAR/16691/01

Following the fire testing by BRE the IFC report concluded:

'Based upon the fire testing conducted and described in Section3, it is the opinion of IFC that if the Biotecture Ltd Living Wall System was manufactured, installed and maintained in accordance with the requirements of this engineering Assessment Report, then the following reaction to fire performance would likely be achieved: **B-s3,d2**

12.0 **Structure**

See the Evolve report 'Structural Engineering Assessment of Biotecture Living Wall System rev A dated 4th October 2017

13.0 **Lighting**

See the Biotecture lighting design guide

MATERIAL/PRODUCT SUBSTITUTION.

Any proposal for use of an alternative material or product must also include proposals for substitution of compatible accessory products and variation of details as products and variation of details as necessary, with evidence of equivalent durability, function and appearance of the construction as a whole.

If such substitution is sanctioned, and before ordering products, the contractor must provide revised drawings, specification and manufacturer's guarantees as required.

Materials /products can only be ordered after issue of an AI, or client instruction. However, if the Contractor wishes to offer for consideration alternatives and options to the requirements of this specification then provide an accompanying letter fully detailing them and quote the price adjustment to the Tender sum.

The phrase "or equal and approved" means that the CA/client may approve the alternative, but is not obliged to approve it.

If an alternative product is proposed during the course of the project, sufficient time must be given to the CA/client to consider this alternative, without jeopardising the programme. A minimum of one month before materials need to be ordered, after appropriate documents have been submitted it is suggested.

Appropriate documents could include:

- Technical literature
- Performance specification
- Test results
- Specification
- Drawings
- Method statements
- COSHH sheets
- Life cycle costing
- Environmental impact statements.

PAVING AREAS.

To be read with Preliminaries/ General conditions.

Remove existing concrete paving and either store for reuse in this project or repairs to main areas.

Removal and reinstatement of block paving, all as recommended in BS 7533-3, annex A. Removing units in such a way as to minimize breakage.

Replaced paving slabs to be matched in with existing and slightly proud to allow for bedding in.

New 600mm x 600mm x 38mm thick Precast concrete pavers to BS EN 1339, with all Tactile flags and slabs to BS 7997.

Laying coarse sand for sand bedded concrete flags, all to BS 7533-4, maintained at even moisture content that will give maximum compaction.

Sand for mortar to fully bedded slab/ flag paving to BS EN 12620, grading 0/4 or 0/2 (MP) or 0/2 or 0/1 (FP).

For further technical advice, or when confronted by unusual problems or circumstances, please contact Marshalls Technical Advisory Services on 0370 411 2233, or by email on advisory.services@marshalls.co.uk

Concrete for foundations and haunching to BS 8500-2.

Steel bar dowels for haunching to BS 4482.

Mortar for bedding and jointing to be Portland cement to BS 12, Class 42.5.
Sand to BS EN 12620, Grade 0/4 or 0/2 (MP).

Installation details and layout for new standard concrete block paving to match existing

General Information

On delivery, the product should be inspected. If there are any issues, please report them immediately and do not commence installation. Before installation commences a certain amount of sorting of the product may be required to ensure consistency of colour, texture and dimensional tolerance.

Health and Safety Information Safe working practices should be employed at all times during the construction process and all necessary Personal Protective Equipment (PPE) should be worn.

Pavement Design for most applications a sub-base of minimum 150mm should prove to be sufficient. However, the paving design must be based upon the prevalent ground conditions and type and frequency of anticipated loads.

Accuracy

Deviations (maximum):

- Level: ± 6 mm.

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- Horizontal and vertical alignment: 3 mm in 3 m.

Mortar joints

Jointing: As laying proceeds, butter ends of units with bedding mortar.

Completely fill joints.

- Narrow mortar joints: Tightly butt. Clean off surplus mortar immediately.
- Tooled mortar joints: Tool to a neat flush profile.

The manufacturing tolerances of the paving units, profile of the site and frequency of string lines used should be taken into consideration during installation. These factors may have a bearing on the straightness of line achievable. Paving units should be laid with a joint width of 2-5mm. Joint widths may be varied slightly in order to achieve straight lines or maintain bond, but should never exceed this size range. We recommend that, when purchasing materials, especially in the case of larger quantities, they all come from the same batch and that the products are thoroughly mixed on site by drawing from a minimum of three packs.

