TECHNICAL SPECIFICATION OF WORKMANSHIP AND MATERIALS

Lots 1 and 2

RESPONSIVE MAINTENANCE, OUT OF HOURS EMERGENCY WORKS, VOID PROPERTY WORKS, MINOR STRUCTURAL / ALTERATION WORKS, AND CALL HANDLING.

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TECHNICAL SPECIFICATION

00-TOP 650 PRODUCTS USED

TECHNICAL SPECIFICATION

01-GENERAL CLAUSES

GENERAL

Applicability

001 This initial general section applies to all subsequent sections of this Specification of Workmanship and Materials **("this Specification")**.

002 This Specification is drafted as a series of instructions that the Contractor must ensure are complied with in relation to the Works. Each instruction includes all tasks necessary to comply fully with the instruction and the Schedule of Rates item(s) to which it relates.

003 The Schedule of Rates amounts, as adjusted by the Contractor's tendered Rates where applicable, and the tendered Prices include for carrying out all tasks required by this Specification. No further payment is due to the Provider in respect of any such tasks beyond the payments provided for in the Schedule of Rates, the Price Framework and the Price Schedule.

004 Specifications across several trades may be relevant to each Schedule of Rates item. The Contractor must comply with all requirements of this Specification applicable to the specific type of Works to be undertaken.

005 References to Paragraphs and Sections in this Specification are to the applicable Paragraph and Section of this Specification. If any contradiction appears within the Specification sections, Schedules of Rates, the Employer's Preliminaries or Policy documents etc., the most rigorous standard takes precedence.

Standards of workmanship and Materials

006 Carry out and complete all Works as required by this Contract including:

- in accordance with Law including Health and Safety Law and Building Safety Law;
- in accordance with all applicable Codes of Practice;
- in accordance with Good Industry Practice;
- in accordance with the Employer's Preliminaries and Policies;
- in accordance with any specific requirements for those Works in this Specification; and
- to the satisfaction of the Employer's Contract Manager.

007 To the extent that the standard of any Works has not been specified in this Contract, agree the relevant standard for the Works with the Employer's Contract Manager before their execution. Where particular Works or working methods are to be "approved by" "agreed with" or are indicated to be "subject to the approval of" the Employer's Contract Manager, give the Employer's Contract Manager adequate notice when such approval or agreement is needed and retain evidence of all approvals given, and items that have been agreed, by the Employer's Contract Manager.

008 To the extent that it is necessary to Design any aspects of the Works, in preparing those use the reasonable skill, care, diligence and expedition as would be reasonably expected of a prudent, experienced contractor with Design obligations having experience in carrying out projects similar in size, scope, nature, complexity and value to the Works.

009 Maintain all existing lines and levels at all times and carry through new Work to the same lines and levels unless otherwise Instructed by the Employer's Contract Manager.

European and British Standards & Codes of Practice

010 Ensure all Works undertaken and all Materials used in those Works comply with all applicable Standards and Codes of Practice that are current at the time of their use.

011 References in this Specification of Workmanship and Materials to any Standards and Codes of Practice are to be construed as references to the version current at the time the Order is undertaken.

012 Where a specific Standard or a Code of Practice is referred to, this sets out the minimum acceptable standard of Materials or workmanship.

013 Any requirement in this Specification of Workmanship and Materials to use Materials defined by reference to a specified Quality Assurance Scheme, British Board of Agrément Certificate, Standard or other approval, may be satisfied by compliance with an equivalent international Standard.

014 A Contractor offering any Materials based on compliance with any such approval or international Standard shall notify the Employer's Contract Manager of such substitution in advance of placing any order for those Materials and provide (in English) technical or other details of the approval or Standard and its qualifying tests.

Materials

015 The Employer wishes to standardise the use of Materials across its Properties included in 00-CCC Top 650 Products Schedule. This is to simplify parts requirements and van stock loads, to improve its repairs processes and to reduce maintenance costs. Wherever possible, match all Materials used to materials currently used in the Properties, particularly in terms of their parts requirements and repair procedures. In this Specification the Employer has set out details of its current Materials to which the Provider is required to standardise.

016 Where this Specification indicates that Materials are to be "Approved by the Employer's Contract Manager", provide samples of the proposed Materials to the Employer's Contract Manager for Approval. Any Materials that comply with the functionality and compatibility (including aesthetic compatibility) requirements of this Specification may be proposed. No further approval is required for any Materials listed in this Specification as being the Client's currently used Materials. The purpose of the Employer's Contract Manager decision on the use and approval of such Materials is to ensure that they meet the Employer's Contract Manager for functionality and compatibility. The decision of the Employer's Contract Manager on this is final.

017 Where this Specification requires Materials to be matched to existing Materials or finishes, this match is subject to the Approval of the Employer's Contract Manager.

018 Do not use any Prohibited Materials in carrying out the Works. Prohibited Materials are those materials which are generally accepted or (having regard to Good Industry Practice) are reasonably suspected of:

- being harmful in themselves;
- being harmful when used in a particular situation or in combination with other Materials;
- becoming harmful with the passage of time; or
- being damaged by or causing damage to the structure in which they are to be affixed.

019 Materials are to be regarded as harmful if, in the context of their use in the Works (whether alone or in combination with other materials) they:

- are prejudicial to health and safety;
- may pose a threat to the structural stability or the physical integrity of any Property; or
- could materially reduce the normal life expectancy of any part of the Property.

020 Sustainable Timber: All timber and wood derived products referred to throughout this document, and which are supplied to the Employer, or used in the Works, must be procured in accordance with all applicable Law.

021 CE/UKCA Marked Products: All products referred to throughout this document and supplied to the Client, or used in the Works, must be supplied with a Declaration of Performance (DoP) and carry the appropriate CE/UKCA conformity assessment marking.

Performance Standards on the CE/UKCA mark must comply with relevant Building Regulations where required.

The CE/UKCA mark must be fixed visibly, legibly and indelibly either to the product or to a label attached to the product. If this is not possible or not warranted, then it must be fixed to the packaging or within the accompanying documentation.

The DoP must be made available by the manufacturer (this may be via a website).

022 Use, fix and apply all Materials strictly in accordance with the manufacturer's recommendations, directions, instructions or technical data sheets.

023 Participate in joint initiatives with the Employer and other contractors to establish supply chain agreements.

024 Where appropriate suggest (economically viable) amendments to this Specification where those amendments may lead to an improvement in environmental performance or sustainability.

025 At the Client's request provide all information the Employer reasonably requests regarding the environmental impact of the supply and use of any Materials the Contractor selects for use in the Works.

026 **Decanting – Clause not used**

Permit to Work Certification

027 Comply with any “permit to work system” notified to the Provider by the Employer’s Contract Manager and ensure that no Worker undertakes any Works covered by any “permit to work System” without a permit having been issued by the Employer’s Contract Manager.

Access

028 Ensure that a risk assessment is undertaken and a method statement is provided to the Employer’s Contract Manager detailing the means of access to undertake all Works requiring access at heights including for inspection and testing.

Firestopping

029 Ensure that all holes for cables, pipes etc., in the structure of any Property formed or drilled by the Contractor are fire-stopped in accordance with Building Safety Law.

030 Report immediately to the Employer’s Contract Manager where existing holes for cables, pipes or service media in the structure of any Property have no or inadequate firestopping, giving the detailed location of the hole and providing digital photographs.

TECHNICAL SPECIFICATION

02-EXCAVATION AND EARTHWORK

EXCAVATION AND EARTHWORK

Excavation

001 Leave excavations for the foundations of walls and similar structures exposed until they have been inspected and approved by Building Control. Do not fill in trenches or holds or cover up the concrete until dimensions have been taken by the Employer's Contract Manager.

002 Refill any excessive depth to the proper level with concrete *(Gen1)* as specified in the "Concrete work" Section. Excavate the formation level to such further depth as the Employer's Contract Manager Instructs where the bottom of any excavation is found to be soft or otherwise unsound. Fill any extra depth with concrete (for which additional payment is to be made).

003 Any rubble, salvageable building materials and antiquities from the excavations belong to the Employer.

004 Check in advance the location of any pipes, cables or any other services when excavations are to be carried out.

Weed killer

005 Use an organic weed killer approved by the Employer's Contract Manager and applied in accordance with the manufacturer's technical data sheet. All products must be used and distributed by or under the direct supervision of a person holding an appropriate Certificate of Competence.

006 All material used, and all methods of application and tank mixes shall be in accordance with Health and Safety Law.

007 The application of weedkiller is to be confined to the areas on the Area Map appended to the Contract Details. The Employer's Contract Manager must be provided with written records showing dates of application, the location of the Works, the chemical and the rate of application.

008 The use of residual herbicides on hard surfaces is strictly prohibited.

Disposal of excavated material

009 Remove from site any surplus excavated material.

Filling

010 Use only clean subsoil free from vegetable soil, roots and rubbish for backfilling around foundations or to make up levels, lay in layers not exceeding 200mm thick and consolidate each layer as required.

Pumping and baling

011 Keep the bottom of excavations free from storm or percolating water by pumping or other means during and throughout the progress of the Works until their completion.

Supporting excavations

012 Support all excavations using earthwork supports to ensure the safety of Staff and the Works to the satisfaction of the Client's Representative.

Work in cold weather

013 Protect excavations against freezing. Do not use frozen materials for backfilling.

Hardcore

014 Use for hardcore only hard dry crushed brick or hard broken rubble stone, or limestone quarry waste, free from mud, dirt, clay, ashes, clinker, asbestos, timber or any other deleterious matter, broken to pass a 75mm diameter ring in all directions, well rolled and consolidated in 100mm layers.

015 Crushed rock under solid floor slabs, sub-bases and road bases shall be sound clean rock when tested in accordance with applicable Standards and shall not be frost susceptible. Sample and test crushed rock in accordance with the Standards applicable before the Works and provide evidence of the tests to the Client's Representative on request.

016 Crushed rock sub-bases material to roads and shared surfaces are to be graded in accordance with the following table:

100mm CRUSHED ROCK: RANGE OF GRADING FOR SUB-BASE MATERIAL	
BS Sieve Size	Percentage by mass passing.
125.00mm	100
100.00mm	90-100
90.00mm	82-100
37.50mm	25-52
28.00mm	10-30
14.00mm	0-10
6.30mm	0-6
3.35mm	0-2

017 Crushed rock road-base material to roads, shared surfaces, bases to footpaths/paved areas are to be graded in accordance with the following table:

65mm CRUSHED ROCK: RANGE OF GRADING FOR ROAD-BASE MATERIAL	
BS Sieve Size	Percentage by mass passing.
65.00mm	100
50.00mm	67-100
37.50mm	52-70
28.00mm	30-45
14.00mm	10-28
6.30mm	6-10
2.36mm	0-6
1.16mm	0-2

018 Crushed rock under solid floor slabs is to be graded as the table in clause 018 above, spread and levelled in layers not exceeding 150mm thick, with each layer thoroughly compacted with a vibrating roller, vibrator plate compactor, vibro tamper, power rammer or other approved means.

019 Crushed rock filling behind retaining walls is to be accordance with clause 016 above, graded in accordance with the table below and thoroughly compacted to the satisfaction of the Employer's Contract Manager.

BS Sieve Size	Percentage by mass passing.
63.00mm	100
37.50mm	85-100
20.00mm	0-20
10.00mm	0-5

020 Sub-base material is to be spread evenly on the blinded formation. Where the total depth of sub-base is less than 250mm, this shall be spread in one layer so when it is compacted the total depth shall be as required or specified within a =10mm to -30mm tolerance and compacted in accordance with the table in clause 23 below.

021 Road base material is to be laid in layers, the minimum compacted depth of material in one layer shall be 110mm and the maximum compacted thickness in one layer shall be 225mm, compaction shall be in accordance with the table in clause 20 below, the finished levels of the compacted road base material shall be within a +10mm to -15mm tolerance.

022 Base material to footpaths and paved areas shall be spread evenly and compacted with a roller of not less than 2.5 tonnes weight and blinded with just enough stone dust or fine granular material to give a close textured surface.

023 The compaction requirements for Granular sub-base and Road base material are as tabled below:

Type of compaction plant	Category	Number of passes of compaction equipment for layers not exceeding the following compacted depths			
		110mm	150mm	225mm	250mm
Smooth-wheeled roller (or vibratory roller operating without vibration)	Mass per metre width of roll: Over 2700kg up to 5400kg	16	N/A	N/A	N/A
	Over 5400kg	8	16	N/A	N/A
Pneumatic-tyred roller	Mass per wheel: Over 4000kg up to 6000kg	12	N/A	N/A	N/A
	Over 6000kg up to 8000kg	12	N/A	N/A	N/A
	Over 8000kg up to 12000kg	10	16	N/A	N/A
	Over 12000kg	8	12	N/A	N/A
Vibratory roller	Mass per metre width of vibrating roller: Over 700kg up to 1300kg	16	N/A	N/A	N/A
	Over 1300kg up to 1800kg	6	16	N/A	N/A
	Over 1800kg up to 2300kg	4	6	10	N/A
	Over 2300kg up to 2900kg	3	5	9	10
	Over 2900kg up to 3600kg	3	5	8	9
	Over 3600kg up to 4300kg	2	4	7	8
	Over 4300kg up to 5000kg	2	4	6	7
	Over 5000kg	2	3	5	6
Vibrating plate compactor	Mass per sq. metre of base plate; Over 1400kg/sqm up to 1800kg/sqm	8	N/A	N/A	N/A

	Over 1800kg/sqm up to 2100kg/sqm	5	8	N/A	N/A
	Over 2100kg/sqm	3	6	10	N/A
Vibro-tamper	Mass: Over 50kg up to 65kg	4	8	N/A	N/A
	Over 65kg up to 75kg	3	6	10	N/A
	Over 75kg	2	4	8	N/A
Power rammer	Mass: 100kg up to 500kg	5	8	N/A	N/A
	Over 500kg	5	8	12	N/A

Blinding

024 Use for blinding only sand, fine gravel, pulverised fuel ash or other fine materials that are free from dust, spread in one layer, and compacted, well rolled and consolidated., Stone dust blinding to roads and sub-bases is to compacted to the required thickness by 4 passes of a smooth wheeled roller weighing not less than 8 tonnes.

025 Do not use shale either as hardcore or blinding to hardcore.

026 Use sufficient blinding material to fill the surface to provide a close smooth surface for hardcore.

Topsoil Areas

027 Grade subsoil to landforms in appropriate weather conditions to avoid compaction and to suitable concave/convex profiles according to the Employer's Contract Manager requirements. All landforms shall be suitable compacted.

028 Excavate locally as necessary, areas of thicker topsoil. Small planting beds located in general landscape areas may be excavated separately at a later date.

029 Grade subsoil to achieve the specified finished levels of topsoil especially at kerb edges.

030 Loosen subsoil up to a minimum depth of 150mm immediately prior to top soil, obtain approval from the Client's Representative for the sub-base before any top-soiling begins on site.

031 Undisturbed topsoil which is to be landscaped is to be prepared as necessary for cultivation operations, in particular:

- Where the ground is hard, break up with a ripper;
- Where the ground is covered with turf or a thick sward, plough or dig over to the full depth of the topsoil;
- Treat with a suitable herbicide to prevent seeding of weeds

Imported Topsoil

032 Topsoil is to comply with applicable Standards; general purpose grade, it must be free from aggressive weeds and hazardous foreign matter, with less than 10% volume of stones, maximum diameter 50mm, maximum organic content 35% by volume/minimum 10% and a pH range 5.0 to 8.2.

033 The areas to be top soiled shall be cultivated to break up any compaction before being covered by topsoil 400mm thick, provided and spread by the Provider. The quality and depth of topsoil must be approved by the Employer's Contract Manager before commencing planting operations.

034 Where the Employer's Contract Manager has deemed that the quality of imported topsoil does not meet the minimum grade specified undertake remedial treatment as required by the Employer's Contract Manager at the expense of the Contractor. This may include improvement by the addition of organic matter, lime and fertiliser.

035 If required by the Employer's Contract Manager either provide a declaration of analysis from the Contractor detailing the classification of the topsoil or, have laboratory tests undertaken on samples of the topsoil and provide details to the Employer's Contract Manager.

036 Where requested by the Employer's Contract Manager have topsoil weighed at a public weighbridge before its delivery to site and produce official dockets to the Employer's Contract Manager.

037 Ensure compliance with any necessary the Environmental Agency declaration of compliance and provenance of all greenfield soil.

038 Do not use topsoil contaminated with sub-soil, rubbish, oil based products or other materials toxic to plant life. Dispose of contaminated topsoil in a manner approved by the Employer's Contract Manager.

Topsoil Cultivation

039 Eradicate all existing annual and perennial weeds prior to commencing any cultivations. Any compacted topsoil is to be broken up to its full depth. Cultivate by rotovating to a minimum depth of 150mm in order to produce a fine tilth, any undesirable material brought to the surface including all stones, clay balls over 25mm size, tufts of grass, rubbish and other foreign matter are to be removed from site.

040 Where topsoil is reasonably dry and workable, grade to smooth flowing contours, with falls for adequate drainage removing all hollows, ridges and sharp changes of levels.

041 Unless otherwise Instructed by the Employer's Contract Manager, ensure finished levels of topsoil after settlement are 30mm above adjoining paving kerbs, manholes and other horizontal surfaces.

042 Topsoil levels may be adjusted by blade grading ensuring that there is nowhere less than 100mm of topsoil. If the required levels cannot be achieved by the movement of existing soil, seek and comply with Instructions from the Employer's Contract Manager.

043 After grading and fertilising, carry out a further cultivation to reduce top 25mm to a fine tilth, apply a balanced fertiliser base dressing approved by the Employer's Contract Manager for grassing works to the area to be grassed at a rate of 30g/m2 and lightly cultivated in.

044 Rake to a true lightly firmed surface, removing all stones and clay balls more than 25mm in any dimension on general areas.

045 Extend cultivations into any adjacent existing grass area to ensure full marrying of levels.

046 Obtain the Employer's Contract Manager approval of cultivations and seed bed preparation before sowing is carried out.

Finished Levels of Topsoil

047 Ensure that unless otherwise Instructed by the Employer's Contract Manager finished levels of topsoil after settlement:

- are 30mm above adjoining paving or kerbs;
- are not less than 150mm below damp proof course of adjoining buildings;
- are Graded to give suitable surface drainage away from buildings and to avoid ponding;
- have any slight depressions are to be filled with topsoil and graded appropriately;
- are married-in with adjoining soil areas;

Geotextile

048 Ensure all non-woven geotextile material manufactured from synthetic or other fibres:

- complies with applicable Standards;
- sustains a load of not less than 2.5KN/m at 5% axial strain determined in a wide strip tensile test;
- allows water to flow in either direction at a rate of not less than 10 litres/m2/s under a constant head of 100mm;
- has a pore opening size distribution between 100*10-6m and 300*100-6m.

049 Lay geotextile material in accordance with the manufacturer's technical data sheet with a minimum lap of 500mm.

050 The geotextile membrane will be part of the permanent Works to separate earthworks materials to form a permeable membrane. Provide evidence to the Employer's Contract Manager Representative, before the geotextile is incorporated into any permanent Works that the geotextile will be sufficiently durable, when installed in contact with materials to be separated to maintain its integrity for at least 20 (twenty) years. Protect geotextile at all times from mechanical and chemical damage. Ensure that the temporary exposure of materials susceptible to light between manufacture and their incorporation into the permanent Works does not exceed 5 hours.