Lay whole paving units first, followed by cut units around obstacles or at edges. No units should be cut down to less than one quarter of its original size to prevent looseness or dislodgement at a later date. Where it appears that only a small section of block will fit, the "inboard cutting" technique should be adopted. The use of a larger or full unit against the edge restraint, allows a smaller unit to be placed in the resulting place. Where slopes, gradients or ramps are being constructed, placement of the units should commence at the lowest point i.e.: the bottom of the slope, working upwards. Where there is a risk of lateral movement of the paving units due to the gradient encountered, the provision of additional intermediate restraint should be considered.

Cutting may be carried out using a diamond tipped power saw or a block-splitting guillotine. It must however be noted that the aesthetic finish achieved will depend greatly upon the choice of cutting mechanism and level of skill.

Cut blocks should be inserted prior to completion of the working period or before the onset of inclement weather. Blocks should be cut such that the resultant joint width remains within the 2-5mm tolerance and no less than $\frac{1}{4}$ of the block in size. When laying to tight curves it may not always be possible to maintain a maximum 5mm joint, in which case, cut or special shaped units may have to be considered.

Inclement Weather Installation should be discontinued (and any open work face covered) if weather conditions are such that the performance of the paving may be jeopardised. In adverse weather conditions, units should not be laid on saturated laying course material. The filling of joints is not possible in damp conditions, and should be topped up at the earliest opportunity. All unfinished areas and stockpiles of materials should be covered in the advent of inclement weather to prevent saturation.

GRANULAR SUB-BASES

Granular material

Quality: Free from excessive dust, well graded, all pieces less than 75 mm in any direction, minimum 10% fines value of 50 kN

when tested in a soaked condition to BS 812-111.

In any one layer only one of the following groups:

Crushed rock (other than argillaceous rock) or quarry waste with not more binding material than is required to help hold the stone together.

Crushed concrete, crushed brick or tile, free from plaster, timber and metal.

Crushed non-expansive slag.

Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay.

Well-burned non-plastic colliery shale.

Natural gravel.

Natural sand.

Highways Agency material

Standard: Highways Agency 'Specification for highway works'.

Type 1 material: To HA specification clause 803.5.

Type 2 material: To HA specification clause 804.6.

Non frost susceptible material

Definition (non frost susceptible material): To Highways Agency 'Specification for highway works' clause 705.5.

EXECUTION

Excavation of subgrades

Final excavation to formation/ subformation level: Carry out immediately before compaction of subgrade.

Soft spots and voids: Give notice.

Wet conditions: Do not excavate or compact when the subgrade may be damaged or destabilised.

Preparation/ compaction of subgrades

Timing: Immediately before placing sub-base.

Soft or damaged areas: Excavate and replace with sub-base material, compacted in layers 300 mm (maximum) thick.

Compaction: Thoroughly, by roller or other suitable means, adequate to resist subsidence or deformation of the subgrade during construction and of the completed pavings when in use. Take particular care to compact fully at intrusions, perimeters and where local excavation and backfilling has taken place.

Compaction of sub-base

Proposals: Well in advance of starting work submit details of:

- Maximum depth of each compacted layer.
- Type of plant.
- Minimum number of passes per layer.

Preparation: Remove loose soil, rubbish and standing water.

Structures, membranes and buried services: Ensure stability and avoid damage.

Laying: Spread and level in layers. As soon as possible thereafter thoroughly compact each layer.

At drainage fittings, inspection cover bases and at perimeters: Take particular care to compact fully.

After compaction and immediately before overlaying: The sub-base surface must be uniformly well closed and free from loose material, cracks, ruts or hollows.

Blinding

Finish: Vibrate to provide a close, smooth surface.

Cold weather working

Frozen materials: Do not use.

Freezing conditions: Do not place fill on frozen surfaces. Remove material affected by frost. Replace and recompact if not damaged after thawing.

Protection

Sub-bases: As soon as practicable, cover with subsequent layers, specified elsewhere.

Subgrades and sub-bases: Prevent degradation by construction traffic, construction operations and inclement weather.

KERBS

Precast concrete kerbs, edgings and channels to BS EN 1340. Check existing profile and replicate profile with new kerbs

Concrete for foundations and haunching to BS 8500-2.

Steel bar dowels for haunching to BS 4482.

Mortar for bedding and jointing to be Portland cement to BS 12, Class 42.5.
Sand to BS EN 12620, Grade 0/4 or 0/2 (MP).

EXECUTION

Laying kerbs, edgings and channels

Cutting: Neat, accurate and without spalling. Form neat junctions.