Generally

051 Remove from the Property any imported filling Materials deemed unsuitable by the Employer's Contract Manager Representative.

052 Keep excavations and areas to be filled free from soil and rubbish.

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

TECHNICAL SPECIFICATION

03-DEMOLITION

DEMOLITION

GENERAL

Generally

001 Execute all demolition Works and alterations in the most careful manner to avoid damage to the surrounding structures in accordance with applicable Standards. Make good any damage caused.

002 Do not allow dangerous portions of any structure to remain standing during idle periods or overnight except where this is unavoidable. Where this is unavoidable, adequately strut and prop such portions to ensure their stability until Works recommence.

003 Load and remove from site all materials (including debris) arising from the demolition or alterations. Do not allow these materials to accumulate. Ensure the care and protection of any Materials to be re-used.

004 Bear the risk of any damage in removing, re-fixing and storing old Materials that are set aside for re-fixing. Replace any damaged or defective Materials or missing parts.

Survey

005 Before starting the Works, examine all available information, survey the structure(s), site and surrounding area. When requested by the provide a survey report with a method statement covering all relevant matters listed in the Health and Safety Executive (HSE) guidance in relation to development of safe working practices (www.hse.gov.uk) for further information and describing:

- the form, condition and details of the structure or structures, the site, and the surrounding area;
- the type, location and condition of features of historical, archaeological, geological or ecological importance;
- the type, location and condition of adjoining or surrounding premises that might be adversely affected by removal of the structure or structures, or by noise, vibration and/ or dust generated during deconstruction/ demolition;
- the identity and location of services above and below ground, including those required for the Provider's use, and the arrangements for their disconnection and removal;
- the form and location of flammable, toxic or hazardous materials, including lead-based paint, and proposed methods for their removal and disposal;
- the form and location of materials identified for reuse or recycling, and

proposed methods for removal and temporary storage;

- the proposed programme of the Works, including sequence and methods of deconstruction/ demolition.
- the details of any specific pre-weakening required;
- the arrangements for protection of Staff and the general public, including exclusion of unauthorized persons;
- the arrangements for control of site transport and traffic; and
- any special requirements.

Bench marks

006 Report to the Employer's Contract Manager any bench marks or other survey information found on the structure(s) to be demolished. Do not remove or destroy unless so Instructed in writing.

Existing features and adjacent works to be retained

007 Keep in place and adequately protect from any damage all features and adjacent work/Properties that are to be retained. Protect any trees as required by applicable Standards.

UTILITIES AFFECTED BY DEMOLITION

Regulations affecting utilities

008 Carry out any Works affecting new or existing services in accordance with all applicable Regulatory Requirements.

Location of services

009 Locate and mark the positions of services affected by the Works. Arrange with the appropriate Utility Providers for the location and marking of the positions of mains services.

Disconnection of services

010 Before starting demolition, arrange with the appropriate Utility Provider(s) for the disconnection of services and removal of fittings and equipment unless the drawings provided by the Employer's Contract Manager state otherwise.

Disconnection of drains

011 Locate and disconnect all disused drains connections. Seal within the site all the connections to existing sewers to the approval of the Utility Provider.

Drains in use

012 Protect drains, manholes, gullies, vent pipes and fittings still in use. Keep them free of debris at all times. Make good any damage arising from demolition. Leave them clean and in working order on completion of the demolition works.

Bypass connections

013 Provide bypass connections as necessary to maintain continuity of services to occupied areas of the Property and adjoining properties. Give a minimum of 72 hours' notice to Occupiers if shutdown is necessary during changeover.

Services which are to remain

014 Notify the Employer's Contract Manager, Utility Provider and Customer of any damage. Repair such damage to the satisfaction of the Employer's Contract Manager and Utility Provider.

WORKMANSHIP

Generally

015 Demolish structure(s) in accordance with the Health and Safety Executive (HSE) guidance notices and applicable Standards.

Equipment

016 Use suitable types and standards of cutting and demolition Equipment for the location and type of Works.

Gas or vapour risks

017 Take adequate precautions to prevent fire or explosion caused by gas or vapour.

Flammable liquids & gases

018 When removing tanks and pipes which may have contained flammable liquids or gases:

inform the appropriate officer of the Statutory Authority and follow any advice given;

display danger notices;

I. prohibit smoking and the use of naked lights;
II. use only non-ferrous tools and equipment, with an ample supply of water, to reduce the risk of sparking;
III. empty tanks and dispose of their contents to ensure that none enters any drainage system or watercourse;
IV. clean tanks and pipes and make them inert as described elsewhere in this Specification or as Instructed by the Client's Representative

Dust

019 Reduce dust by for example periodically spraying demolition Works with water (with suitable mitigation to prevent run off entering the drainage system). Use dust sheets and temporary screens.

Health hazards

020 Take adequate precautions to protect Staff and the public from health hazards associated with any dangerous fumes and dust arising during the Works including suitable consideration of/testing for lead contamination in existing painted surfaces.

021 Perform all Works in such a manner to ensure the safety of the Works and the public and so as to cause the minimum inconvenience to the public.

Adjoining properties

022 Leave adequate temporary support and protection for adjoining properties at each stage and arrange for inspection by the Employer's Contract Manager when demolishing structure(s).

023 Maintain and alter temporary supports and protection as necessary as the Works progress.

024 Demolish structure(s) causing a minimum of damage to adjoining properties. Leave no unnecessary or unstable projections.

025 Do not disturb any support to the foundations of any adjoining property unless otherwise Instructed.

026 Report to the Employer's Contract Manager any defects exposed or becoming apparent in any adjoining property.

027 Promptly repair any damage caused to any adjoining property by demolition work. Make good to ensure safety, stability, weather protection and security.

Structure(s) to be retained

028 Adequately protect all parts of existing structure(s) which are to be kept in place.

029 Cut away and strip out with care the minimum amount necessary so as to keep the amount of making good to a minimum.

030 Prevent debris from overloading any part of the structure which is not to be demolished.

Services which are to remain

031 Notify the Employer's Contract Manager and Utility Provider of any damage. Make arrangements for repair to the satisfaction of the Employer's Contract Manager and Utility Provider.

Partly demolished structure(s)

032 Leave partly demolished structure(s) in a stable condition, with adequate temporary support at each stage to prevent the risk of uncontrolled collapse.

033 Prevent debris from overloading scaffolding platforms.

034 Prevent access to partly demolished structure(s) by unauthorised persons.

035 Leave safe whilst not working at the Property.

Dangerous openings

036 Illuminate all openings as necessary, provide guarding and barriers at all times, including outside of normal working hours, and take all reasonable steps to prevent access by unauthorised persons.

Asbestos-based materials

037 Where asbestos-based materials are known to be present in the structure(s) to be demolished, ensure they are removed in accordance with the Employert's Policy for asbestos removal and the Health and Safety Executive's (HSE) Control of Asbestos Regulations 2012 where possible before any demolition works commence.

Unknown hazards

038 Inform the Employer's Contract Manager of any unrecorded voids, tanks, chemicals, etc. discovered during demolition works. Agree with the Client's Representative the methods for safe removal, filling, etc.

New openings

039 When forming new openings or altering existing openings:

- cut away existing arches, lintels or sills;
- provide temporary strutting and supports and shoring;
- cut away for hoist and insert new lintels, including cutting and pinning ends;
- cut away for, and insert new sills, including cutting and pinning ends;
- make good floors up to levels for new thresholds, sills etc., including latex levelling screed;
- wedge and pin up to existing work and build up jambs as described;
- extend and make good finishings to match existing as necessary;
- remove all debris from the Property and site; and
- retain supports until the new Works have adequate strength to support the existing structure.

Taking down

040 When taking down:

- provide temporary support;
- remove all applied finishes;
- make good finishes and match to existing as necessary;
- make good floors up to levels with latex levelling screed; and
- remove all debris from the Property and site.

Building up existing openings

041 When building up existing openings:

- build up in Materials to match existing or as described for the full thickness of the wall;
- cut out existing thresholds, sills, arches, lintels, etc;
- hack off finishings from jambs or reveals before building up;
- prepare surfaces for raising, including lead core or similar damp proof course;
- cut toothing;
- wedge and pin up to existing work as required; and
- extend and make good finishings to match existing as necessary.

Extending finishings

042 Match all extensions to finishings, plasterwork, ceilings, flooring etc., and any making good exactly to the existing finishings.

MATERIALS

Ownership

043 Components and materials arising from demolition (other than any found during excavations) belong to the Provider unless the Employer's Contract Manager has advised before their removal that they are to remain the property of the Employer in order to be reused in the Works. Remove all materials other than those belonging to the Employer from site as the Works proceed.

044 Maintain and protect all removed materials that are to remain the property of the Employer until they are removed by the Employer or reused in the Works.

045 Where possible recycle or reuse Materials other than brick, stone and concrete rubble or other hard material, arising from deconstruction and demolition Works elsewhere on the Contract, subject to compliance with the appropriate specification [and in accordance with any site waste management plan]At least 5 (five) Business Days before such reuse, submit full details and supporting documentation as evidence of compliance with the specification to the Employer's Contract Manager for their approval.

Hardcore

046 Reuse brick, stone and concrete rubble or other hard materials arising from demolition as hardcore, subject to compliance with this Specification.

Bricks

047 Use whole, sound bricks arising from the Works for replacing cracked or defective bricks or filling to existing openings.

Infected Timber

048 Inform the Employer's Contract Manager when infected timber is encountered. Remove timber infected by fungal/insect attack from the Property in a way which will minimise the risk of infecting other parts of the building. Destroy it as soon as possible.

Commencement condition survey

049 Before starting the Works:

- survey the existing state of the Property to be kept in place;
- record the magnitude and extent of all cracks, spalling, flaking and other irregularities of the fabric of the Property; and
- agree the commencement condition survey record with the Client's Representative.

Extent of support work

050 Where necessary, provide support systems to those elements of the Property which are to be retained.

051 Submit detailed proposals including drawings and calculations for all systems to the Employer's Contract Manager for approval, and resolve any amendments proposed. This includes for procuring structural engineering drawings and calculations for support systems.

052 Provide adequate and stable support systems and thereby maintain the integrity of supported structure for the period of erection to completion of dismantling support systems.

Workmanship

053 Carry out all work in accordance with the Order or any design brief issued with it.

054 Use Staff experienced in the methods of erecting and maintaining support systems to supervise and control the Works.

Erecting support systems

055 Locate the positions of existing and new services which may be affected by support systems and provide any necessary temporary diversions.

056 Prevent excessive loadings from foundations of support systems being imposed onto foundations of structure to be kept in place.

057 Erect and connect support systems to structure to be kept in place. Take:

- all necessary precautions to prevent damage; and
- due account of movement of the structure which may occur before, during and after demolition.

058 Promptly repair any damage caused to adjoining properties by the erection or connection of support systems. Make good to ensure safety, stability, weather protection and security.

059 Report to the Employer's Contract Manager any damage caused to retained features or works by the erection or connection of support systems. Agree the methods of repair with the Employer's Contract Manager.

060 Check support systems at agreed stages during erection for compliance with design proposals.

Unknown hazards

061 Inform the Employer's Contract Manager of any unrecorded voids, flues, services, etc., discovered during the erection of support systems. Agree with the Employer's Contract Manager methods for infill, making good, relocation of support connections, etc.

Loading support systems

062 Complete the erection and connection of the support systems before starting the demolition of any adjoining structures.

063 Inform the Employer's Contract Manager when support systems are erected and all connections are made to the structure to be kept in place. Obtain any required permissions to load systems.

Maintaining support systems

064 Provide safe access and safe places of work in the support systems for inspection and maintenance.

065 Regularly inspect and maintain support systems, making good ties, wedges, connections, corrosion protection, etc., as necessary.

066 Adequately protect support systems from impact by vehicles, plant and site operations. Prevent access by unauthorised persons. Leave safe when not working at the Properties and outside the Contractor's Working Hours.

Dismantling support systems

067 Inform the Employer's Contract Manager when all permanent connections between the supported structure and new construction have been made. Obtain permission before disconnecting and dismantling support systems.

Making good

068 Repair any connection holes made in the structure kept in place, using Materials to match those existing. Repair damage caused to buildings, roads or pavements.

Site clearance

069 Clear away all debris, excess materials and temporary Works and leave the Property and its site in a tidy condition on completion of the Works.

Employer's current manufacturers/suppliers/products

070 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

TECHNICAL SPECIFICATION

04-ASBESTOS WORKS

ASBESTOS WORKS

GENERAL

001 Removal of licensed asbestos can only be carried out by an Asbestos Licensed Contractor.

002 The Contractorr shall employ the services of an Asbestos Licensed Contractor before undertaking any Asbestos Works. All works classed as Asbestos Works should be undertaken in accordance with the Control of Asbestos Regulations (CAR) and the general procedures listed in this Specification.

Removal

003 Asbestos should be removed when: deemed by the survey Risk Assessment to be:

- a high risk material i.e. Insulation materials;
- in a damage state;
- it is breaking away from the substrate base; or
- the asbestos is likely to be abraded or otherwise damaged.

004 As there is a possibility that non-asbestos materials may become contaminated from adjacent asbestos, consideration may need to be given to the removal or cleaning of adjoining materials and belongings.

Encasing

005 Encasing is constructing an airtight barrier around the asbestos, and is suitable where the cost of removal would outweigh the benefit or risk posed.

006 An encasement can be constructed from wood, metal or sheetrock, all joints must be sealed completely and be air tight.

Encapsulation or sealing

007 Encapsulation is suitable for use when the asbestos present is in a hard to reach place(s).

008 Encapsulation is the application of an impervious materials, which is secured over or around an ACM and is designed to prevent the release of fibres under foreseeable conditions, such as vibration, impact and age degradation.

009 For large areas the cost of encapsulation or sealing may approach the cost of removal. Any eventual removal may be more difficult and costly. Continuing assessment on a periodic basis will be defined by the asbestos survey risk assessment will also be required if the encapsulation or sealing option is taken. Not all paints and other surface coatings on the market are suitable. In particular, the sealant should not increase the fire hazard properties of the material being treated. If the asbestos is poorly bonded to the substrate, the application of a coating may result in large sections of the asbestos breaking away from the substrate. The surface to be encapsulated or sealed should be cleaned with an approved “H” type vacuum cleaner to remove all debris and dust particles ensuring good adhesion of the coating to be applied.

Removal and maintenance work

010 Where Asbestos Works is being performed, the Contractor is required to notify the Health and Safety Executive or other enforcing authorities using Form FODASB5 14 days in advance of the works commencing, except in emergency situations where shorter notice with their agreement can be given.

011 Reasonable notice shall be given to any adjacent Employer Party, Customers and Staff that Asbestos Works is to be carried out, and when it is to be carried out. The notification should also include an explanation of the general procedures and equipment involved and the precautions to be taken in accordance with CAR Regulations. Waste asbestos products shall be disposed of in accordance with the Hazardous Waste Regulations having given at least 3 (three) days’ notice to Environment Agency.

Notifiable Non Licensed Work

012 Notifiable non licensed Works (NNLW) is the removal of asbestos materials that would not normally require the Provider to give notification prior to commencement of Works, an example would be the removal of damaged or broken asbestos cement products, when the condition or the quantity of the material may give rise to significant quantities of dust and debris. This would mean this Work would be notifiable but not subject to full requirements of licensable Asbestos Works. In such instances it is advisable for the Contractor to consider if the quantity of Work being carried out to asbestos containing materials would mean the Works are notifiable, in such scenarios use of an

Asbestos Licensed Contractor may be necessary subject to the results of risk assessments.

013 Where NNLW is being performed, the Contractor is required to notify the relevant enforcing authority using Form ASB NNLW1, with additional requirements and obligations being placed upon the Contractor in respect of medical surveillance and maintenance of health records for each employee exposed to asbestos.

014 The Provider should contact www.hse.gov.uk for further information and guidance on NNLW.

015 In considering whether the works will require notification of non-licensed Works consideration needs to be given as to whether the Works are:

- **Maintenance** e.g. drilling holes to attach fittings or pass cables through, painting, cleaning etc.
  Maintenance includes some removal where it is incidental to the main task, e.g. removing an asbestos ceiling tile to allow inspection.
- **Removal** e.g. as part of a refurbishment or redesign project.
- **Encapsulation** e.g. work to enclose or seal asbestos materials in good condition.

And whether Air monitoring and control, and the collection and analysis of samples will be required.

016 Consideration will need to be given to the asbestos type

017 **Is it friable?** Friable means easily crumbled or reduced to powder. The more friable a material is, the more likely it will release asbestos fibres when worked on and the greater the risk of exposure. Work which disturbs more friable materials, e.g. asbestos pipe insulation, will tend to be notifiable non-licensed work and work which disturbs the least friable materials, e.g. asbestos cement, can normally be treated as non-licensed work.

018 **How firmly is the asbestos bonded in a matrix?** (For removal work only). Bonded in a matrix means the asbestos is coated, covered or contained within another material, such as cement, paint or plastic. ACMs of this type in good condition can usually be treated as non-licensed work. If the ACM's are significantly damaged, and so more likely to release fibres, they will need to be treated as notifiable non-licensed work.

019 Consideration will ned to be given to the Asbestos material's condition

020 **Has the material been damaged or is it in poor condition?** Removal of ACMs in poor condition e.g. due to flood or fire damage, will normally need to be treated as notifiable non-licensed work.

021 **Will the materials' matrix be destroyed when worked on?** e.g, using gel or steam to remove deteriorating textured decorative coatings such as 'Artex' will normally need to treated as notifiable non-licensed work.

022 Examples of notifiable non-licensed work (NNLW) with asbestos:

- Using steaming or gelling methods large-scale removal of textured decorative coatings (e.g. beyond that required for maintenance activities such as installation/replacement of smoke alarms and fittings);
- Minor short duration work to remove asbestos insulating board as part of a refurbishment project;
- Minor short duration involving asbestos insulation (e.g. repairing minor damage to a small section of pipe insulation where the exterior coating has been broken or damaged);
- Removal of asbestos cement products (e.g roof sheeting) where the material has been substantially damaged or broken up (e.g. as a result of fire or flood damage);
- Removal of asbestos cement products (e.g. roof sheeting) where the removal activity will mean that the material will be substantially broken up, creating significant quantities of dust and debris (e.g. ‘dropping’ an asbestos cement roof); and
- Removal of asbestos paper and cardboard products if not firmly bonded in a matrix

023 All non-licensed and notifiable non-licensed work with asbestos needs to be carried out with the appropriate controls required by the Health and Safety Executive or other enforcing authorities in place, and those carrying out the work must have had the correct level of information, instruction and training, to protect themselves (and others in the area) from the risks to health that exposure to asbestos causes.

024 If the Contractor determines that the Works, they are about to do is notifiable non-licensed work (NNLW), the section below on notification explains how the Provider is complying with the additional requirements.

Notification

025 The Contractor will need to notify the relevant enforcing authority of any NNLW with asbestos:

- notification is to be use of the online notifications form (via either a computer or Smartphone);
- all three possible regulators can be notified via this database - the Health and Safety Executive, Local Authorities and the Office of Rail and Road (see table below);
- notice is required before the work starts - there is no minimum notice period;
- the Contractor does not need to wait for permission from the enforcing authority – the database will provide a PDF copy of the notification;
- if the Contractor is doing a project or contract with multiple NNLW jobs you can notify once for the whole project or contract;
- if the Contractor is a licensed asbestos contractor carrying out NNLW work, a notification will still have to be submitted; and
- the online notifications form is the only method of notification accepted.

Type of premises/activity	Enforcing Authority
Shops, offices, separate catering services, launderettes, sport, entertainment and recreational activities, exhibitions, church or religious meetings, hotels, camping and caravan sites, wholesale and retail storage	LA (Local Authority)
Factories and factory offices, civil engineering, construction and demolition sites, hospitals, research and development establishments, local government services and educational establishments, fairgrounds, radio, television and film broadcasting, sea going ships, docks, transport undertakings, domestic premises, quarries, farms (and associated activities), horticultural premises and forestry's, mines or quarries and offshore installations, licensed nuclear sites	HSE (Health & Safety Executive)
Railways, railway lines, signal boxes	ORR (Office of Rail and Road)

Designating areas

026 All areas where there is NNLW taking place must be designated and marked with a suitable warning notice. These areas must be restricted to those carrying out the work.

027 **Food and drink must never be consumed in designated areas.**

Medical surveillance

028 All the Contractor's operatives carrying out NNLW will need to have had a medical examination **at least every 3 (three) years**, as long as the operative continues to do NNLW. Any Provider's operatives carrying out NNLW for the first time will have to have an examination before they can start such work:

- medical examinations must include an examination of the chest and a lung function test;
- they need to be carried out by a licensed medical practitioner, e.g. a GP;
- those operatives already under surveillance via a licensed asbestos contractor and in possession of a valid certificate do not need to have the NNLW medical;
- medical examinations should be carried out in work time at the Provider's expense; and
- the GP must issue a certificate to confirm the examination has taken place and on what date - the Provider needs to keep this certificate for 4 years.

Record keeping

029 The Contractor need to keep a register (health record) of NNLW with asbestos for each operative exposed to asbestos:

030 This must include:

- the nature and duration of work with asbestos and estimated exposure for each individual operative; and
- dates of the operative's medical examinations.

031 Registers of work (health records) must be kept for 40 years (and offered to the Health and Safety Executive or other enforcing authorities or the individual concerned should the business cease trading).

032 The need to record exposure does not mean that every non licensed task must have air sampling. There will often be published exposure figures or knowledge within the industry about exposures found at similar lower risk work done in the past. If a task is unusual, then sampling may be required.

Non Notifiable Non Licensed Work

033 Removal of non-licensable asbestos containing materials is deemed to be included within the rates contained in the Schedule of Rates (**with the exception of the rates in the Asbestos Works section of the Schedule of Rates which are only for the removal and/or encapsulation of licensed asbestos or non-licensed asbestos that may have been contaminated by adjoining licensed asbestos)** together with the Contractor's tendered percentage adjustment.

034 Non licensed asbestos works are deemed to be:

- Sporadic and of low intensity – to be considered sporadic and of low density the concentration of asbestos fibers in the air should not exceed 0.6f/cubic centimeter measured over 10 minutes;

035 Carried out in such a way that the exposure of workers to asbestos will not exceed the legal control of 0.1 asbestos fibers per cubic centimeter of air (0.1f/cm^3) (averaged over a four (4) hour period);

036 Meet at least one of the four following conditions:

1. It is a short non-continuous maintenance task, with only non-friable materials (friability describes how likely a ACM is to release asbestos fibres when worked on, so non-friable materials will only release a small number of fibres during work);
2. It is a removal task, where the ACMs are in reasonable condition and are not being deliberately broken up, and the asbestos fibers are firmly contained in a matrix e.g. the asbestos is coated, covered or contained within another material, such as cement, paint or plastic;
3. It is a task where the ACMs are in good condition and are being sealed or encapsulated to ensure that they are not easily damaged in the future: and
4. It is an air monitoring and control task to check fibre concentrations in the air, or its condition and analysis of asbestos samples to confirm the presence of asbestos in a material.

037 Examples of non-licensed asbestos work:

- Cleaning of small quantities of loose/fine debris containing ACM dust (where the work is sporadic and of low intensity, the control limit will not be exceeded, and it is short duration work);
- Drilling of textured decorative coatings for installation of fixtures/fittings;
- Encapsulation and sealing –in work on asbestos containing materials (ACMs) that are in good condition;
- Maintenance Works involving:
    - Asbestos cement products (e.g. on roof sheeting, tiles and rainwater goods);
    - Asbestos in ropes, yarns and woven cloth;
    - Asbestos gaskets or asbestos rope cord (including removal as part of the repair and upkeep of equipment) if this can be done without substantial breakage;
    - Asbestos containing thermoplastic and vinyl floor tiles, bitumen roof felt, shingles, damp-proofing coatings and mastics;
    - Asbestos-containing felt and paper;
    - Plastic paint coatings, PVC floors, panels and sealing compounds;
    - Asbestos-containing conveyor belts/drive belts, bonded rubber, electric cables;
    - Resin-based ACMs such as friction products (e.g. brake linings)
    - Painting/repainting Asbestos Insulating Board) (AIB that is in good condition;

- Removal of:
    - Asbestos cement products (e.g. roof sheeting and rainwater goods) providing the material is carefully handled/removed without breaking up, this includes work with asbestos cement which is weathered but not otherwise substantially damaged;
    - Small areas of textured decorative coatings using suitable dust-reducing methods, to support other activities such as installation/replacement of smoke alarms and light fittings;
    - Textured decorative coatings provide that this can be done without deterioration of the material (e.g. if the backing board is carefully cut around to achieve virtually intact removal);
    - Loosely fixed (e.g. screwed) asbestos insulating board (AIB) panels to gain access to areas for other Maintenance activities (e.g. under a bath to carry out pipework maintenance, or for access to a ceiling void for repair of lighting) This also includes re-attaching the panels after the work is done;
    - An AIB door with asbestos fireproofing;
    - Asbestos cement products (e.g. roof sheeting) where the material will be substantially damaged or broken up (e.g. as a result of fire or flood damage);
    - Asbestos cement products (e.g. roof sheeting) where the material will be substantially broken up, creating significant quantities of dust and

debris (e.g. dropping an asbestos cement roof);
- Asbestos paper and cardboard products if not firmly bonded in a matrix)

- **Short duration work:**
  - To repair minor damage to AIB;
  - Involving drilling holes in AIB (e.g. installing shelving);
  - To remove asbestos insulating board as part of a refurbishment project;
  - Involving asbestos insulation e.g. repairing minor damage to a small section of pipe insulation where the exterior coating has been broken or damaged;

- Other work on:
  - On other materials containing asbestos (such as paints, bitumen, resins, rubber etc.,) where the fibers are bound in a matrix which prevents most of them being released (this includes, typically, aged/weathered AC);
  - Associated with collecting and analyzing samples to identify the presence of asbestos;
  - Large scale removal of textured decorative coatings using steaming or gelling methods (e.g. beyond that required for maintenance activities such as installation/replacement of smoke alarms and fittings)

038 Certain of the operations listed in 037, dependent upon the circumstances in which the Works will be undertaken, will also be notifiable to the Health and Safety Executive or other enforcing authorities on form ASB NNLW1, with additional requirements and obligations being placed upon the Provider in respect of medical surveillance and maintenance of health records for Staff exposed to asbestos.

Demolition and structural alterations involving restricted work

039 Demolition and structural alteration of buildings or other structures containing asbestos material should be in accordance with the Regulations. All asbestos products, including asbestos cement sheeting, must be removed before demolition is commenced. In some circumstances, partial removal, followed by partial demolition to allow access to previously obstructed asbestos material, may be necessary. In such cases, the partial demolition operation should be conducted under conditions appropriate to the removal Work. The techniques for

handling and removal of non-friable asbestos-cement products are detailed later in this Specification.

REMOVAL OF ASBESTOS

040 This section provides guidelines for undertaking the planned and safe removal of asbestos-based materials from buildings, equipment/plant and structures, and outlines the equipment that could be used, removal techniques and general safety and hygiene requirements.

041 This section applies to the removal or work on:

- Friable asbestos, including sprayed asbestos coatings used for thermal and acoustic insulation in buildings.
- Decorative coatings in buildings;
- Asbestos-based lagging on boilers and other industrial plant;
- Asbestos cement products;
- Roof coverings;
- Asbestos Insulation Panels;
- Ropes, felts, papers and the like; and
- Other non-asbestos materials that have been contaminated with asbestos.

042 Working with asbestos and asbestos-based products is hazardous. It is the Contractor's duty under the Health and Safety at Work Act to provide a healthy and safe place of work. To achieve this, it will be necessary to plan the work and adopt good work practices.

043 In any activity involving the removal of asbestos-containing materials the procedures adopted must allow for the containment of asbestos. All practicable steps must be taken to ensure that Staff and any Employer Party in the area are not exposed to asbestos fibers.

044 NOTE: Removal of friable asbestos that has been used for thermal or acoustic insulation and other stated applications may only be carried out by a competent person(s) with a valid asbestos removal license from the Health and Safety Executive using appropriate guidance, restricted work must be at all times be under direct supervision.

SAFE REMOVAL OF FRIABLE ASBESTOS

045 This section applies to the removal or work on:

- Friable asbestos, including sprayed asbestos coatings used for thermal and acoustic insulation in buildings.
- Decorative coatings in buildings;
- Asbestos-based lagging on boilers and other industrial plant.

Information to be provided by the Employer

046 The Employer will provide the Contractor with access to the Employer's electronic asbestos register where they can obtain (if available) a copy of the asbestos survey (or suitable representative survey) giving details of the ACM identified to the Contractor prior to commencement of any work.

047 It is recognised that in some cases the full extent of the asbestos material is not known until removal is under way.

048 In the preparation of job specifications by the Contractor's Asbestos Licensed Contractor the following considerations should be addressed:

Location and Status of ACM:

- Internal;
- External but protected.
- External exposed to weather;
- Enclosed in ducts; "Confined Spaces Considerations"
- Difficult or unusual site conditions, which will influence the selection or application of removal methods, particularly about transport, scaffolding or weather protection.
- Removal from roof space areas or areas or Working at Heights, confined spaces, or areas with other constraints within a property.

Technical description of the material to be removed with details of the type of asbestos present and any special or unusual materials or circumstances.

049 The extent of the removal Work should be adequately detailed on the Order (subject to Clause 020 above), to indicate areas for removal, otherwise, information of the following nature should be provided where available:

- Surface dimensions of flat or large curved areas, thickness of insulation, external diameters of pipes, length of each size pipe, and number and type of pipefittings, e.g. flanged joints, valves, tees, expansion bends. Particular detail is to be provided if asbestos is to be removed from any part of the building's air-conditioning system;
- Details of any pipe work sections that are steam or electrically heated and the arrangement of its insulation;
- Details of any section or materials to be left in place;
- Confirmation and details of residual heat that will remain in pipe work, boilers, etc.;
- Any unusual or specific hazards associated with the removal Works;
- Temperature considerations — normal working temperature for each portion of the plant concerned ambient temperature at the removal area;
- Conditions of substrate surfaces — special requirements, such as the removal or otherwise of protective paint or lacquer from pipe work or for the application of paint or other protective coatings to the substrate from which the asbestos-based material has been removed;
- Types of fittings and supports and whether these may be removed or disposed of with the waste;
- Type of finish required or specification for re-insulation;
- Special service requirements, for example, where there is any potential hazard from contact with live electrical equipment in use in the removal area; attention should be drawn to this fact;
- Where electrical switchgear or panels are to be sealed, consideration should be given to the provision of supplementary ventilation to dispose of potential heat build-up and consequent fire risk;
- Site occupancy restrictions and conditions;
- Adjacent area cleaning (adjacent areas which are to be cleaned or are to be protected from airborne dust and are to be cleaned on completion);
- Safety practices to be followed under relevant legislation; and
- Location of any relevant electrical cables;

050 If necessary, the Contractor should contact the Employer's Contract Manager where his risk assessment states a sample is required, requesting that additional sampling and testing of potential ACM's is necessary.

Information to be supplied by the Contractor

051 Restricted Work involving asbestos must be notified to the Health and Safety Details of any section or materials to be left in place;

- Confirmation and details of residual heat that will remain in pipe work, boilers, etc.;
- Any unusual or specific hazards associated with the removal Works;
- Temperature considerations — normal working temperature for each portion of the plant concerned ambient temperature at the removal area;
- Conditions of substrate surfaces — special requirements, such as the removal or otherwise of protective paint or lacquer from pipe work or for the application of paint or other protective coatings to the substrate from which the asbestos-based material has been removed;
- Types of fittings and supports and whether these may be removed or disposed of with the waste;
- Type of finish required or specification for re-insulation;
- Special service requirements, for example, where there is any potential hazard from contact with live electrical equipment in use in the removal area; attention should be drawn to this fact;
- Where electrical switchgear or panels are to be sealed, consideration should be given to the provision of supplementary ventilation to dispose of potential heat build-up and consequent fire risk;
- Site occupancy restrictions and conditions;
- Adjacent area cleaning (adjacent areas which are to be cleaned or are to be protected from airborne dust and are to be cleaned on completion);
- Safety practices to be followed under relevant legislation; and
- Location of any relevant electrical cables;

052 The Contractor (or his appointed Asbestos Licensed Contractor) should provide a detailed plan of Work and all method statements with specifications or drawings showing details as require under CAR regulations as follows:

- Type, quantity and extent of isolation required at the asbestos removal area and location of restricted access borders;
- Particular methods to be adopted when removing material, including detail of the contamination control programme, for example, provision of negative air pressure and the location of the exhaust unit;
- This should include specifications of size, capacity and type of filter, location of decontamination unit and where it is to be discharged;
- Detailed risk assessment for both asbestos and all other perceived risks;
- Waste disposal programme including;
- On-site storage system;
- Method of removal from the building;
- Detailed risk assessment; and
- Waste disposal site to comply with Hazardous Waste Regulations 2005

- Any other information required to ensure compliance with CAR Regulations and Health and Safety Executive guidance
- Where the risk assessment requires that removal operations be undertaken under controlled conditions the Provider will request the Client to appoint a Health and Safety approved analyst to provide assurance that his operations have been completed in accordance with the Provider's plan of Work and other management duties including air testing, 4 stage clearances and issue certificate of reoccupation.

053 This information is to be uploaded to the Employer's electronic asbestos register by the Provider on completion of the Works.

Guidelines for Providers for planning and programming:

054 Consideration should be given to the removal of all asbestos from a Property at the same time. Decanting (if necessary) and/or other management issues to be agreed with the Employer prior to commencement of Works.

055 Conversely, the work of other Employer Parties should be scheduled to preclude them working near to or accidentally breaking into the asbestos removal area. The Contractor is given access to the Employer's Electronic Asbestos Register so he can download survey data if available, in a situation where no relevant sample or survey data exists and his risk assessment requires that samples should be taken, the Provider should bring this to the attention of the Employer's Contract Manager who will either, issue an Order with the Contractor or through the Employer's own analyst, get a sample or survey completed and uploaded to Client's electronic asbestos register.

056 The following are the major points to which early consideration should be given:

- Health and safety of Staff;
- Health and safety of Customers and the general public;
- Most appropriate work methods for the work;
- Identification of types of asbestos involved;
- Programme of commencement and completion dates. However, it should be recognised that unforeseen problems with removal or the extent of the asbestos cannot always be ascertained prior to removal Work commencing;
- Responsibility for the supply and application of isolating materials, e.g., ropes, barriers, plastic screens, waste containers and warning signs;
- Preparation of surfaces (pre-removal) cleaning;
- Precise information on extent of the work covered by the Contract;
- Limitations of access to the removal area;
- Conditions of employment on the site, including the labour and supervision required and agreed working hours;

- Transport facilities;
- Protected storage area pending the removal of asbestos-based materials;
- Availability of water, power, heat, light and drainage;
- Accommodation, decontamination and canteen facilities;
- Provision of access equipment, such as scaffolding or ladders;
- Protection of adjacent areas, plant and machinery;
- Waste disposal methods and responsibilities and cleanup requirements;
- Temporary sealing of asbestos where necessary;
- Notification to the Health and Safety Executive;
- Responsibility for air monitoring, including clearance monitoring;
- Customers furniture store;
- Decanting arrangements;
- Analyst work area
- Transit routes waste disposal facilities

Training

057 Instruct all asbestos removal Staff in the relevant aspects of working with or on asbestos to ensure compliance with CAR Regulation 9 and associated Approved Codes of Practice: the health hazards associated with asbestos, safe working procedures, and the wearing and maintenance of protective clothing and equipment. The level of training may vary according to the requirements of a job but all Staff should be given detailed information on the reasons for safety and health precautions.

058 Provide evidence that his Staff have received training for task specific removal of non- notifiable, non-licensed, and notifiable non-licensed asbestos containing materials including use of special PPE, cleaning materials, disposal procedures etc.,

Supervisory personnel

059 Ensure that supervisory personnel have a detailed knowledge of the precautions and procedures outlined in the CAR Regulations, ACOP HSG 247 and in this model Specification. With this knowledge and personal experience, they should assume the following responsibilities:

- To plan the total removal procedure;
- To select the most appropriate technique for removal of asbestos;
- The pre-removal setting up;
- Reassurance Air Tests
- The actual removal and final cleaning operation, 4 stage clearances and certificate of reoccupation as applicable;

- To ensure that all necessary measures are taken to reduce the airborne concentration of asbestos dust to the lowest practicable level;
- To ensure that asbestos fibres and asbestos-containing material do not contaminate adjacent areas;
- To ensure that all Staff under their supervision are adequately trained in the safe working practices outlined in HSWO and in CAR Regulations;
- To ensure that the removal is continually supervised by Staff and that the operation is carried out in a safe and proper manner, in accordance with the precautions listed in the CAR Regulations;
- To ensure that personal protective equipment is used and maintained in good condition;
- To ensure that the removal site is maintained in a clean condition, that waste is quickly and properly disposed of in accordance with process detailed in Provider's Plan of Work
- To ensure personal hygiene procedures are continually observed;
- To maintain copies of all records and a site log detailing all site operations on a daily basis and can be signed off by all parties on site; and
- To supply all information to the Client's Representative (electronically uploading to Client's electronic asbestos register) on completion of the Works.

Site preparation for the removal of friable asbestos from buildings and other structures

060 The plan of Work issued to the Health and Safety Executive or other enforcing authorities will set out the procedures adopted for the removal of friable asbestos must be designed to contain the asbestos and minimise airborne exposure. The steps required will vary from job to job but in all cases will include the following:

- Access to the asbestos removal area must be restricted to those involved in the removal work. A thorough preclean must be undertaken prior to work area preparation and commencement of abatement activities;
- Contamination of flooring and furnishings with asbestos containing dust must be avoided';
- The drift of airborne fibers must be restricted by ensuring that the removal area is effectively screened off from adjacent areas. This is usually achieved by extracting air from the removal area to ensure that it remains at negative pressure with respect to surrounding areas;
- The precautions taken must be sufficient to ensure that any asbestos contamination in the air or surrounding areas is maintained below 0.01 fibers/ml (for a sample volume of at least 480 litres passed through a filter with an effective diameter greater than 20mm) at all stages during and after the asbestos removal work. The steps to be taken will be determined by the likelihood of asbestos fiber release and the size of the job in terms of the time taken to complete it and the area involved. In the following sections, the site preparation that is considered appropriate for three commonly

performed removal tasks are specified;

- The removal of fireproofing, thermal or acoustic insulation applied to structural steel or ceilings, or other similar major asbestos removal jobs;
- The removal of decorative coating containing relatively low percentages of asbestos; and
- Small-scale jobs such as the removal of minor amounts of asbestos pipe lagging.

Preparation of a site for a major removal programme.