Long units (450 mm and over) minimum length after cutting: 300 mm.

Short units' minimum length after cutting: The lower of one third of their original length or 50 mm.

Bedding: Position true to line and level along top and front faces, in a mortar bed on accurately cast foundations.

Securing: After bedding has set, secure with a continuous haunching of concrete.

Haunching dowels

Size: 12 mm diameter, 150 mm long.

Installation: While concrete is plastic, insert dowels vertically into foundation.

Centres: 450 mm.

Distance from back face of kerb: 50 mm.

Projection: 75 mm.

Haunching: Rectangular cross section, cast against formwork, fully enclosing and protecting dowels.

Channels

Installation: Lay to an even gradient. Avoid ponding and backfall.

Lowest points of channels: 6 mm above drainage outlets.

Drainage channel systems

Installation:

Constant depth channels: Lay to an even gradient. Avoid ponding and backfall.

Commence laying from outlets.

Channel systems with a built in fall: Lay with top of channels level, installed in correct sequence to form an even gradient

without ponding or backfall. Commence laying from outlets.

Silt and debris: Immediately before handover, remove from entire system.

Washing and detritus: Safely dispose without discharging into sewers or watercourses.

Accuracy

Deviations (maximum):

Level: ± 6 mm.

Horizontal and vertical alignment: 3 mm in 3 m.

Mortar joints

Jointing: As laying proceeds, butter ends of units with bedding mortar. Completely fill joints.

Narrow mortar joints: Tightly butt. Clean off surplus mortar immediately.

Tooled mortar joints: Tool to a neat flush profile.

GRASS VERGE

To be read with Preliminaries/ General conditions.

Area to receive new area of grass verge as indicated in DWG24619.109. Area is to be infilled with existing spoil excavated to form area for new concrete slab to form the soil sub base.

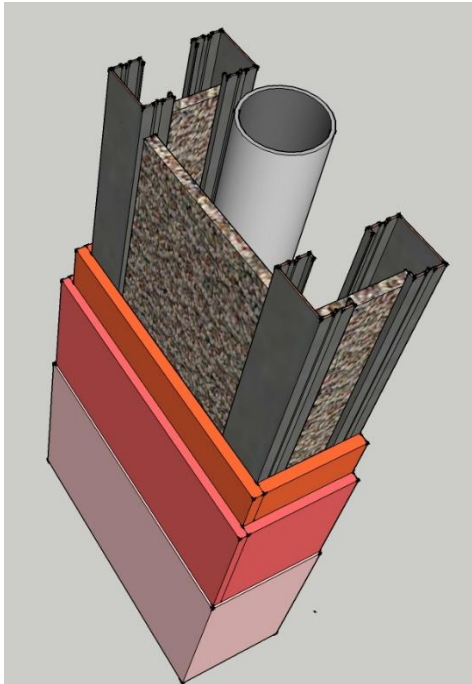
Contractor is to install Rolawn Medallion Turf or similar approved turf.

General information

Color	Green
Finish	Textured
Material	Vegetation
Shape	Rectangle
Length	1640 mm
Width	610 mm
Height	12.5 mm
Uniclass	Pr 45 57 91 20 Cultivated turf Primary
CAWS	Q30/400 Cultivated turf
Specification data - Cultivated turf	
Turf dimensions	0.61 x 1.64 m.
Grass sward	-
Turfgrass seed mix type	General purpose.
Turfgrass species composition	Fescue and ryegrass.
Cut height (maximum)	12.5 mm.
Substrate	-
Reinforcement mesh	-
Type	Oxygrid™ degradable net.
Strength	Able to be placed and unrolled without breaking.
Mass per square metre (maximum)	20 kg.
Sustainability data	
Material	Vegetation

PIPE ENCASEMENT

Various SVP's, heating and plumbing pipes are to be encased in plasterboard encasements.



Channel section

SVP or other pipework

50mm Rockwool RW5 insulation batts

15mm thick Fireline board

12.7mm thick Plaster board

2-3mm plaster skim finish

METAL STUD PARTITION SYSTEM

British Gypsum, East Leake, Loughborough, Leicestershire LE12 6HX Website: www.british-gypsum.com Tel: 0844 800 1991 E-mail: bgtechnical.enquiries@bpb.com.

Nominal thickness overall 30mm

Performance criteria:

Fire resistance to BS EN 1364-2: 30 minutes.

FRAMING

Studs to be Gypframe 70S50 at 600mm centres and Gypframe 72FEC50 at abutments, openings and junctions.

Floor channel to be Gypframe 72FEC50

Gypframe GFT1 to support horizontal joints of single layer board linings.

Gypframe Fixing strap GFS1 to support horizontal joints in face layer of double layer board linings, or as an alternative to fixing T for single layer board linings.

Head condition fix Gypframe 72FEC50 up to structural soffit.

100mm Rockwool RW5 acoustic quilt cavity insulation

Internal facing to be Gyproc Fire Line Duplex 12.5mm fire resistant plasterboard with a vapour barrier, helping improve fire resistance and prevent condensation damage. boards to both sides.

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Facing to both sides to be 12.7m Gyproc Wall Board, fixed with 25mm and 40mm British Gypsum Drywall Screws at 300mm centres.

All joints taped with 50mm wide Thistle ProTape FT100 glass fibre mesh plasterers' scrim tape.

All boards to be finished with 2mm – 3mm Thistle Skim coat plaster (General use)

Fix perimeter channel Gypframe 72FEC50 to walls with 8mm Ø pre drilled holes at 65mm Min. drill hole depth and use Fischer Duopower Nylon High Performance Plug 8mm Ø x 50mm long with 6mm Ø x 50mm Self-tapping cap head screws at 300mm centres

Fix plasterboards with 41mm and 25mm British Gypsum Collated Jack-Point Screws at 300mm centres

PLASTER FINISH

British Gypsum, Head Office, East Leake, Loughborough, Leicestershire, LE12 6HX
T: 0115 945 1000 british-gypsum.com

Clean off all debris to existing brickwork/Blockwork inner leaf and roughen edges of damaged plaster, as backgrounds should be reasonably dry, clean and dust-free.

Apply Thistle® GypPrime, dilute if preferred using a ratio of no more than 1 part Thistle GypPrime to 5 parts water

Apply 9mm -10mm thick ThistlePro DuraFinish gypsum finish plaster to EN 13279-1:2008, Type B7/20/6 on low-suction backgrounds. Key surface with stiff brush

Apply 11mm thick Thistle® HardWall gypsum finish plaster to EN 13279-1:2008, Type B4/20/2 and C3/20. Apply the plaster with a firm pressure, and build it out to the required thickness without exceeding 8mm. Rule the plaster to an even surface and lightly scratch it to form a key for 2mm of Thistle finish plaster. Fix Thistle Plaster Angle Beads or Thistle Plaster Stop Beads to angles by embedding them in dabs of plaster. Follow good site practice as outlined in BS EN 13914 Code of Practice for Internal Plastering.

RIGID BEADS/ STOPS

Manufacturer: British Gypsum, Lafarge or equal approved

Material: galvanised steel to BS 6452-1.

INSTALLING BEADS/ STOPS

Fix Thistle Thin Coat Angle Beads to plasterboard angles by embedding them in dabs of plaster. To hold the bead in alignment as the plaster sets, it is recommended to use additional mechanical fixings like non-rusting nails, screws and staples. Wipe any surplus from corners before the plaster sets, as scraping it away later may damage the zinc coating.

Cutting: Neatly using mitres at return angles.

Fixing: Securely using longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with background.

Finishing: After joint compounds/ plasters have been applied, remove surplus material while still wet from surfaces of beads which are exposed to view.

REPAIRS TO PLASTER

Repair Minor damage - Lightly sand the surface to remove burrs and fill flush with Gyproc Easi-Fill or Easi-Fill 45, or two applications of Gyproc Joint Cement. When dry, apply Gyproc Drywall Primer or Gyproc Drywall Sealer to leave the surface ready for decoration.

Deep indents resulting from impact, apply a coat of Gyproc Easi-Fill or Easi-Fill 45, followed by the procedure for repairing minor damage as outlined above, once set/dry. Damaged core and/or broken edges (non-performance situations only) . Apply Thistle GypPrime or PVA to seal the core and surrounding liner.

Bulk fill the hole with a stiff mix of Gyproc Easi-Fill or Easi-Fill 45, or Gyproc Joint Filler, and strike off flush. Apply Gyproc Easi-Fill or Easi-Fill 45, or two applications of Gyproc Joint

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Cement, once the filler is set/dry. When dry, apply Gyproc Drywall Primer or Gyproc Drywall Sealer (only suitable in non-performance situations).