061 Where total enclosure of the removal area is required, isolation of the area can be achieved by the installation of low-density polyethylene sheeting (not less than 1000 gauge) on the floor and walls of the structure. It may be necessary to erect a temporary timber or metal frame to which the plastic barrier can be attached. All joints should be overlapped and taped to ensure that the area is completely sealed off. In some circumstances the use of adhesives may supplement the use of tape.

062 Existing floor coverings should be removed where practicable. A double layer of plastic sheeting (suitably fixed by double-sided tape or adhesive to prevent movement between layers) should be used on the floor of the containment area, and a turn-up should be used where the floor joins the sidewalls. Plywood 6mm should be used between layers to prevent accidental penetration of sheeting.

063 Vertical shafts should be properly sealed off to prevent the thermos-syphon effect spreading asbestos fibers throughout the building.

064 Where asbestos is removed from an entire floor of a multi-storey building, all passenger and goods lifts should be prevented from stopping at the floor from which asbestos is being removed. Asbestos removal Staff may gain access to the floor via the fire stairs or from an elevator dedicated for this purpose. Where a lift is used for access, all exit doors to other floors should be sealed. It is important that emergency escape exits are available when blocking off such areas

065 All movable furniture, plant and fittings shall be removed from the asbestos removal area. The immovable items should be fully wrapped and sealed in suitable plastic sheeting and stored in lockable container on site to facilitate involvement of the Employers loss adjuster; an inventory (including photographs) of all items removed should be taken and where possible their condition agreed with the Customer (signed copy) so that they are effectively isolated from the removal area. In regions of heavy traffic or high wear, additional masking or barricading may be necessary.

066 Where masking operations may liberate asbestos fibres, all Staff in the removal area should wear respiratory protective devices approved for asbestos. This precaution is particularly applicable when removing existing barriers or partitions such as false ceiling tiles. Where asbestos materials may have fallen on to a false ceiling, the ceiling should only be removed under full controlled removal conditions. Any utility or service pipework, which penetrates the ceiling space, is to be sealed.

067 Except for the Negative Pressure Units ("NPU") all ventilation and air-conditioning networks servicing the removal area should be closed for the duration of the removal job. All vents should be thoroughly masked to prevent the ingress of asbestos fibers into the duct network. Upon completion and after final cleaning of the removal area, all mechanical ventilation filters for re circulated air should be replaced.

068 Additional care must be taken to ensure that asbestos fibers cannot escape at points where pipes and conduits pass out of the removal area. Greater attention to masking and reassurance testing should be given in these regions, particularly if service riser-shafts pass through the removal area.

069 To prevent the escape of airborne asbestos fibres from the removal area enclosure, an exhaust extraction fan should be installed in a position so as to create a negative air pressure of approximately 5 Pascal's (water gauge) within the removal area. While accepting that the measurement of this pressure is not always possible, a good guide to the effectiveness of the system can be gauged from the inwards effect on the plastic tenting. It is a requirement that clear viewing panels be installed at strategic locations throughout the enclosure to allow inspection from outside the enclosure, if clear viewing panels cannot be provided, then the Provider is to install a close circuit TV system with external monitors. If there is a visible bellowing inward, there is good negative pressure. In this arrangement, the major and usually only route of air into the removal area would be through the three-stage unit. The correct flow of air should be verified using the smoke testing method.

070 The air extracted by this system should pass through an appropriate High Efficiency Particulate Air ("HEPA") filter to remove any asbestos fibres. Ideally, air extraction units should be so situated that access to the filters can be gained from the removal area. This expedites the otherwise difficult decontamination of these units and allows another unit to be brought into service in the event of a breakdown. Where it is not possible to change the filter within the removal area, a temporary enclosure should be constructed around the unit to allow for filter replacement.

071 The HEPA filter should comply with the minimum 99.997 percent efficiency requirement detailed in the British Standards. A coarse pre-filter should be installed prior to the HEPA filter to prolong the useful life of the high efficiency filter. Where practicable, the discharge point for this extraction unit should be to the outside air, distant from other working areas, air-conditioning inlets or breathing air compressors. Where this is not possible, testing of the exhaust air should be carried out.

072 Extraction equipment should be operated continuously whilst the removal enclosure is in place. Such equipment should be DOP tested every six months.

073 When installing the asbestos removal area containment, extra consideration should be given to the alteration of the fire rating of the building and to the provision of the fire-fighting facilities, emergency exits and emergency lighting.

074 Warning notices stating "Asbestos Hazard Area, Keep Out" shall be placed at entrances to the removal area. These signs are to be placed so they are clearly visible. Other more general signs may be used elsewhere in the Properties to indicate that Works are in progress.

Compliance testing of removal area containment prior to commencement of work.

075 Before any asbestos removal begins in an enclosure, a visual inspection to check the integrity of the structure must be carried out. Smoke testing should also be used to detect leaks and observed by the asbestos analyst.

076 Attention should be given to the bellowing inward of the plastic sheeting. At the beginning of each working period the inspection should be repeated and any defects remedied immediately.

Decontamination facilities.

077 To prevent the escape of asbestos as Staff enter and leave the removal area a specially constructed transit route and mobile or on-site decontamination unit will be required. In all cases where it is deemed necessary to totally enclose the removal area, a decontamination unit consisting of at least three compartments should be used. It is recommended that a 4:1 shower to the Staff member ratio be used for calculating the appropriate size of decontamination unit to be used on any particular project. Where a friable asbestos removal programme is being undertaken, a decontamination unit must be provided that incorporates the following elements or achieves the same or better protection:

.1 A dirty area having provision for:

- Removal of contamination from protective clothing, footwear and respirator;
- Washing footwear in footbath;
- Storage of contaminated clothing and footwear; and
- Airflow towards the removal area;

.2 A Shower Area with hot water adjustable at the source. Body soap liquid and shampoo, nail brushes, mirror, and clean disposable towels.

.3 A clean area having provision for:

- Storage of individual respirators in containers or lockers;
- Storage of clean clothing; and
- Airflow towards dirty area;

078 Spring-loaded doors between the areas should be used to ensure that an airlock is maintained as the person passes through the unit.

079 The decontamination unit should be sited immediately adjacent to, or joined to the enclosed asbestos removal area where possible. Where it is not physically possible to locate the decontamination unit adjacent to, and joined to, the removal enclosure transit procedures to minimise asbestos contamination should be implemented, such procedures are outlined in the Health and Safety Executive guidance HSG 247.

080 Decontamination procedures should be followed whenever the Staff member leaves the enclosure. While the protocol to be followed will vary with the design of the decontamination unit, it is recommended that:

- The respirator should be worn and operating until the person has removed all contamination from outer garments and equipment;
- Personnel should not smoke, eat or drink in any part of the decontamination facility;
- The decontamination unit should be regularly cleaned by persons wearing protective clothing
- Standard entry and decontamination procedure to be adopted as part of this Specification.
- The decontamination unit must have a copy of certificate of reoccupation when it arrives at the Property and a 4 stage clearance completed at the end of operations before it leaves the Property which will be completed by the asbestos analyst.

Entry to the Work Enclosure

081 Staff shall enter the clean room of the decontamination unit in groups of no more than two. Staff shall remove all street clothing and store it safely in their assigned locker. The Staff member will remove his or her respirator from its protective sealed bag and fit it. Battery packs will be held by hand until the The Staff member has suited up.

082 When the Staff member has properly fitted and tested his or her respirator a clean stripping suit will be donned or carried through the shower room into the dirty end of the decontamination unit. At this time with the respirator on, the Staff member will don work clothes and the clean stripping suit. When these items of clothing have been put on, a transit suit shall be put on over all other clothing for transit to the work area. Work clothes that are worn into a contaminated area must be bagged up at the end of each project. Clothing may be laundered utilizing a washing machine equipped with a 5-micron water filter. This washing machine must be a dedicated unit, no other clothing to be laundered in this unit.

083 Transit to the work area shall be by the shortest possible route. Staff will be familiar with the transit route prior to participating in any transit procedure. When the Staff member arrives at the three-stage air lock he/she will enter the clean or exterior chamber and remove the blue transit suit. The Staff member will then pass into the interior or dirty stage of the airlock where boots and gloves will be collected and put on.

084 The Staff member is ready to begin tasks that have been assigned to him/her by the site supervisor.

085 When the Staff member is ready to leave the work area, the Staff member will adhere to the following:

.1 Staff will wait inside the work area until permission to exit is given by the site supervisor. When permission to exit is given Staff will inspect each other while still inside the work area. Any visible debris found shall be removed prior to commencing transit procedure. Boots will be thoroughly inspected at this time and washed.

.2 When the inside visual examination is complete the first Staff member may enter the dirty end of the three-stage unit to begin transit out. When the Staff member is completely inside the dirty stage he/she must inspect their Personal Protective Equipment ("PPE") and Respiratory Protective Equipment ("RPE") and wipe it down or vacuum where necessary, boots and gloves will be removed and stored safely to one side of the unit. The stripping suit shall then be removed and disposed of in a labelled red asbestos bag provided.

.3 When the Staff member has completed these steps he is free to step into the clean end of the three stage and don a transit suit. After transit suit has been donned the Staff member may proceed to the decontamination unit via the transit route.

.4 After arriving at the decontamination unit the Staff member will enter the dirty end making sure to close the door behind them. The transit suit shall be removed first followed by any other clothing. RPE must not be removed or stored in the dirty end of the decontamination unit at any time.

.5 The Staff member is now ready to enter the shower unit of the decontamination unit. With his or her RPE- respirator still fitted the Staff member shall enter the shower unit. Water shall be turned on and temperature adjusted to a comfortable level. Before the Staff member steps under the water stream the battery pack must be turned off and the filter covered. When these steps have been completed the Staff member may step under the water stream allowing water to soak the head and the exterior of their RPE. The Staff member may then remove the RPE and thoroughly clean it making sure not to get water into the motor or battery

connections. When the respirator “RPE” is clean it may be hung on a hook while the Staff member thoroughly showers and cleans his/her body.

.6 When the Staff member has finished showering he may then enter the clean room remembering to bring RPE with him. RPE shall be bagged prior to the Staff member drying off and getting dressed back into street clothes.

Equipment

086 All tools and electrical equipment, such as H type vacuum cleaners and power tools, should be left in the removal area until the completion of the removal job. When the equipment is removed it should be vacuumed thoroughly and all accessible surfaces wiped over with a damp cloth. When decontamination is not possible, the item should be wrapped in plastic and sealed and only opened in another removal area.

087 Any asbestos contained in the H type Vacuum cleaner should be disposed of as asbestos waste.

088 The H type Vacuum should be cleaned, tested and calibrated at least every month.

Removal techniques for buildings and structures

089 The removal of asbestos-based materials from buildings and other structures should be carried out by methods, which will minimise the release of asbestos fibres into the atmosphere both during and after removal operation. The choice of method is determined by the nature of the asbestos material,

090 Breaking through the finishing compound and cutting the reinforcing wire in the lagging are operations, which can liberate considerable quantities of dust. Care should therefore be taken in the selection of tools and in keeping the insulation wet. Tools should allow cutting of the insulation into small sections while keeping asbestos fiber levels in the removal area to a minimum.

091 Power cables, telephone cables and fire alarms may lie beneath asbestos insulation. These cables must be clearly identified prior to the commencement of any cutting as severe damage and/or hazard to the Staff member could result.

092 As the techniques used for the removal of sprayed thermal insulation from buildings are not dissimilar from those used for removal from steam pipes and boilers, the following removal methods may equally be adapted to the removal of asbestos from industrial plant and machinery.

Protective clothing and equipment

093 Respiratory devices “RPE” and protective clothing “PPE” are required during all abatement activities; adequate rest breaks should be provided for Staff during removal to consider the physical strain caused using such equipment.

094 The degree of respiratory protection required is determined by the nature of the removal job, the type of asbestos and the potential for exposure to asbestos fibers.

095 A guide to the selection of appropriate respiratory protection for various operations involving asbestos is presented in paragraphs 99 to 115 inclusive in this Specification.

096 Face masks are to be checked and tested at least every 6 (six) months.

Dismantling of asbestos removal area

097 The asbestos removal Work ordered should only be considered to have been completed when the Provider and/or the Asbestos Licensed Contractor has complied fully with the clearance criteria.

098 On completion of the asbestos removal job, all tools and equipment not used for cleaning should be removed from the removal area so that efficient vacuuming of the inside of the removal area enclosure can be undertaken. In taking these tools and equipment from the removal area, appropriate decontamination procedures should be observed.

099 After clearance has been given, any sealing plastic used should then be dismantled, folded inwards and placed in appropriate disposal bags and sealed. The sealing plastic should not be reused but must be treated as asbestos waste. Safety barricades and warning signs should not be removed until the complete area has been thoroughly cleaned.

HANDLING OF NON-FRIABLE ASBESTOS -FRIABLE ASBESTOS

100 Works of removal and disposal of non-notifiable non licensed, and notifiable non licensed materials in accordance with this Specification are deemed to be included in the rates in the Schedule of Rates and in the Provider's Tendered Rates and as defined in the NHF Schedule of Rates Measurement Preambles – Generally as stated below;

1. The removal and disposal of all non-licensed work on asbestos containing materials, whether it is notifiable or non-notifiable work (in accordance with and as defined in the Control of Asbestos Regulations 2012) such as but not limited to textured coatings, asbestos cement sheeting and roof tiles, vinyl floor tiling, gaskets etc.
2. Working in conjunction with all non-licensed work on asbestos containing materials, whether it is notifiable or non-notifiable work (in accordance with and as defined in the Control of Asbestos Regulations 2012) such as but not limited to textured coatings, asbestos cement sheeting and roof tiles, vinyl floor tiling, gaskets etc."

General

101 Non-friable asbestos products have been compounded from asbestos mixed with cement or other hard bonding materials "asbestos is firmly bound in the matrix of the material". This section recommends precautions to be observed when working with non-friable asbestos products.

102 These products include, but are not limited to:

- Flat or corrugated, compressed asbestos-cement sheeting;
- Asbestos-cement pipes for water, drainage and flue gases;
- Roofing slates;
- Floor or wall coverings;
- Asbestos gaskets;
- Pump and valve packings;
- Asbestos bonded into bituminous products;
- Reinforced plastic products;
- Thermoplastic products and backings;
- PVC floor tiles and backings;
- Asbestos-cement ducts and the like; and
- Asbestos-cement drip trays and tank covers.

103 So long as these products are maintained in good order and are not worked on with abrasive cutting or grinding tools, they are not likely to present a health risk.

104 New building materials incorporated since 1999 should not contain asbestos.

105 Ensure that precautions are observed during structural alteration or demolition involving asbestos-cement materials and removal of floor and wall coverings containing asbestos.

General precautions to be observed for non-friable asbestos products can be found in the Health and Safety Executive guidance "Asbestos Essentials Task Manual"

106 Work procedures must be designed to minimise the generation of dust. Action should be taken to avoid the spread of asbestos fibers. In particular, the following principles should be adopted:

- Abrasive cutting or sanding power tools should not be used on asbestos-containing products. These may generate large amounts of dust containing asbestos;
- Non-powered hand tools such as handsaws should be used;
- Wetting down the material further reduces the release of asbestos fibres when cutting;
- High pressure water jets/guns shall not be used because of the potential to spread asbestos waste over the surrounding environment;
- Work with asbestos-containing products in well-ventilated areas and, where possible, in the open air;
- Good work hygiene principles shall be observed. This may entail the use of plastic drop sheets to collect off-cuts and coarse dust or the use of appropriate vacuum-cleaning equipment when necessary;
- Suitable respiratory protection should be used when airborne asbestos fibres is likely to be present; and
- All off-cuts and collected dust should be disposed of as asbestos waste. (See section 116-126 of this Specification.)

Removal and disposal of asbestos cement sheeting (Hazardous Waste Regulations)

107 Ensure that the following precautions are observed when removing asbestos-cement roofing, wall sheeting or other asbestos cement products from buildings or other structures:

- The asbestos-cement sheets should be sprayed with a sealing solution or wetted with water, but not with high-pressure water jets. Roofing sheets should not be wetted during freezing weather if it is anticipated that this could create a risk of slipping or falling from the roof;
- Power tools should not be used during removal except for a low RPM drill to remove roofing screws; this method should be used in conjunction with shadow vacuum techniques. Fixings may vary from job to job but in most cases a modified bolt cutter can be used to detach roofing material from substrates. Concrete saws including all electrical grinding equipment must not be used to detach asbestos cement products from substrates;
- Damaged asbestos-cement should be kept wet to reduce levels of dust;
- Asbestos-cement sheets should be removed whole where possible and should be lowered to the ground, not dropped;
- The removed sheets should be stacked on a plastic sheet and not allowed to lie about the site where they may be further broken or crushed by machinery or site traffic;
- All asbestos-containing waste should be wrapped in plastic or otherwise sealed and removed from the site as soon as possible, using covered skips or on a covered lorry;
- The asbestos-containing waste should be disposed of in a manner, and at a site licensed for the storage, labelling and disposal of asbestos waste;
- Asbestos-cement sheets must not be reused or offered for sale;
- Any asbestos-cement residues remaining in the roof space or around the removal area should be cleaned up, using a “H” type vacuum cleaner or suitable wipes if necessary;
- Customers should be decanted or relocated (where appropriate);
- As far as practicable there should be no spread of contamination beyond the work area;
- All windows and doors in the building should be closed or in buildings where there is no ceiling the area below or adjacent to the work should be barriered off; and
- Staff should wear disposable overalls and either a disposable suitable RPE respirator or half-face mask fitted with appropriate dust filters.

Working on brittle roofs

108 Asbestos-cement sheeting is liable to shatter without warning under a person's weight and for this reason roofs that are sheathed in asbestos cement sheeting are included in those roofs known as "brittle roofs".

109 Persons who have the knowledge, experience and resources necessary to allow them to work at heights safely should only undertake the removal of asbestos-cement sheeting from a roof.

110 The Contractor should consider what hazards are involved and how they can be overcome. In the planning and execution of the Work, a system of Work should be established, taking into consideration the Work to be done, relevant statutory requirements, the type of equipment necessary, the training and experience of the Staff involved, and the instruction and supervision required. The system of Work should allow for not only those directly involved in the Work, but also other persons who could be affected.

Removal of vinyl floor and wall coverings containing asbestos

NOTE: Dry sanding of vinyl asbestos floor coverings is **prohibited.**

111 Vinyl-asbestos coverings (usually asbestos-backed floor coverings) may still be encountered. They do not usually present a risk on site but breaking up to prepare the surface for replacement, or removal operations, may create a hazard.

112 The Provider in working with products that may contain asbestos should ensure that all practicable steps are taken to confirm whether or not asbestos is present. If there is any doubt about the product being asbestos free after the Provider has completed a risk assessment, he should inform the Client requesting an Order for the asbestos analyst to have samples taken and laboratory tested to ISO/ICE 17025 undertaken. The product is more likely to contain asbestos if it was installed between 1960 and 1999.

13 Where the vinyl-asbestos coverings are found (or assumed) to contain asbestos the provisions set out in 089 to 092 above should be followed.

114 Significant releases of asbestos fibers can result when vinyl-asbestos products are abraded by sanding. The work methods and control procedures used when working with vinyl-asbestos products must be designed to limit Staff' exposure to asbestos and the spread of asbestos into the surrounding environment.

115 In deciding the approach that is to be taken in replacing asbestos-backed vinyl products, the following option may be considered:

- Removing the product with a spade or other flat instrument in accordance with the Health and Safety Executive guidance.

MONITORING ASBESTOS IN AIR LEVELS AND CLEARANCE PROCEDURES

General

116 The analytical service in monitoring asbestos in air levels and clearance procedures will be undertaken by Asbestos Consultants and Analysts (Specialist Subcontractors) appointed directly by the Contractor whose fees and expenses are deemed to be included in the rates in the Schedule of Rates and in the Contractor's Tendered Rates.

117 The measurement of airborne asbestos fibre levels may be required to verify that asbestos exposure standards have not been exceeded and to check that practices set out in the Health and Safety Executive Guidance and these guidelines have been met. The main objective of sampling should be to ensure that the potential for personal exposure has been minimised. Air sampling should always be undertaken by competent laboratories as set out in second edition of the Health and Safety Executive guidance HSG 248 (May 2021).

118 The type of monitoring that is applicable will depend on the exposure circumstances and removal methods employed. Advice should always be sought from a competent laboratory that conforms with HSG 248.

119 The determination of airborne asbestos fibre concentrations in air must be carried out in accordance with HSG 248.

Selection of laboratories

120 As set out in the Health and Safety Executive guidance all involved in asbestos must be competent and the Employer's Contract Manager must satisfy himself that those employed in asbestos management or removal are competent to standards laid down in CAR Regulations. To demonstrate such competence the laboratory should demonstrate the meet requirements of International Standards Organisation "ISO/ICE 17025" that covers the whole organization in terms of quality systems, control of records, training, test calibration methods etc.

Air sampling

121 The Contractor will be issued with an Order to appoint a Health and Safety Executive approved analyst to witness and sign off all test and clearance operations and issue of certificate of reoccupation.

122 Air sampling forming part of the overall asbestos management will include some/all the following:

- Background sampling to establish the conditions that exist before work is commenced;
- Leak testing to check the integrity of the enclosure deployed in removal or encapsulation activities;
- Personal monitoring to verify that action level predictions are accurate and to facilitate internal risk assessments and control;
- Clearance air monitoring to verify that the area is safe for normal occupation following the removal of asbestos materials;
- Reassurance sampling after the working enclosure has been removed or other works in the vicinity of asbestos have been completed.

Visual inspections

123 The appointed analyst will examine the Contractor's appointed Asbestos Licensed Contractor's plan of work (method statements) to familiarise themselves with the scope of Works. The first stage in the 4-stage clearance process is for the asbestos analyst to ensure the Works ordered have been completed, what was removed; is there any asbestos remaining in the Work area and the actual asbestos materials that were removed.

124 The visual inspection second stage of 4 stage clearance is conducted after the removal area has been meticulously cleaned and prior to clearance air monitoring. Inspections, prior to clearance monitoring, will be the responsibility of the Contractor, but the asbestos analyst must duplicate this function. The asbestos analyst may request that the Asbestos Licensed Contractor's supervisor accompany him during this exercise. Any asbestos remaining (i.e. that not visible to the naked eye) will be removed rapidly in the normal cleaning process. In some circumstances sealant may be applied to work surfaces and plastic sheeting after the visual inspection and initial monitoring (see Guideline for the Removal of Enclosure Area Sheeting). Any dust present in the removal area must be treated as if it contains asbestos. If asbestos is not completely stripped from an area because of access difficulties, then it should be sealed, and the location noted.

Clearance indicator air sampling Stage three of 4 stage clearance

125 Following a satisfactory visual inspection, clearance monitoring will be required. The area must be dry, and the negative air switched off and the inlet capped before sampling is started. As far as is practicable the decontamination unit must be isolated from the area being cleared. Clearance air monitoring should be carried out to HSG 248 and a written report issued by the laboratory.

126 Guideline for the removal of enclosure area sheeting

- Clean all internal surfaces including plant cover. Run exhaust air fan to clear area. Switch off fan and cap exit;
- Visual inspection. Carry out clearance monitoring. Is result 0.01 fibres/ml or below? Strike tenting. Dispose of waste;
- Reoccupation is this the first clean? Seal all inner surfaces with spray on sealant. Carry out clearance monitoring;
- Is result 0.01 fibres/ml or below? Assess where fibre contamination is coming from and take appropriate action; and
- Before tenting is struck, a result below 0.01 fibres/ml is required or confirmation that fibre contamination has not come from the asbestos removal job.

Final Assessment post enclosure/ work area dismantling stage four of 4 stage clearance

127 On satisfactory completion of all previous stages the final stage of the clearance process can commence, the analyst can be present during this process and all PPE, RPE should be worn. All polythene sheeting used in enclosure is disposed of as asbestos waste. In some situations, the asbestos analyst may take a further air test as an additional safety precaution or reassurance air test" after work area is fully cleared.

128 When all stages are completed satisfactorily the certificate of reoccupation is issued for the Work area and before removal from site at the end of the project but after use the decontamination unit is tested and certificate of reoccupation is issued. On completion of removals the Cntractor shall upload all details of removals on the Employer's electronic asbestos register on a Property by Property; room by room basis including inventory of customer's items, waste documentation and copy of certificate of reoccupation and waste notices.

RESPIRATORY AND PERSONAL PROTECTION FOR ASBESTOS WORK

General

129 Providers and others involved in work involving asbestos or abatement procedures must be fully conversant with the appropriate control measures necessary to protect against exposure to asbestos fibres. There is a legal requirement placed on Contractors to ensure that their Staff and others in the vicinity are adequately protected from the effects of asbestos.

130 Good occupational hygiene practice requires that all practicable efforts be made to prevent asbestos fibres from entering the air of the workplace. In circumstances where it is impracticable to prevent asbestos from entering the atmosphere, suitable respiratory protective equipment should be worn.

131 An information sheet on approved types of respiratory protection devices is available from the local office of the Health and Safety Executive.

Standard respirator programme

132 It is essential for all contractors required to use respirators in their work to develop and run a comprehensive respiratory protection programme. There are seven elements to a successful programme, which include:

- The administrative system;
- Knowledge and assessment of the risks involved;
- Control processes;
- Correct selection of respiratory protection Equipment (RPEs);
- Staff training and supervision
- Medical assessment in compliance with CAR Regulations; and
- Inspection, fit tests and maintenance and storage of RPEs.

Administrative system

133 Written standard operating instructions must be available. These should provide information on the Provider's policy in respect of the issue and use of RPEs. One person should be responsible for the coordination and direction of this policy. Each RPE programme will vary according to the peculiarities of the work being carried out.

Knowledge and assessment of risks involved.

134 The degree of respiratory protection required for asbestos work is determined by:

- The nature of the work;
- The type of asbestos;
- The work methods; and
- Potential for exposure to asbestos.

135 It is essential that a full appraisal of the Work using the above criteria be carried out to assess the likely risk factors and to identify the appropriate safety measures. It may be necessary to undertake environmental background or personnel monitoring to assist with the assessment and this is a responsibility of the Contractor and the Asbestos Licensed Contractor (removal contractor).

136 Air contaminated with asbestos fibers will be the major hazard to Staff and the most appropriate control methods will need to be considered in the assessment

process. Because the greatest risk is from the inhalation of asbestos fibres, stringent protection measures must be used. Therefore, all Staff likely to be exposed to asbestos must wear approved RPEs for the whole period exposed.

Correct selection of respiratory protection Equipment (RPEs)

137 To determine the correct selection of the most appropriate RPE for asbestos work, the following issues must be addressed:

- Fit to the wearer: If a proper fit cannot be achieved with one type, model or size of respirator, another, which does fit, must be provided;
- Face seal: The presence of facial hair (beard, stubble growth, or sideburns), wearing of spectacles, or facial characteristics may affect the face seal adversely. Positive pressure-powered equipment with full-face piece copes better with these problems than non-powered devices;
- Freedom of movement: The need for a Staff member to move freely about a job will influence the type of RPE. While airline respirators offer higher protection the restrictions imposed by the airline may be prohibitive;
- Physical and thermal stress: The wearing of RPE can cause severe problems during asbestos removal because of the physical activity required. In addition, this type of work is often carried out in hot environments. The cooling effect of air-supplied respirators will make them more acceptable and condensation on the visor will not be a problem; and
- Other factors: These could include:
    - The need to communicate;
    - Ease of cleaning; and
    - Availability of replacement parts.

Staff training

138 The correct and proper use of RPE must be taught to all users. No person should be required to use respirators without first being given training in correct use, operation, care and maintenance, emergency procedures, cleaning and storage requirements.

Medical assessment

139 Any type of respirator may impose undue stress on some users. Persons required to routinely wear respirators should be given the opportunity of a medical assessment to determine if they are able to safely wear them.

Inspection, maintenance and storage of RPE

140 Proper inspection, maintenance and repair of RPDs are an essential part of the respirator protection programme. Face-pieces should be cleaned, dried and stored properly after each use. Regular checks of the diaphragms, valves and face-piece parts will reveal any defect, which should be repaired. The batteries for powered air RPE will require recharging.

Protective clothing - General

141 Appropriate protective clothing will afford protection to asbestos Staff and prevent spreading contamination or health risk to others. All protective clothing used to carry out restricted work must be disposed of as asbestos waste. During other work involving asbestos protective clothing may be reused but appropriate measures must be taken to ensure cleanliness (see section on laundering).

Types of protective clothing

142 Persons involved in working with asbestos should always wear protective clothing which:

- Is made of material that resists penetration by asbestos fibres, such as nylon or treated synthetic material;
- Covers the body and fits snugly at the neck, wrists and ankles. It should also cover the head by having an attached hood; and
- Is maintained in good condition and if torn or damaged, immediately repaired or replaced;

  NOTE: Because of the impervious nature of this type of clothing the wearer may become affected by heat stress. The Contractor should ensure that Staff are knowledgeable on the signs and symptoms of heat disorders and the means to prevent illness caused by heat. There are three types of overalls in general use for asbestos work. Each type of overall has its advantages and disadvantages. The use of disposable or single-use overalls for all asbestos work is advisable because laundering is not required. Where the use of alternative types is necessary the full implications of how they will be cleaned or laundered need to be considered.

- Disposable or single-use protective clothing which is generally used for one job and discarded as asbestos waste. These are particularly suitable for all types of asbestos work;
- Overalls made from lightweight synthetic material such as nylon, which is also waterproof, or PVC waterproof clothing should be chosen as an option for the removal of non-friable materials only. The light nylon overall is particularly suitable for large ongoing jobs because they can be washed

under a shower when leaving the contaminated area. Laundering is necessary primarily for hygiene. The PVC type overalls can be used in a similar way; however, they are heavy, cumbersome and too hot for longer jobs;

Laundering of asbestos-contaminated clothing

143 The laundering of contaminated overalls presents some difficulties to comply with CAR Regulations Regulation 14

- The transfer and handling of contaminated overalls may put other people at risk from asbestos. For this reason, contaminated overalls should never be washed in a home laundry and Staff in a laundry handling asbestos-contaminated clothing must take special precautions;
- While the washing process removes asbestos fibers, the spin-drying cycle deposits the fibers on to the garment again; and
- During the mechanical drying process asbestos fibers are released into the air. International standards require that clothing which has been used in asbestos work be "... laundered in accordance with the following requirements:
    - The clothing is, wherever practicable, laundered at the place at which the work involving asbestos has been carried out; and
    - If it is not practicable to launder the clothing at that place, the clothing is, before being taken to the place where it is to be laundered, damped and placed in a closed container impermeable to asbestos dust and conspicuously marked with the words "ASBESTOS CONTAMINATED CLOTHING"; and
    - Wherever the clothing is laundered, it is laundered in such a manner as to clean the clothing and to suppress the release of asbestos dust into the air; and
    - Every employee to whom the clothing is given for laundering receives, before being given the clothing, instructions on the precautions to be taken to ensure that the clothing is laundered and handled in such a manner as to protect the safety of every employee coming into contact with it during the laundering process; and
    - The clothing is not laundered by an employee at an employee's home."

Footwear

144 Footwear should be adequate for the type of work being undertaken and where possible have no laces.

Gloves

145 If gloves are provided, they should be made of impervious material for ease of cleaning. To assist with manual dexterity disposable type gloves may be more acceptable. On health grounds, there are few reasons to require people handling asbestos casually to wear gloves, however, extended contact with asbestos can lead to asbestos corns or “warts”.

STORAGE, LABELLING AND DISPOSAL OF ASBESTOS

General

146 This section outlines the steps necessary for the Provider to ensure, as far as is practicable, the prevention of contamination by asbestos from any workplace or property; to ensure that asbestos-containing materials are stored, labelled where agreed with the Employer’s Contract Manager and disposed of correctly.

Storage and disposal of asbestos

147 The Contractor should take all practicable steps to ensure that asbestos waste products are not received into, stored, distributed or dispatched from any place of work unless in suitably sealed and labelled receptacles. The receptacles should be designed, constructed, maintained and closed so as to prevent any of the contents from escaping when subjected to the stresses and strains of normal handling.

148 It is the Contractor’s duty to ensure all dangerous substances are properly packaged and labelled and all asbestos waste shall be sealed in plastic bags (500 gauge thick) and labelled “Asbestos hazard — Wear respirator and protective clothing while handling contents”.

149 In addition bags shall be transported for disposal in UN approved and labelled double layered (red bag on inside clear bag) and have a specified means of closure (PVC tape and swan neck and tape) and are to be placed in a sealed skip when on site and subsequently disposed of in accordance with Hazardous Waste Regulations.

150 Sealed Asbestos skips are only to remain on site for the duration of the Works, and once the Works are complete and 4 stage clearance achieved are to be immediately removed. Sealed Asbestos skips remaining more than 24 hours after achievement of 4 stage clearance will be removed by a Client Party and all

costs incurred by the Client will be set-off against the valuation of the Asbestos Works including an administrative fee of 100% of the cost of the skip removal.

151 Update the Employer's electronic asbestos register system after removal of asbestos, putting information against specific locations where asbestos has been removed in each room in each specific property, including uploading details of any pertinent certificates and waste documentation within 10 days of completion of the Order.

Handling

152 Ensure that asbestos waste received into or dispatched from any workplace is packed in sealed plastic bags and FIBC's, the following practices applied:

- Pallet loads should be securely fastened by banding (in order to not cut the bags) and covered;
- Pallet loads should be securely mounted on suitable pallets, which can be moved by hoist, forklift truck or other mechanical handling means without damage. Hooks or other sharp equipment should not be used for handling the bags; and
- A supply of suitable adhesive tape should be made available by the Provider to repair any damaged bags. Where the damage cannot be repaired to prevent the release of asbestos during handling, the damaged bag should be placed inside another receptacle, which can be effectively sealed.

153 Asbestos cement sheets and pipes or insulating board should not be broken or cut for disposal in plastic bags. The Contractor should ensure that these materials are suitably sealed in plastic and transferred to a labelled truck or skip for safe storage prior to being transported to an approved disposal site. The vehicle transporting the waste should be appropriately identified in accordance with the Regulations.

154 Clean skip or container thoroughly after use.

155 Manufactured goods containing asbestos, such as boilers, should be sealed or suitably packaged (e.g. by shrink wrapping) to prevent asbestos fibres arising from abrasion during transport.

Disposal at designated landfill of transfer station

156 Asbestos waste may only be deposited at a suitably licensed landfill facility or received by a suitably licensed transfer station prior to onward shipment to a licensed landfill. 3 days' notice must be given to the Environment agency before moving waste and consignment note process as defined in Hazardous Waste Regulations must be followed. Producers /Licensed Waste carriers of asbestos waste should ensure they receive written confirmation of a facilities status to accept such material to ensure compliance with their responsibilities under the Hazardous Waste Regulations.

Reuse of abated asbestos containing products

157 The reuse of abated asbestos containing products, such as corrugated roofing and slates is not permitted.

INSTRUCTION AND TRAINING

General

158 This section applies to all Staff who are exposed to and required to work with asbestos including supervisory and maintenance personnel.

Type and scope of instruction and training required

159 Provide instruction and training to all such Staff (including those with supervisory functions) on the hazards, risks and controls as assessed for their work, and satisfy himself that any Asbestos Licensed Contractor appointed by the Provider meets the requirements of Regulation 10 CAR Regulations in terms of competence. The Health and Safety Executive Guidance L143 and HSG 247 provides a list of requirements for persons who work with asbestos.

160 Provide all such Staff, including such temporary Staff with:

- Training and assessment in line with the CAR ACOP L143 AND HSG 247 for the Training of Asbestos Removal Operatives.
- Safe Pass Training: Where Staff or supervisors are required to operate plant or equipment covered by specific training requirements of Regulations, ACOPS or guidelines then such training should also be provided. The Provider must maintain, on site, proof that training has been provided in accordance with the above.

Training in maintenance of control equipment

161 Ensure that any person carrying out any maintenance or servicing of exhaust ventilation equipment or other control equipment is competent to carry out the task.

Training in the use of respiratory protective equipment

162 All employees shall be provided with training on the correct use and maintenance of respiratory protective equipment.

MEDICAL MONITORING

General

163 Health and Safety Executive regulations require among other things that Providers monitor the health of their employees in relation to significant hazards, and it requires medical examination of employees exposed to significant hazards. The Provider shall assure themselves that their Staff have where applicable had medical examinations in compliance with CAR Regulations (every 3 years for NNLW) and (every 2 years for licensed asbestos removal workers).

Initial medical CAR Regulations (Regulation 22)

164 Any Staff directing employees to undertake Asbestos Works must ensure that the employee has:

- A full work history;
- A medical examination, relevant to persons who work with asbestos including specific examination of the chest and other tests that may be appropriate prior to starting employment in restricted work;
- The Provider should ensure that the employee has this asbestos medical thereafter biannually; and
- The cost of the medical examinations shall be the responsibility of the Provider.

165 Notwithstanding the above provision, the Health and Safety Executive may direct any person undertaking work involving asbestos to have a medical examination.

166 While the employee remains in the employment of the Contractor:

- The Contractor shall ensure that the employee has a medical examination in accordance with the Regulations.
- The cost of the medical examination shall be met by the Contractor.

Personal medical information

167 The personal medical information of the employee remains the property of that employee. The Contractor will receive certification from the medical practitioner stating whether the employee is fit or otherwise for the restricted asbestos work. The employee should be encouraged to share their medical information, where appropriate, with the Provider.

168 Where an employee leaves the company, the Contractor should ensure that the employee is aware of the need to continue with bi annual medical examinations.

169 Retain all medical records relating to asbestos for a period of 40 years.

Medical examinations

170 The asbestos medical examinations shall be performed by qualified medical practitioners with specialist qualifications in occupational or respiratory medicine it is essential that all practitioners have experience in asbestos-related diseases and conditions.

Asbestos Exposure Register

171 Staff who may have been exposed to asbestos should ensure that their names and appropriate details are entered in the Asbestos Exposure Register administered by the Health and Safety Executive.

SPECIALIST EQUIPMENT

Controlled Wetting Equipment

172 Equipment for the controlled wetting of asbestos containing materials is to be in accordance with British Standard, it should effectively wet asbestos –containing materials and suppress asbestos fibres both during and after the asbestos removal process, by multi-point injection of sprayed coatings, insulating board, thermal insulation and coatings on pipes, tanks and vessels, or spraying with low-pressure spray heads of liquid on to insulating boards and other material less than 10mm thick to suppress the release of airborne asbestos.

Negative Pressure Units ("NPU")

173 Portable and/or transportable negative pressure units are to be in accordance with British Standard, they are to incorporate HEPA filters to British Standard for use in the controlled removal of asbestos containing materials. This requirement also applies to negative pressure units designed to create negative pressure within a portable contamination unit facility or working enclosure and two part negative pressure units.