SCAFFOLD

Clarify when a scaffold design is required and what level of training and competence those erecting, dismantling, altering, inspecting and supervising scaffolding operations are expected to have.

Scaffold design

It is a requirement of the Work at Height Regulations 2005 that unless a scaffold is assembled to a generally recognised standard configuration, e.g., NASC Technical Guidance TG20 for tube and fitting scaffolds or similar guidance from manufacturers of system scaffolds, the scaffold should be designed by bespoke calculation, by a competent person, to ensure it will have adequate strength, rigidity and stability while it is erected, used and dismantled.

At the start of the planning process, the user should supply relevant information to the scaffold contractor to ensure an accurate and proper design process is followed. Typically, this information should include:

Site location

Period of time the scaffold is required to be in place Intended use

Height and length and any critical dimensions which may affect the scaffold

Number of boarded lifts

Maximum working loads to be imposed and maximum number of people using the scaffold at any one time

Type of access onto the scaffold e.g., staircase, ladder bay, external ladders

Whether there is a requirement for sheeting, netting or brick guards

Any specific requirements or provisions e.g., pedestrian walkway, restriction on tie locations, inclusion/provision for mechanical handling plant e.g., hoist)

Nature of the ground conditions or supporting structure and Information on the structure/building the scaffold will be erected against together with any relevant dimensions and drawings

Any restrictions that may affect the erection, alteration or dismantling proc

Prior to installation, the scaffold contractor or scaffold designer can then provide relevant information about the scaffold. This should include:

Type of scaffold required (tube & fitting or system)

Maximum bay lengths

Maximum lift heights

Platform boarding arrangement (i.e., 5 + 2) and the number of boarded lifts that can be used at any one time

Safe working load / load class

Maximum leg loads

Maximum tie spacing both horizontal and vertical and tie duty

Details of additional elements such as beamed bridges, fans, loading bays etc, which may be a standard configuration (see note 1 ref tg20:13) or specifically designed

Information can be included in relevant drawings if appropriate

Any other information relevant to the design, installation or use of the scaffold

Reference number, date etc. To enable recording, referencing and checking

All scaffolding must be erected, dismantled and altered in a safe manner. This is achieved by following the guidance provided by the NASC in document SG4 'Preventing falls in scaffolding' for tube and fitting scaffolds or by following similar guidance provided by the manufacturers of system scaffolding.

For scaffolds that fall outside the scope of a generally recognised standard configuration the design must be such that safe erection and dismantling techniques can also be employed throughout the duration of the works. To ensure stability for more complex scaffolds, drawings should be produced and, where necessary, these may need to be supplemented with specific instructions.

Any proposed modification or alteration that takes a scaffold outside the scope of a generally recognised standard configuration should be designed by a competent person and proven by calculation.

Scaffold structures that normally require bespoke design

Includes:

All shoring scaffolds (dead, raking, flying)

Cantilevered scaffolds [1](#)

Truss-out scaffolds

Façade retention

Access scaffolds with more than the 2 working lifts [2](#)

Buttressed free-standing scaffolds

Temporary roofs and temporary buildings

Support scaffolds

Complex loading bays

Mobile and static towers

Free standing scaffolds

Temporary ramps and elevated roadways

Staircases and fire escapes (unless covered by manufacturer's instructions)

Spectator terraces and seating stands

Bridge scaffolds

Towers requiring guys or ground anchors

Offshore scaffolds

Pedestrian footbridges or walkways

Slung and suspended scaffolds

Protection fans

Pavement gantries

Marine scaffolds

Boiler scaffolds

Power line crossings

Lifting gantries and towers

Steeple scaffolds

Radial / splayed scaffolds on contoured facades

System scaffolds outside manufacturers guidance

Sign board supports

Sealing end structures (such as temporary screens)

Temporary storage on site

Masts, lighting towers and transmission towers

Advertising hoardings/banners

Rubbish chute

Any scaffold structure not mentioned above that falls outside the 'compliant scaffold' criteria in tg20 or similar guidance from manufacturers of system scaffolds.

The above list is not exhaustive and any scaffold that is not a standard configuration or does not comply with published manufacturers' guidelines will require a specific design produced by a competent person.

Note

1. TG20:13 provides compliant scaffolds for a limited range of cantilever scaffolds, loading bays, static towers, use of rakers, bridges and protection fans.

2. TG20:13 provides a range of compliant scaffolds, which can be boarded at any number of lifts, but only two platforms can be used as working platforms at any one time.