Class H Vacuum Cleaners

174 The operation, cleaning and maintenance of Class H (high hazard) vacuum cleaners is to be in accordance with British Standard, they are to incorporate a filter conforming to British Standard in the controlled removal of asbestos containing materials.

Employer's current manufacturers/suppliers/products

175 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

TECHNICAL SPECIFICATION

05-EXTERNAL WORKS

EXTERNAL WORKS

MATERIALS

Hardcore

001 For hardcore in beds and when filling to make up levels under paving, use only good clean hard brick, concrete, hard tiles, stone or ballast, broken before placing to pass a 75mm ring and free from all rubbish and deleterious material.

002 Thoroughly consolidate hardcore to the required levels and contours with a roller, vibrating roller or mechanical punner. Take care that no damage is done to adjacent work.

003 Blind surfaces of hardcore with sand, ashes or other fine material approved by the Client's Representative.

Sub-bases to Roads.

004 Type 1 Sub-base to be unbound mixture made from crushed rock, crushed slag, crushed concrete, recycled aggregates or well burnt non-plastic shale and may contain up to 10% by mass of natural sand that passes a 4 mm test sieve.

005 Type 2 Sub-base to be unbound mixture made from crushed rock, crushed slag, crushed concrete, recycled aggregates or well burnt non-plastic shale, natural gravel and natural sand that passes a 4 mm test sieve.

Precast concrete paving flags

006 Use only precast concrete paving flags of a standard and quality to Applicable Standard, approved by the Client's Representative, made from natural and crushed aggregate, hydraulically pressed, of uniform natural colour throughout and with a non-slip surface finish. Tactile paving flags are to be in accordance with Applicable Standard and laid in accordance with the applicable Standard.

007 Lay flags true and square on cement mortar (1:3) dabs with 6mm joints, or sand filled joints and pointed up with cement and sand (1:6) mortar in accordance with the applicable Standards and cleaned off on completion.

Precast concrete edgings and kerbs

008 Lay precast concrete edgings and kerbs on edge with top 6mm below the finished level of the adjacent surface and laid in accordance with the applicable Standard. All precast concrete edgings and kerbs are to be to applicable Standard.

Bond Coat

009 Bond coats should comply with the applicable Standards. The minimum target rate of spread to existing substrates should not be less than 0.3kg/m2 of residual binder. For application to newly laid substrates the minimum target rate of spread should not be less than 0.2kg/m2 of residual binder.

Asphalt Concrete

010 Asphalt concrete is to be in accordance with applicable Standard and PD 6691 for Category B traffic and laid and compacted to applicable Standard.

011 Binder to be petroleum bitumen conforming to Table 1 of the applicable Standard.

	Surface Course	Binder Course
Asphalt Concrete Paving for Carriageways and Shared Surfaces	Thickness: 40mm Material: AC14 Close Surf to PD 6691 Table B14 Column 1	Thickness: 60mm Material: AC20 Dense Bin to PD 6691 Table B11 Column 3
Asphalt Concrete Paving for Carriageways and Shared Surfaces – Basecourse Trafficked	Thickness: 30mm Material: AC14 Close Surf to PD 6691 Table B14 Column 1	Thickness: 70mm Material: AC20 Dense Bin to PD 6691 Table B11 Column 3
Asphalt Concrete Paving for Carriageways and Shared Surfaces – Surface Course only	Thickness: 30mm Material: AC14 Close Surf to PD 6691 Table B14 Column 1	
Asphalt Concrete Paving for Carriageways and Shared Surfaces and Humps		Thickness: 40mm Material: AC20 Dense Bin to PD 6691 Table B11 Column 3
Asphalt Concrete/Hot Rolled Asphalt to Carriageways and Shared Surfaces	Thickness: 40mm Material: HRA 30/10F Close Surf to PD 6691 Table C2.A Column 4	Thickness: 60mm Material: AC20 Dense Bin to PD 6691 Table B11 Column 3

	Surface Treatment: Uncoated chippings	
Asphalt Concrete/Hot Rolled Asphalt to Footpaths	Thickness: 25mm Material: HRA 15/10F Close Surf to PD 6691 Table C2.A Column 3 Surface Treatment: Uncoated chippings	Thickness: 50mm Material: AC20 Dense Bin to PD 6691 Table B11 Column 3

012 Asphalt concrete shall be laid by machine on carriageways and may be laid by hand on footpaths.

Hot Rolled Asphalt

013 Hot rolled asphalt is to be in accordance with applicable Standard and PD 6691 for Category B traffic and laid and compacted in accordance with the applicable Standard

	Surface Course
Hot Rolled Asphalt to Carriageways and Shared Surfaces (surface Course only)	Thickness: 40mm Material: HRA 30/10F Close Surf to PD 6691 Table C2.A Column 4 Surface Treatment: Uncoated chippings
Hot Rolled Asphalt to footpaths	Thickness: 25mm Material: HRA 15/10F Close Surf to PD 6691 Table C2.A Column 3 Surface Treatment: Uncoated chippings

014 All aggregates used for bituminous surfacing materials shall be sound, clean, hard broken rock graded to and conforming to the applicable Standards. Aggregates in the wearing course in contact with the wheels of vehicles shall have a maximum aggregate abrasive value of 16 and a minimum polished stone value of 45. Hot rolled asphalt to be transported and tested to the applicable Standards.

Mastic Asphalt to existing Walkways/Flooring

015 Existing concrete surfaces are to be cleared of any possible contaminates and loose chippings/sections to be removed with minor repairs undertaken to allow coating to act as suitable basecoat. Existing outlets and up-stands should be securely fixed and cleaned of any possible contaminates.

016 Mastic asphalt is to be in accordance with the Applicable Standards and laid and compacted to the applicable Standard, amount of reclaimed asphalt to be 10% by mass of the total mixture.

017 Binder to be paving grade petroleum bitumen conforming to the applicable Standard.

	Surface Course
Mastic Asphalt to Walkways and Flooring	Thickness: 20mm Material: Fine aggregate to Applicable Standard Surface Treatment: Uncoated chippings Movement Joints: Proprietary within topcoat, at 6 metre centres or above existing structural expansion joints

Chippings

018 Pre-coated Chippings to comply with and applied in accordance with the applicable Standards.

Chippings to Asphalt Wearing Surface to Carriageway	Pre-coated nominal size 14mm , maximum aggregate abrasion value at 12 and a minimum polished stone value of 55
Coloured Chippings to Asphalt Wearing Surface to Carriageway	Pre-coated Hardened red pigmented 20mm, maximum aggregate abrasion value at 12 and a minimum polished stone value of 55 coated with escorey red epoxy resin
Un-coated Chippings to Asphalt Wearing Surface to footpaths	Clean dry granite chippings of a light colour, nominal size 10mm, distributed at the rate of 1kg/m2 and rolled in

Thermostatic Road Marking

019 To be hot thermos-plastic road marking to applicable Standard applied as detailed in Traffic Signs Manual Chapter 8, Traffic Safety Measures and Signs for Roadworks and Temporary Situations.

Interlocking brick/block paving

020 Ensure concrete block paving is of uniform colour throughout and of a size, shape and colour to match existing. Block paviors to be in accordance with and laid in accordance to the applicable Standards in either herringbone or stretcher bond.

021 Sand for bedding to be sharp sand or crushed rock fines, not more than 10%, retained on a 5mm BS sieve and evenly graded as Applicable Standard GF85)/4/(MP) fine aggregate with clay, silt and fine dust content not more than 3% by mass, and free from deleterious salts and contaminates

WORKMANSHIP

Formation

022 Thoroughly compact the bottom of stripped or excavated areas to receive base. Remove any obstructions or soft spots and add and compact suitable additional Material to provide level or graded surfaces of equal bearing capacity.

Bases for paving

023 Immediately after compaction of the earth formation, lay a limestone base with limestone dust blinding in a consolidated layer not exceeding 150mm thick compacted with a vibrating roller or mechanical rammer.

Concrete paving flags

024 Unless specified otherwise elsewhere, lay flags to the Applicable Standard on a prepared stone base to match existing bonding and on a 25mm thick consolidated bed of semi-dry mortar. Use joints 5-10mm wide pointed with cement mortar (1:3) as the Works proceed. Protect completed paving until the pointed joints have set and then brush off and leave clean.

Asphalt Concrete and Hot Rolled Asphalt

025 Lay asphaltic concrete and hot rolled asphalt paving to a standard and quality approved by the Client's Representative.

026 Lay and compact asphaltic concrete and hot rolled asphalt in restricted areas by methods that produce a compacted finish equivalent to the thickness achieved by heavy rollers.

Kerbs and edgings

027 Bed kerbs and edgings on concrete and haunched half-way up on the back. Form fine open joints between units. Full height upstand is to be 125mm above road or channel level.

028 Drop kerb upstand shall be 0-10mm for pedestrian crossings, and 25mm for vehicular crossings.

Interlocking brick/block paving

029 Ensure that sub-bases are suitably accurate and to the specified gradients before laying paving.

030 Lay block paving on a well graded sand bed vibrated to provide a thoroughly interlocked paving of even overall appearance with regular sand filled joints and accurate to line, level and profile, and thoroughly compact block paving's with vibrating plate compactor as laying proceeds.

031 Cut blocks/paviors neatly and accurately without spalling to give neat junctions at edge restraints and changes in bond.

Stopcock Pits

032 Construct stopcock pit to specified size, including excavation, disposal, earthwork support, backfill, lay 75 mm concrete base and concrete common bricks to applicable Standard to form half brick wall in cement mortar (1:3 30N/mm2) in stretcher bond, form 2 number holes each not exceeding 55mm nominal size diameter, and fix only surface box supplied by Water Authority, bedded in cement mortar (1:3)

Lighting Column Bases

033 Construct lighting column base to specified size, including excavation, disposal, earthwork support, backfill, place mass concrete base with cable recess, base size as table below:

Lighting Column Height	Base Size
5m	600mm x 600mm x 750mm deep
6m	600mm x 600mm x 1000mm deep
8m	600mm x 600mm x 1200mm deep
10m	600mm x 600mm x 1500mm deep
12m	600mm x 600mm x 1800mm deep

Pipe Ducts

034 Pipe ducts are to be laid straight to line, true to gradient or level on the specified bedding material, provide 50mm minim um clearance between pipe ducts when they cross, materials to be:

PIPE DUCT FOR:	
General Use	Unplasticised PVC to Applicable Standard complete with drawlines and flexible joints
Street Lighting Cables in Footways to Footpaths	32mm diameter Orange alkathene ducting made from polythene or PVC-u marked with name of Street lighting Authority and Year of Manufacture in 6mm high blue lettering along its entire length, no joints allowed
Street Lighting Cables in Carriageways or Parking Areas	160mm diameter PVC-u to Applicable Standard complete with flexible joints

Identification Tape

035 During backfilling of trenches for electricity service cables, lay continuous colour coded, heavy gauge polythene identification tapes, 300mm below the surface along the route of the cable. Marker tape for street lighting cables shall be 150mm wide coloured yellow and printed its length in 100mm high black lettering with the words caution – street lighting Cable below”

Tree Felling/Removal

036 Felling shall consist of the removal of the complete tree, including the stump to below ground level.

037 If the stump is not to be ground out, the Provider will be required to leave the stump as low to the ground as possible, unless otherwise Instructed by the Client’s Representative.

038 When felling trees in open spaces, if there is a delay between felling and stump removal, the Contractor shall leave the stump at a height of at least 1m above ground level to prevent people tripping over it.

039 The resultant hole following stump removal is to be backfilled and consolidated with topsoil to ensure a finish level with the surrounding area. For trees in hard surfaces, the hole shall be backfilled with topsoil to 7cm's below the surrounding area. Before leaving the site unattended, the Cntractor must reinstate the surface to match the surrounding area and leave the area safe and level with the surrounding area.

040 Advance warning notices must be delivered by the Contractor at his own expense at least one week prior to the removal of any tree to neighbouring households where trees adjoining dwellings are required to be removed. The format of the advance warning notice is to be agreed with the Employer's Contract Manager.

041 Take due care when felling or removing trees to avoid damage to property, ground surfaces, animals, people, vegetation and surrounds. The Contractor must ensure that branches, limbs, trees and stumps are removed using a safe system which complies with recognised procedures. The Employer's Contract Manager will require the Contractor, in certain cases, to provide a method statement of procedure. Before the Work can be undertaken in such cases, the Employer's Contract Manager must approve the working system outlined in the statement.

042 All damage resulting from the felling or removal of trees is the responsibility of the Contractor The Contractor must carry out all rectification and reinstatement to the satisfaction of the Employer's Contract Manager.

043 Remove all arising's from site.

Stump Removal

044 The Employer's Contract Manager will specify to the Contractor whether stumps are to be grubbed up or ground out.

045 Where trees are removed from streets (hard paved and bitumen macadam areas), the surface must be reinstated and left safe before moving on to the next operation on site.

046 Any hollow remaining after stump removal shall be backfilled and consolidated with a layer of topsoil, 70mm below the surrounding ground level and the original surfacing reinstated. Great care must be taken by the Contractorr not to damage any services.

047 Where trees are removed from lawns, shrub areas etc., and the location shall be reinstated before proceeding to the next operation. Reinstatement shall consist of backfilling with topsoil and then consolidation. The backfill shall be mounded sufficiently to allow for settlement. Where the surrounding area is grass the Provider must sow the new topsoil with an adequate amount of amenity grass seed.

048 Grubbing up of the stump shall consist of the complete removal of the tree stump and roots over 4cms in diameter by hand, machine excavation, winching or other means, trees used as an anchorage for winching operations shall be adequately protected by rubber ties, cordwood or other suitable material in accordance with the Applicable Standard for Tree work

Site/Street Furniture

049 Rotary Driers are to be constructed from:

Clothes line; 2.6mm diameter, minimum 24m plastic coated line;

Non-folding arms; 3 or 4 no 25mm diameter aluminium tubes or 25mm x 13mm painted galvanised steel section;

Non-folding stays; 3 or 4 no 2omm diameter aluminium tubes or 13mm x 13mm painted galvanised steel section;

Brackets: zinc die cast;

Centre Pole: galvanised hot finished welded hollow section made from steel to Applicable Standard, minimum 34mm diameter, minimum 1.7m length;

Excavate 450mm deep hole for 300mm x 300mm x 375mm concrete (Gen 3) base, with aluminium tube cast in, backfill and disposal off site;

050 Tubular clothes posts are to be constructed from:

50mm heavy duty steel tube 2050mm long;

Top cross member; 750mm long, twice bored and fitted with 5mm guide rings of 15mm diameter;

Hitch handles; 5mm diameter bent to butterfly shape with no sharp projections, fitted 1100mm from top of post;

Fixing lugs; 2 no 200mm x10mm inserted through post at right angles to each other and welded

Galvanised after manufacture;

Excavate 450mm deep hole for 300mm x 300mm x 450mm concrete (Gen 3) base, with post cast in, backfill and disposal off site;

051 Precast concrete clothes posts are to be constructed from:

Post; 125mm x 125mm at base tapered to 90mm x 90mm at top with pyramid top, post 3050mm long, twice holed 75mm from top, and 1500mm from top to accommodate fittings;

Galvanised hook to top hole, and galvanised “D” shaped tying ring to mid hole;

Excavate 550mm deep hole for 450mm x 450mm x 450mm concrete (Gen 3) base, with post cast in, backfill and disposal off site;

052 Litter bins are to be constructed from:

Hardwood slats on galvanised steel frame, and galvanised steel liner fixed with a security chain;

Ground fixed to insitu concrete (Gen 3) foundation 300mm x300mm x200mm, or post or wall fixed as manufacturer’s technical data sheet;

053 Footpath Bollards are to be comply with Applicable Standard and to be constructed from:

Galvanised tubular steel painted black with bands

Bollards to be set in concrete (Gen 3) base 300mm x 300mm x 375mm concrete base, with high intensity retro-reflective bands set back 500mm from face of kerb to centre of bollard. Excavate, backfill and disposal of excavated materials off site;

Cleaning Existing Paving

054 Clean existing paving with high pressure washer, the Contractor is to determine the pressure and any chemical additive necessary to achieve the required level of cleaning. The Provider is to ensure that the pressure washing does not displace any jointing sand/fine aggregate during the cleaning process.

Topsoil and soil ameliorants

055 Preparation of undisturbed topsoil is to be in accordance with Applicable Standard. Break up hard ground thoroughly, remove visible roots and large stones with a diameter greater than [75 mm]. Areas to be covered with turf or thick sward are to be rotavated or dig over to full depth of topsoil. At appropriate times treat with a suitable translocated non-residual herbicide.

056 Imported topsoil for multi-purpose use accordance with Applicable Standard: Loamy sand.

057 Imported low fertility topsoil for specific purpose - Low fertility. - soil textural class to Applicable Standard: Sandy loam

058 Sanitised and stabilised composted materials is to be certified to PAS 100 with horticultural parameters: -

- pH (1:5 water extract): 7.0-8.7;
- Electrical conductivity (maximum, 1:5 water extract): 200 mS/m;
- Moisture content (m/m of fresh weight): 35-55%;
- Organic matter (minimum): 25%;
- Grading (air dried samples): 99% passing 25 mm screen, and 90% a 10 mm screen mesh aperture;
- Carbon:Nitrogen ratio (maximum): 20:1;
- Texture: Friable;
- Objectionable odour: Not permitted; and
- Quality Compost Protocol certification: Required.

059 Green compost for soil amelioration to be in accordance with BSi PAS 100:2011 or current revision, obtained from a PAS 100 compliant facility.

Spreading Topsoil

060 Spreading topsoil is to be in accordance with Applicable Standard and the following requirements:

- Temporary roads or surfacing: Remove before spreading topsoil.
- Spreading: Spread when reasonably dry, maintaining crumb structure. Do not compact.
- Layers: - Depth (maximum): 150 mm. - Gently firm each layer before spreading the next.
- Depth after firming and settlement: No greater than 400 mm.

061 The finished levels of topsoil after settlement is to be:

- Above adjoining paving or kerbs: 30 mm.
- Within the root spread of existing trees: Unchanged.
- Below dpc of adjoining buildings: Not less than 150 mm.
- Shrub areas: Higher than adjoining grass areas by 30 mm.
- Within root spread of existing trees. Unchanged.
- Adjoining soil areas. Marry in.

062 Final cultivation od topsoil is to be:

- Compacted topsoil: Break up to full depth.
- Tilth: Loosen, aerate and break up topsoil to a tilth suitable for blade grading.
- Depth: maximum 400 mm.
- Particle size (maximum): 25 mm.
- Timing: Within a few days before planting or sowing.
- Weather and ground conditions: Suitably dry.
- Surface: Leave regular and even.
- Levels: 30mm above surrounding surface.
- Undesirable material brought to the surface:
    - Remove visible weeds. –
    - Remove roots and large stones with any dimension exceeding 25mm.

063 Grading of topsoil:

- Contours: Smooth and flowing, with falls for adequate drainage.
- Hollows and ridges: Not permitted.

Seeding/ turfing

064 General Information/Requirements

Seeded and Turfed Areas

Growth and development: Healthy, vigorous grass sward, free from the visible effects of pests, weeds and disease.

Appearance: A closely knit, continuous ground cover of even density, height and colour.

Climatic conditions: Carry out the work while soil and weather conditions are suitable.