Competence and supervision of scaffolding operatives

All employees should be competent for the type of scaffolding work they are undertaking and should have received appropriate training relevant to the type and complexity of scaffolding they are working on.

Employers must provide appropriate levels of supervision taking into account the complexity of the work and the levels of training and competence of the scaffolders involved.

As a minimum requirement, every scaffold gang should contain a competent scaffolder who has received training for the type and complexity of the scaffold to be erected, altered or dismantled.

Trainee scaffolders should always work under the direct supervision of a trained and competent scaffolder.

Operatives are classed as 'trainees' until they have completed the approved training and assessment required to be deemed competent.

Erection, alteration and dismantling of all scaffolding structures (basic or complex) should be done under the direct supervision of a competent person. For complex structures this would usually be an 'Advanced Scaffolder'

or an individual who has received training in a specific type of system scaffold for the complexity of the configuration involved.

Scaffolding operatives should be up to date with the latest changes to safety guidance and good working practices within the scaffolding industry. Giving operatives job specific pre-start briefings and regular toolbox talks is a good way of keeping them informed.

Guidance on the relevant expertise of Scaffolders and Advanced scaffolders including details of which structures they are deemed competent to erect can be obtained from the [Construction Industry Scaffolders Record Scheme \(CISRS\) website](#).

Scaffold inspection

It is the scaffold users / hirer's responsibility to ensure that all scaffolding has been inspected as follows:

Following installation / before first use

At an interval of no more than every 7 days thereafter

Following any circumstances liable to jeopardise the safety of the installation e.g., High winds.

All scaffolding inspection should be carried out by a competent person whose combination of knowledge, training and experience is appropriate for the type and complexity of the scaffold. Competence may have been assessed under the CISRS or an individual may have received training in inspecting a specific type of system scaffold from a manufacturer/supplier.

A non-scaffolder who has attended a scaffold inspection course (e.g., a site manager) could be deemed competent to inspect a basic scaffold structure.

The scaffold inspection report should note any defects or matters that could give rise to a risk to health and safety and any corrective actions taken, even when those actions are taken promptly, as this assists with the identification of any recurring problem.

TARMAC

PRODUCTS

Chippings to BS EN 13043 and PD 6682-2.

Bitumen emulsion: To BS 434-1.

Cutback bitumen: To BS EN 12591.

Asphalt concrete to BS EN 13108-1.

EXECUTION

Laying generally to BS 594987.

Remove loose material, rubbish and standing water.

Adjacent work: Form neat junctions. Do not damage.

Channels, kerbs, inspection covers: Keep clean.

New Tarmac areas

- Surface course

The top layer, usually made of a small, hard aggregate in a bitumen or asphalt binder. The surface course for a car park is recommended to be 25 mm thick.

- Binder course

The load-bearing layer that strengthens the pavement. The binder course should be at least 70 mm thick.

- Sub-base

A layer of crushed rock or hardcore that acts as a load-bearing layer. The sub-base is usually 225 mm thick.

- Sub-grade

Compacted soil with any vegetation or loose topsoil removed.

Keep traffic-free until cooled to prevailing atmospheric temperature.

Prevent damage. Do not allow rollers to stand on paving at any time.

Lines and levels to have regular falls to prevent ponding.

Overall texture to be smooth, even and free from dragging, tearing or segregation.

Surface treatment to existing paving:

Surface to receive dressing and kept clean and dry. All patching complete.

Accuracy

Permissible deviation from required levels, falls and cambers in accordance with BS 594987, Table 7.

Contractor's use of Tarmac areas

Defer laying of final surfacing until as late as practicable.

Immediately before laying final surfacing, clean and make good the base/ binder course and allow to dry. Uniformly apply, without puddles, a tack coat of sprayed bitumen emulsion of a suitable grade to BS 434-1 at 1.5–2.0 kg/m². Allow emulsion to break completely before applying surfacing.

Uncoated chippings for surface dressing

Applying binder at a rate to be in accordance with Transport Research Laboratory Road Note 39.

Cutback bitumen : Do not use at temperatures below 15°C.

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Modified binders: Do not use without prior approval. Adjust rate in accordance with manufacturer's instructions.

Applying chippings:

Coverage: 100–105% shoulder to shoulder to BS 598-108.

Compaction: Roll. Do not crush chippings.

Excess chippings to be removed before traffic is allowed.

Chippings loosened by traffic to be removed when instructed.