Watering:

- quantity: wet full depth of topsoil;
- application: even and without displacing seed, seedlings or soil;

- frequency: as necessary to ensure the establishment and continued thriving of all seeding/turfing;

Water restrictions:

- timing: if water supply is or is likely to be restricted by emergency legislation do not carry out seeding/turfing until instructed. if seeding/turfing has been carried out, obtain instructions on watering;

Notice, give one week's notice before to the Client's Representative at the following stages:

- setting out;
- applying herbicide;
- applying fertilizer;
- preparing seed bed;
- seeding or turfing;
- visiting site during maintenance period;

Setting out:

- boundaries: mark clearly.

- delineation: in straight lines or smoothly flowing curves as shown on drawings.

5 Preparation

Soil Requirements

Wildflower seeded areas:100mm dressing of low fertility topsoil.

Lawn areas: Existing topsoil, incorporated with compost.

Wildflower Seed Mixture for Wildflower Meadows:

- Supplier: Emorsgate or other equal and approved. –
- Mixture reference: EM4 or other equal and approved.
- Origin of each species (as defined in Flora Locale's Code of practice for collectors, growers and suppliers of native flora):UK origin.
- Application rate: 4 g/m².

Flowering Lawn Seed Mixture for Flowering Lawn

- Supplier: Emorsgate or other equal and approved. –
- Mixture reference: EL1.
- Origin of each species (as defined in Flora Locale's Code of practice for collectors, growers and suppliers of native flora):UK origin.
- Application rate: 4 g/m².

Quality of Seed for all Grassed Areas:

- Freshness: Produced for the current growing season.

- Certification: Blue label certified varieties.

  - Standard: EC purity and germination regulations.

  - Official Seed Testing Station certificate of germination, purity and composition: Submit when requested.
- Samples of mixtures: Submit when requested.

Quality of Wildflower Seed for Wildflower and Flowering Lawn:

- Standard: In accordance with Flora Locale's 'Code of practice for collectors, growers and suppliers of native flora'.
- Germination testing: Not required.
- Freshness of seed: Produced for the current growing season.
- Samples: Submit when requested.

Sowing

- General: Establish good seed contact with the root zone.
- Method: Seed drill, Distribution:2 equal sowings at right angles to each other.
- Season: Grass seed generally: April to October.

Cleanliness

- Soil and arisings: Remove from hard surfaces.
- General: Leave the works in a clean, tidy condition at Completion and after any maintenance operations.

Employer’s current manufacturers/suppliers/products

066 Ensure all Materials are compatible with and standardised to the Employer’s current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer’s current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

TECHNICAL SPECIFICATIUON

06-FENCING AND GATES

FENCING AND GATES

MATERIALS

Generally

001 Follow any timber sizes stated in the Schedule of Rates items, in preference to those stated in any applicable Standard or equivalent.

002 Use only galvanised/sheradised ironmongery and fixings.

003 Where the Schedule of Rates refers to posts “not exceeding” a particular size in Orders and for Valuation use the Schedule of Rates item closest to actual post sizes used in the Works.

004 Use cement, water, aggregates and sand as defined in the “Concrete Work” Section.

005 Note that different fencing types exist amongst the Properties in a variety of heights and with concrete and metal posts set in earth or concrete.

Timber gates

006 Construct frames with ledge and bracing joints. Bracing shall rise up from the hinged side of the gate.

Metal gates

007 Properly weld together metal gates and grind all welds to a smooth finish, before undertaking galvanising.

Pressure impregnating

008 Where Works are described as ‘pressure impregnated with preservative’ use pressure pretreated timbers for fencing and gates with organic, solvent-based preservative treatment approved by the Client’s Representative. All timber shall receive a double vacuum treatment in accordance with the applicable Standard after machining. This treatment shall be a modern, industrial, organic, solvent based wood preservative containing no “red list” biocides. Application must be by low pressure impregnation, giving highly effective protection against wet rot fungi and having a 30 year warranty.

009 Carry out deep cutting, planning and other fabrication before treatment. Where any crosscutting or notching of the pressure impregnated timbers is necessary, liberally treat all new surfaces exposed with a preservative approved by the Client's Representative.

010 Produce a certificate of treatment to cover all timbers processed indicating that the timber has been procured from sources which can independently be verified as being either: from a legal and sustainable source or from a FLEGT licensed or equivalent source. This shall comply with the EU timber Regulation (EUTR) and the UK Timber Procurement Policy (TPP).

Wood preservatives

011 Thoroughly clean all woodwork to be treated and ensure it is perfectly dry before application. Apply (by brush, trowel, injection or gravity irrigation treatment) the preservative in two coats and work it into all joints. Follow with the second coat before the first coat has dried out. Use only products registered by the Health and Safety Executive (HSE) and listed on the HSE website under non-agricultural pesticides.

Concrete mix

012 Ensure all concrete used for bedding in posts is Gen1 as defined in the "Concrete Works" Section.

Nails and screws

013 Ensure nails, screws, clips, wire and other ancillaries and fixings are galvanised and as defined in the "Woodwork" Section.

WORKMANSHIP

Fence route

014 Clear vegetation or other obstructions along fence routes. Remove any humps and fill any hollows with compacted soil to provide a clear way, permitting unobstructed passage on both sides of the fence, approximately level or with smooth undulations.

015 Identify any services in the ground before excavations commence and take appropriate precautions to avoid any damage.

Fence erection

016 Erect fences as follows:

- with posts truly vertical and tops to line;
- with struts uniformly angled to give maximum support;
- with straining posts in strained wire fences located at each end, at each change in direction and at each acute change in level;
- with struts to all straining posts in the direction of the line of the fence; and
- with posts fixed, but if the ground is soft or a post or strut cannot be securely fixed in the manner specified, set in concrete (or additional concrete) or otherwise as approved by the Client's Representative, to make the fence secure.

Fixing posts

017 Fix posts as specified in the applicable Standard for the type of fencing involved and in accordance with the following:

- in concrete:
- use appropriate size and depth for size of post; and
- use appropriate size and depth for size of struts;
- using holes with vertical sides; and
- where using:
- concrete in holes: half fill the hole with concrete with earth above, both well rammed;
- earth filled holes: keep the hole as small as possible consistent with refilling and compacting with earth (Cleft Chestnut Pale Fencing only); or
- driven posts: drive without damaging the posts. (Cleft Chestnut Pale Fencing only)

Post spurs

018 Use metal post spurs, where Instructed by the Employer's Contract Manager.

Painting

019 Ensure decoration specified in the Schedule of Rates matches the existing unless instructed otherwise.

Maintaining protective treatments

020 Avoid cutting on site. Make good any damaged protective coatings (e.g. galvanising) to the standard of protection given by the specified coating. Do not cut timber treated with preservative where it will be in the ground. Apply preservative coating to any cuts to treated timber.

Chain-link Fencing

021 Chain-link fencing shall consist of:

Galvanised steel chain link: 50mm mesh, 3.5mm galvanised, fixing to line wire with crimping rings at 300mm centres

Line wire: 3mm nominal diameter galvanised plain mild steel wire.

Posts: for 900mm high fencing, post to be 100mm x 100mm x 1450mm long, parallel sided, weathered on top, reinforced with 4 Nr 6mm diameter mild steel, bars laced with binding wire at 200mm centres, intermediate posts, three times holed, corner and end posts, three times holed both ways, and once holed one way with 12mm diameter holes. End and corner posts to have mortice and 10mm diameter bolt holes to engage stays. Three number line wires at 430mm centres. Excavation for corner and end post holes 450mm x 450mm x 675mm, excavation for intermediate post holes 250mm x 250mm x 675mm, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth.

Posts: for 1200mm high fencing, post to be 125mm x 125mm x 1870mm long, parallel sided, weathered on top, reinforced with 4 Nr 6mm diameter mild steel, bars laced with binding wire at 200mm centres, intermediate posts, three times holed, corner and end posts, three times holed both ways, and once holed one way with 12mm diameter holes. End and corner posts to have mortice and 10mm diameter bolt holes to engage stays. Three number line wires at 580mm centres, nominal 3.5mm diameter. Excavation for corner and end post holes 450mm x 450mm x 675mm, excavation for intermediate post holes 250mm x 250mm x 675mm, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth.

Posts: for 1800mm high fencing, post to be 125mm x 125mm x 2620mm long, parallel sided, weathered on top, reinforced with 4 Nr 6mm diameter mild steel, bars laced with binding wire at 200mm centres, straight run posts, five times holed, corner and end posts, five times holed both ways, and once

holed one way with 12mm diameter holes, End and corner posts to have mortice and 10mm diameter bolt holes to engage stays. Three number line wires at 880mm centres, nominal 4mm diameter. Excavation for corner and end post holes 450mm x 450mm x 850mm, excavation for intermediate post holes 300mm x 300mm x 850mm, 100mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth.

Stays: for chain-link fencing fixed to end and corner posts in-line with fencing, size and length of stay to match height of fence:

900mm Fence = 75mm x 75mm x 1500mm stay

1200 mm Fence = 100mm x 75mm x 1830mm stay

1800mm Fence = 100mm x 85mm x 2590mm stay

Or to in accordance with the applicable Standards

Stay parallel sided, splayed and holed at top for stay bolt fixing to posts on top, reinforced with 4 Nr 6mm diameter mild steel, bars laced with binding wire at 200mm centres, three times holed with 12mm diameter holes, bolts for fixing stays 125mm long x 10mm diameter with nut and washer, eye bolts to all cut ends. Excavation for stay holes 600mm x 300mm x 525mm, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth.

Vertical Board Fencing

022 Vertical timber boarded fencing shall consist of:

950mm Vertical board (rounded top with bull wire):

2 nr. 44mmx 69mm splayed horizontally softwood runners bolted with 200mm x 10mm diameter bolt with nut and washer at connection of runner and post;

900mm long x 94mm x 20mm board with rounded top, fixed vertically at 114mm centres to runners;

Bull-wire 3.15mm diameter (10SW) galvanised mild steel to applicable Standard stapled to horizontal runners;

1050mm Vertical board (rounded top):

2 nr. 44mmx 69mm splayed horizontally softwood runners bolted with 200mm x 10mm diameter bolt with nut and washer at connection of runner and post;

1000mm long x 144mm x 20mm board with rounded top, fixed vertically at 164mm centres to runners;

1050mm Vertical board (square top):

2 nr. 44mmx 69mm splayed horizontally softwood runners bolted with 200mm x 10mm diameter bolt with nut and washer at connection of runner and post;

1000mm long x 144mm x 20mm board with splayed top, fixed vertically at 164mm centres to runners;

1050mm Vertical board (square top with bull-wire):

2 nr. 44mmx 69mm splayed horizontally softwood runners bolted with 200mm x 10mm diameter bolt with nut and washer at connection of runner and post;

1000mm long x 144mm x 20mm board with splayed top, fixed vertically at 164mm centres to runners;

Bull-wire 3.15mm diameter (10SW) galvanised mild steel to applicable Standard stapled to horizontal runners;

1250mm Vertical board (square top):

2 nr. 44mmx 69mm splayed horizontally softwood runners bolted with 200mm x 10mm diameter bolt with nut and washer at connection of runner and post;

1200mm long x 144mm x 20mm board with splayed top, fixed vertically at 164mm centres to runners;

1675mm Vertical board (square top):

3 nr. 44mmx 69mm splayed horizontally softwood runners bolted with 200mm x 10mm diameter bolt with nut and washer at connection of runner and post;

1600mm long x 144mm x 20mm board with splayed top, fixed vertically at 164mm centres to runners;

1675mm Vertical board (square top with bull-wire):

3 nr. 44mmx 69mm splayed horizontally softwood runners bolted with 200mm x 10mm diameter bolt with nut and washer at connection of runner and post;

1600mm long x 144mm x 20mm board with splayed top, fixed vertically at 164mm centres to runners;

Bull-wire 3.15mm diameter (10SW) galvanised mild steel to applicable Standard stapled to horizontal runners;

1875mm Vertical board (square top):

3 nr. 44mmx 69mm splayed horizontally softwood runners bolted with 200mm x 10mm diameter bolt with nut and washer at connection of runner and post;

1800mm long x 144mm x 20mm board with splayed top, fixed vertically at 164mm centres to runners;

1875mm Vertical board (square top) with bull-wire:

3 nr. 44mmx 69mm splayed horizontally softwood runners bolted with 200mm x 10mm diameter bolt with nut and washer at connection of runner and post;

1800mm long x 144mm x 20mm board with splayed top, fixed vertically at 164mm centres to runners;

Bull-wire 3.15mm diameter (10SW) galvanised mild steel to applicable Standard stapled to horizontal runners;

1050mm Vertical board (double narrow board):

2 nr. 44mmx 69mm splayed horizontally softwood runners bolted with 200mm x 10mm diameter bolt with nut and washer at connection of runner and post;

Wide board: - 1000mm long x 144mm x 20mm splayed top board, fixed vertically at 204mm centres;

2 nr narrow boards: – 1000mm long x 72mm 20mm splayed top and fixed vertically to form evenly spaced infill (20mm spaces between all boards);

1050mm Vertical board (triple narrow board)

2 nr. 44mmx 69mm splayed horizontally softwood runners bolted with 200mm x 10mm diameter bolt with nut and washer at connection of runner and post;

Wide board: - 1000mm long x 144mm x 20mm splayed top board, fixed vertically at 420mm centres;

3 nr narrow boards:– 1000mm long x 72mm x 20mm splayed top and fixed vertically at 92mm centres to form infill (20mm spaces between all boards);

1050mm Vertical board (picket):

2 nr. 44mmx 69mm splayed horizontally softwood runners bolted with 200mm x 10mm diameter bolt with nut and washer at connection of runner and post;

1000mm long x 72mm x 20mm splayed top board, fixed vertically at 144mm centres; (72mm spaces between all boards);

1050mm Vertical board (staggered height picket):

3 nr. 44mmx 69mm splayed horizontally softwood runners bolted with 200mm x 10mm diameter bolt with nut and washer at connection of runner and post;

Alternate 1000mm/650mm long x 72mm x 20mm splayed top board, fixed vertically at 144mm centres (72mm spaces between all boards);

1800mm Diagonal board:

3 nr. 44mm x 69mm splayed horizontally softwood runners bolted with 200mm x 10mm diameter bolt with nut and washer at connection of runner and post;

144mm x 20mm splayed top edge, fixed diagonally (45% to horizontal) at 175mm centres, splayed ends to board;

1800mm Diagonal board (with bull-wire):

3 nr. 44mmx 69mm splayed horizontally softwood runners bolted with 200mm x 10mm diameter bolt with nut and washer at connection of runner and post;

144mm x 20mm splayed top edge, fixed diagonally (45% to horizontal) at 164mm centres, splayed ends to board (20mm spaces between all boards);

Bull-wire 3.15mm diameter (10SW) galvanised mild steel to applicable Standard stapled to horizontal runners;

Posts: for 1050mm high fencing:

Post to be 100mm x 100mm x 1350mm long, parallel sided , weathered in one direction, reinforced with 4 Nr 6mm diameter mild steel, bars laced with binding wire at 200mm centres, twice times holed both directions with 12mm diameter holes;

Posts at 1800mm centres;

Excavation for post holes 300mm x 300mm x 425mm, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth.

Posts: for 1250mm high fencing:

Post to be 100mm x 100mm x 1550mm long, parallel sided , weathered in one direction, reinforced with 4 Nr 6mm diameter mild steel, bars laced with binding wire at 200mm centres, twice times holed both directions with 12mm diameter holes;

Posts at 1800mm centres;

Excavation for post holes 300mm x 300mm x 425mm, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth.

Posts: for 1675mm high fencing:

Post to be 125mm x 125mm x 2250mm long, parallel sided , weathered in one direction, reinforced with 4 Nr 6mm diameter mild steel, bars laced with binding wire at 200mm centres, three times holed both directions with 12mm diameter holes;

Posts at 1800mm centres;

Excavation for post holes 300mm x 300mm x 725mm, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth.

Posts: for 1800mm and 1875mm high fencing:

Post to be 125mm x 125mm x 2440mm long, parallel sided , weathered in one direction, reinforced with 4 Nr 6mm diameter mild steel, bars laced with binding wire at 200mm centres, three times holed both directions with 12mm diameter holes;

Posts at 1800mm centres;

Excavation for post holes 300mm x 300mm x 800mm, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth.

Garden Rail Fencing

023 Garden rail fencing 450mm high consisting of:

225mm x 50mm softwood horizontal rail with splayed top edge bolted with 150mm long x 9mm diameter bolts with nuts and washers to posts;

Concrete posts 750mm long x 75mm x75mm with splayed top edge with two 11mm diameter holes, Excavation for post holes 300mm x 300mm x 425mm, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth.

Cleft Chestnut Pale Fencing

024 Cleft Chestnut Pale Fencing1200mm high to applicable Standard, type CW120 consisting of:

3 lines of (4 strands) twisted wire at 450mm spacing between wire and 75mm spaces between 1200mm long pales;

125mm x 125mm x 2050mm long wooden intermediate posts at 2250mm centres;

125mm x 125mm x 1870mm long wooden corner posts;

100mm x 75mm x 1830mm long wooden straining posts;

Posts driven into earth, minimum 300mm deep

Open Mesh Steel Panel Fencing (General Purpose Grade)

025 Open mesh panel fencing 2000mm high consisting of:

50mm x 50mm mesh welded at each intersection, 4mm diameter wire, each mesh panel to be 3025mm wide x 2000 mm high with minimum of 2 horizontal “v” rails to provide rigidity, fixings and clamps to posts as manufacturer’s technical data sheet, all wire to be green organic powder coated to applicable Standard;

Posts: galvanised rectangular hollow section, powder coated to match mesh panels;

Metal Fencing

026 900mm High Steel Bow Topped Fencing constructed from:

2 no 40mm x 10mm mild steel horizontal rails with top rail holed at 112mm centres with 13mm diameter holes;

540mm girth x 40mm x 10mm intermediate mild steel support once bent and welded centrally to lower horizontal rail with 150mm x 150mm x10mm mild steel base plate welded on;

13mm diameter mild steel Uprights with bow tops overall height 815mm welded to the 2 no horizontal rails, Uprights at max 112mm centres;

Each end of horizontal rail fixed to lug of post with 1 no 6mm diameter x 50mm long mild steel bolt with lock nut and washer.

1175mm long x 40mm x 40mm x 3.2mm mild steel hollow section intermediate posts with 4no 40mm x10mm x 3.2mm x 50mm long lugs welded on, each lug with 6mm diameter hole, 150mm x 150mm x 10mm mild steel base plate welded on the base and solid mild steel capping welded to top of posts. Posts at 2600mm centres;

1175mm long x 40mm x 40mm x 3.2mm x 50mm long mild steel hollow section end posts with 2no 40mm x10mm x3.2mm lugs welded on, each lug with 6mm diameter hole, 150mm x 150mm 10mm mild steel base plate welded on and solid mild steel capping welded to top of posts;

All components to be galvanised after manufacture and assembly;

Excavation for intermediate and end post holes 300mm x 300mm x 600mm deep, and 300 x 300mm x 300mm for intermediate supports, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

027 1200mm High Steel Bow Topped Fencing constructed from:

2 no 40mm x 10mm mild steel horizontal rails with top rail holed at 112mm centres with 13mm diameter holes;

540mm girth x 40mm x 10mm intermediate mild steel support once bent and welded centrally to lower horizontal rail with 150mm x 150mm x 10mm mild steel base plate welded on;

13mm diameter mild steel uprights with bow tops overall height 815mm welded to the 2 no horizontal rails, Uprights at 12mm centres;

Each end of horizontal rail fixed to lug of post with 1 no 6mm diameter x 50mm long mild steel bolt with lock nut and washer.

1650mm long x 40mm x 40mm x 3.2mm mild steel hollow section intermediate posts with 4no 40mm x 10mm x3.2mm x 50mm long lugs welded on, each lug with 6mm diameter hole, 150mm x 150mm x 10mm mild steel plate welded on the base and solid mild steel capping welded to top of posts. Posts at 2600mm centres;

1650mm long x 40mm x 40mm x 3.2mm mild steel hollow section end posts with 2no 40mm x 10mm x3.2mm lx 50mm long lugs welded on, each lug with 6mm diameter hole, 150mm x 150mm 10mm mild steel base plate welded on and solid mild steel capping welded to top of posts;

All components to be galvanised after manufacture and assembly;

Excavation for intermediate and end post holes 300mm x 300mm x 600mm deep, and 300 x 300mm x 300mm for intermediate supports, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

028 970mm High Steel Double Bow Topped Fencing constructed from:

2 no 40mm x 10mm mild steel horizontal rails with top rail holed at 103mm centres with 13mm diameter holes;

13mm diameter mild steel Uprights with bow tops overall height 885mm welded to the 2 no horizontal rails, Uprights at 103mm centres;

Extra bow tops, 13mm diameter mild steel extra bow tops to match profile of bow tops on uprights, both ends welded to bow tops on uprights;

Each end of horizontal rail fixed to lug of post with 1 no 10mm diameter x 50mm long mild steel bolt with lock nut and washer.

1325mm long x 40mm x 40mm x 3.2mm mild steel hollow section intermediate posts with 4no 40mm x 10mm x 3.2mm x 50mm long lugs welded on, each lug with 12mm diameter hole, 150mm x 150mm x 10mm mild steel plate welded on the base and solid mild steel capping welded to top of posts. Posts at 2000mm centres;

1325mm long x 40mm x 40mm x 3.2mm mild steel hollow section end posts with 2no 40mm x 10mm x3.2mm x 50mm long lugs welded on, each lug with 6mm diameter hole, 150mm x 150mm 10mm mild steel plate welded on the base and solid mild steel capping welded to top of posts;

All components to be galvanised after manufacture and assembly;

Excavation for intermediate and end post holes 300mm x 300mm x 600mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

029 1010mm High Steel Bow Topped Fencing Fixed to wall constructed from:

2 no 40mm x 10mm mild steel horizontal rails with top rail holed at 112mm centres with 13mm diameter holes;

13mm diameter mild steel Uprights with bow tops overall height 590mm welded to the 2 no horizontal rails, Uprights at 112mm centres;

Each end of horizontal rail fixed to lug of post with 1 no 6mm diameter x 50mm long mild steel bolt with lock nut and washer.

975mm long x 40mm x 40mm x 3.2mm mild steel hollow section intermediate posts with 4no 40mm x 10mm x3.2mm x 50mm long lugs welded on, each lug with 12mm diameter hole, solid mild steel capping welded to top of posts. Posts at 1900mm centres; post grouted into prepared mortice in brickwork with cement mortar (1:4)

1325mm long x 40mm x 40mm x 3.2mm mild steel hollow section end posts with 2 no 40mm x 10mm x3.2mm x 50mm long lugs welded on, each lug with 12mm diameter hole, solid mild steel capping welded to top of posts, end post supported by extended wall foundations;

All components to be galvanised after manufacture and assembly;

030 1000mm High Steel Vertical Bar Railings with separate top rail constructed from:

3 no 50mm x 30mm x 2.5mm mild steel rectangular hollow sections horizontal rails;

16mm diameter mild steel bars 610mm long, both ends welded to horizontal bars, Bars at maximum 115mm centres;

Ends of horizontal rails welded to posts;

1325mm long x 50mm x 30mm x3.25mm mild steel rectangular hollow section post, mitre cut and butt welded to horizontal rails, with 150mm x 150mm x 10mm mild steel plate welded on base, posts to have 2 no 12mm diameter holes drilled for M10 x 75mm long galvanised steel fixings, and 3 no 12mm diameter galvanised drain holes all on the centreline of post and on both sides of panel, posts at 2000mm maximum centres;

All components to be galvanised after manufacture and assembly;

Excavation for intermediate and end post holes 300mm x 300mm x 400mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

031 1000mm High Steel Vertical Bar Railings with separate top rail constructed from:

1 no 50mm x 30mm x 2.5mm mild steel rectangular hollow section horizontal rail set into sliding sockets of posts;

2 no 40mm x 12mm mild steel horizontal intermediate rails, both ends once drilled with 6mm diameter hole and bolted to lugs of posts with 6mm diameter bolts 40mm long with lock nuts and washers;

16mm diameter mild steel bars 580mm long, both ends welded to horizontal bars, Bars at maximum115mm centres;

1325mm long x 50mm x 30mm x 3.25mm mild steel rectangular hollow section intermediate post with 4 no 40mm x 10mm x 3.2mm x 50mm long lugs welded on, each lug drilled for 6mm diameter hole, 2 no 60mm long mild steel hollow sections welded on to form sliding socket to carry 50mm x 30mm x 3.2mm mild steel hollow section top rails, with 150mm x 150mm x 10mm mild steel plate welded on base and solid mild steel capping welded to top of post, posts at 2000mm maximum centres;

1325mm long x 50mm x 30mm x 3.25mm mild steel rectangular hollow section end post with 2 no 40mm x 10mm x 3.2mm x 50mm long lug welded each lug drilled for 6mm diameter hole, 1 no 60mm long mild steel hollow sections welded on to form sliding socket to carry 50mm x 30mm x 3.2mm mild steel hollow section top rails, with 150mm x 150mm x 10mm mild steel plate welded on base and solid mild steel capping welded to top of post;

All components to be galvanised after manufacture and assembly;

Excavation for intermediate and end post holes 250mm x 250mm x 400mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

032 1100mm Steel Barrier Railings constructed from;

50mm x 25mm thick mild steel horizontal top rail;

50mm x 10mm mild steel horizontal bottom rail;

15mm x15mm vertical mild steel bars 990mm long, both ends welded to horizontal rails, bars at maximum 114mm centres, Central vertical bar to extend down into concrete base;

Ends of horizontal bottom rails welded to posts, top rail welded to posts as continuous length for length of barrier – all joints in top rail welded to obtain a smooth, continuous finish;

1525mm long x 50mm x50mm mild steel bar intermediate post welded to horizontal rails, posts at 1800mm centres;

1525mm long x 50mm x50mm mild steel bar end post welded to horizontal rails;

All components to be galvanised after manufacture and assembly;

Excavation for centre support, intermediate and end post holes 250mm x 250mm x 400mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

033 1100mm High Steel Barrier Railings fixed to Wall constructed from:

50mm x 25mm thick mild steel horizontal top rail;

50mm 10mm mild steel horizontal bottom rail;

15mm x15mm vertical mild steel bars 990mm long, both ends welded to horizontal rails, bars at maximum 114mm centres, Central vertical bar to extend down and be grouted into 40mm x 225mm deep pocket drilled into top of existing or new 215mm thick masonry retaining wall;

Ends of horizontal bottom rails welded to posts, top rail welded to posts as continuous length for length of barrier – all joints in top rail welded to obtain a smooth, continuous finish;

1525mm long x 50mm x50mm mild steel bar intermediate post welded to horizontal rails, intermediate posts at 1800mm centres, posts grouted into 75mm diameter x 450mm deep pockets drilled into top of existing or new 215mm thick masonry retaining walls;

1525mm long x 50mm x50mm mild steel bar end post welded to horizontal rails, posts grouted into 75mm diameter x 450mm deep pockets drilled into top of existing or new 215mm thick masonry retaining walls;

All components to be galvanised after manufacture and assembly;

034 1800mm High Steel Post Chain Link Fence constructed from:

Plastic coated steel chain link heavy pattern wire to be Grade “A” (wire core to be zinc coated) 1800mm wide fixed securely to line wires with 2mm nominal plastic coated wire ties Grade “A”;

3 no strands, plastic coated zinc coated mild steel wire;

Intermediate posts, 2450mm long, 50mm x 50mm x 3.2mm mild steel rectangular hollow section with plastic insert cap, 3 times drilled for 3mm diameter plastic coated line wire, Posts at 3000mm centres;

Straining posts: 2325mm long x38mm x 38mm x 2.6mm rectangular hollow section;

End posts: 2450mm long x 50mm x 50mm x 3.2mm mild steel rectangular hollow section with plastic insert cap, 3 times drilled for 3mm diameter plastic coated line wire;

Stay: 2200mm long x 25mm x25mm x 2mm mild steel hollow section, 2 times obliquely drilled for 3mm diameter plastic coated line wire;

Strut: 500mm long x 25mm x25mm x 2mm mild steel hollow section, one end welded to post, other end obliquely welded to stay;

All posts, stays and struts galvanised after manufacture;

Excavation for intermediate and end post holes 450mm x 450mm x 750mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

Excavation for stay and strut post holes 700mm x 450mm x 450mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

035 2440mm High Steel Paladin Type Fencing constructed from:

Panels: 2440mm x 3025mm long welded mesh (6.0mm diameter horizontal wire, 5.0m diameter vertical wire), each panel having 3 “V” beams built into mesh which span horizontally acting as reinforcing rails, green coloured mesh size 200mm x 25mm;

Posts: 60 x 60mm mild steel rolled hollow section, green coloured, resistance to bending 8.30m3, with threaded inserts fitted to front face, fitted with plastic insert cap, supplied with 25mm x25mm slotted clamp bars and 7 no M8 tamper resistant bolts, Posts and clamp bars polyester powder coated green at 2975mm centres;

Excavation for post holes 300mm x 300mm x 700mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

036 2000mm High Steel Paladin Type Fencing constructed from:

Panels: 2000mm x 3025mm long welded mesh (6.0mm diameter horizontal wire, 5.0m diameter vertical wire), each panel having 3 “V” beams built into mesh which span horizontally acting as reinforcing rails, green coloured mesh size 200mm x 25mm;

Posts: 60 x 60mm mild steel rolled hollow section , green coloured, resistance to bending 8.30m3, with threaded inserts fitted to front face, fitted with plastic insert cap, supplied with 25mm x25mm slotted clamp bars and 7 no M8 tamper resistant bolts, Posts and clamp bars polyester powder coated green at 2975mm centres;

Excavation for post holes 300mm x 300mm x 700mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

Steel Palisade Fencing

037 2400mm High Steel Palisade fencing constructed from:

Pales: Corrugated “D” section, 3mm thick galvanised steel, fixed at 152mm centres, with rounded tops to pales if adjacent to over-hanging trees or buildings, otherwise triple pointed and splayed, bottom of fence with 50mm ground clearance;

Rails: 2 no 50mm x 50mm x 2.75mm galvanised steel rails, bolted with shear-nuts;

Posts: 102mm x 44mm x 7.4mm rolled steel joist (RSJ), Posts at 2.75m centres;

Fixings: Galvanised steel;

All to be hot dipped galvanised to applicable Standard;

Excavation for post holes 350mm x 350mm or 450mm diameter x 750mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

Submit manufacturer’s and installer’s certificates in accordance with the requirements of the applicable Standard;

038 2000mm High Steel Palisade fencing constructed from:

Pales: Corrugated “D” section, 3mm thick galvanised steel, fixed at 152mm centres, with rounded tops to pales if adjacent to over-hanging trees or buildings, otherwise triple pointed and splayed, bottom of fence with 50mm ground clearance;

Rails: 2 no 50mm x 50mm x 2.75mm galvanised steel rails, bolted with shear-nuts;

Posts: 102mm x 44mm x 7.4mm rolled steel joist (RSJ), Posts at 2.75m centres;

Fixings: Galvanised steel;

All to be hot dipped galvanised to applicable Standard;

Excavation for post holes 350mm x 350mm or 450mm diameter x 750mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

Submit manufacturer's and installer's certificates in accordance with the requirements of the applicable Standard;

Timber Gates

039 Timber single leaved Gates 844mm x 1000mm high constructed from:

2no 44mm x 69mm softwood runners splayed horizontal;

5 no 1000mm long x 144mm x20mm softwood vertical boards at 175mm centres;

1 no 44mm x 69mm softwood brace splayed horizontally and fixed diagonally (upwards from hinged side);

All nailed together with 51mm long x 3.3mm galvanised plain headed nails (or 55mm x 2.1mm Ring shank galvanised nails);

Hinges: 2 no 300mm x 40mm x 4mm bat and band hinges, coach bolted with nut, and with 3 no 4.1mm diameter countersunk holes at 100mm centres and screwed;

Hook Plates: 2 no 100mm x 50mm x4mm with 12mm diameter solid mild steel pin welded on face to suit hinge, plate four times holed with 4.1mm diameter holes and screwed to vertical timber rail, top pin to pint upwards, bottom pin to point downwards;

Catch: bright zinc coated mild steel trip catch;

Gate stop: 2 no 1000mm long 20mm softwood fence boards returned to meet gate at both sides, nailed to vertical rail and end of runners.;

Softwood 850mm long x 50mm x 100mm vertical rail bolted to side of gate post with 2 no 200mm long x 10mm diameter bolts with nut and washer, bolts trimmed flush with nut after fitting and touch painted;

If Required:

Gate Posts: 2 no 1350mm long x 100mm x 100mm precast concrete gate post, weathered in one direction, reinforced with 4 no 6mm diameter mild steel bars laced with binding wire at 200mm centres, twice holed in each direction with 12mm diameter holes;

Excavation for post holes 300mm x 300mm x 550mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

040 Timber single leaved Gates 855mm x 1600mm high constructed from:

3 no 44mm x 69mm softwood runners splayed horizontal;

5 no 1600mm long x 144mm x20mm softwood vertical boards at 175mm centres;

2 no 44mm x 69mm softwood brace splayed horizontally and fixed diagonally (upwards from hinged side);

All nailed together with 51mm long x 3.3mm galvanised plain headed nails (or 55mm x 2.1mm Ring shank galvanised nails);

Hinges: 2 no 300mm x 40mm x 4mm bat and band hinges, coach bolted with nut, and with 3 no 4.1mm diameter countersunk holes at 100mm centres and screwed;

Hook Plates: 2 no 100mm x 50mm x4mm with 12mm diameter solid mild steel pin welded on face to suit hinge, plate four times holed with 4.1mm diameter holes and screwed to vertical timber rail, top pin to pint upwards, bottom pin to point downwards;

Bolt: 250mm bright zinc mild steel padlock bolt, two vertical boards cut to form a 100mm diameter hole allow access to bolt from outside;

Gate stop: 2 no 1600mm long x 20mm softwood fence boards returned to meet gate at both sides, nailed to vertical rail and end of runners.;

Softwood 1500mm long x 50mm x 100mm vertical rail bolted to side of gate post with 3 no 200mm long x 10mm diameter bolts with nut and washer, bolts trimmed flush with nut after fitting and touch painted;

If Required:

Gate Posts; 2 no 2250mm long x 125mm x 125mm precast concrete gate post, weathered in one direction, reinforced with 4 no 6mm diameter mild steel bars laced with binding wire at 200mm centres, three times holed in each direction with 12mm diameter holes;

Excavation for post holes 300mm x 300mm x 550mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

041 Timber single leaved Gates 855mm x 1800mm high constructed from:

3 no 44mm x 69mm softwood runners splayed horizontal;

5 no 1800mm long x 144mm x20mm softwood vertical boards at 178mm centres;

2 no 44mm x 69mm softwood splayed horizontally and fixed diagonally (upwards from hinged side) brace;

All nailed together with 51mm long x 3.3mm galvanised plain headed nails (or 55mm x 2.1mm Ring shank galvanised nails);

Hinges: 2 no 300mm x 40mm x 4mm bat and band hinges, coach bolted with nut, and with 3 no 4.1mm diameter countersunk holes at 100mm centres and screwed;

Hook Plates: 2 no 100mm x 50mm x4mm with 12mm diameter solid mild steel pin welded on face to suit hinge, plate four times holed with 4.1mm diameter holes and screwed to vertical timber rail, top pin to pint upwards, bottom pin to point downwards;

Bolt: 250mm bright zinc mild steel padlock bolt, two vertical boards cut to form a 100mm diameter hole allow access to bolt from outside;

Gate stop: 2 no 1800mm long x 20mm softwood fence boards returned to meet gate at both sides, nailed to vertical rail and end of runners.;

Softwood 1700mm long x 50mm x100mm vertical rail bolted to side of gate post with 3 no 200mm long x 10mm diameter bolts with nut and washer, bolts trimmed flush with nut after fitting and touch painted;

If Required:

Gate Posts: 2 no 2250mm long x 125mm x125mm precast concrete gate post, weathered in one direction, reinforced with 4 no 6mm diameter mild steel bars laced with binding wire at 200mm centres, three times holed in each direction with 12mm diameter holes;

Excavation for post holes 300mm x 300mm x 550mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

042 Timber single leaved Gates 855mm x 1750mm high Diagonal Boards constructed from:

3 no 44mm x 69mm softwood runners splayed horizontal;

144mm x20mm softwood diagonal boards at 175mm centres;

2 no 44mm x 69mm softwood braces splayed horizontally and fixed diagonally (upwards from hinged side);

All nailed together with 51mm long x 3.3mm galvanised plain headed nails (or 55mm x 2.1mm Ring shank galvanised nails);

Hinges: 2 no 300mm x 40mm x 4mm bat and band hinges, coach bolted with nut, and with 3 no 4.1mm diameter countersunk holes at 100mm centres and screwed;

Hook Plates: 2 no 100mm x 50mm x4mm with 12mm diameter solid mild steel pin welded on face to suit hinge, plate four times holed with 4.1mm diameter holes and screwed to vertical timber rail, top pin to pint upwards, bottom pin to point downwards;

Catch: bright zinc coated mild steel trip catch;

Bolt: 250mm bright zinc mild steel padlock bolt, one diagonal board cut to form hand grip;

Gate stop: 2 no 20mm x 95mm softwood fence boards returned to meet gate at both sides, nailed to vertical rail and end of runners.;

Softwood 1600mm long x 50mm x 100mm vertical rail bolted to side of gate post with 3 no 200mm long x 10mm diameter bolts with nut and washer;

If Required:

Gate Posts: 2 no 2250mm long x 125mm x 125mm precast concrete gate post, weathered in one direction, reinforced with 4 no 6mm diameter mild steel bars laced with binding wire at 200mm centres, three times holed in each direction with 12mm diameter holes;

Excavation for post holes 300mm x 300mm x 550mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

043 Timber two leaved Gates each leaf 1205mm x 1000mm high constructed from:

2 no 44mm x 69mm softwood runners splayed horizontal;

7 no 1000mm long x 144mm x20mm softwood vertical boards at 175mm centres;

2 no 44mm x 69mm softwood braces splayed horizontally and fixed diagonally (upwards from hinged side);

All nailed together with 51mm long x 3.3mm galvanised plain headed nails (or 55mm x 2.1mm Ring shank galvanised nails);

Hinges: 2 no 300mm x 40mm x 4mm bat and band hinges, coach bolted with nut, and with 3 no 4.1mm diameter countersunk holes at 100mm centres and screwed;

Hook Plates: 2 no 100mm x 50mm x4mm with 12mm diameter solid mild steel pin welded on face to suit hinge, plate four times holed with 4.1mm diameter holes and screwed to vertical timber rail, top pin to pint upwards, bottom pin to point downwards;

Catch: bright zinc coated mild steel trip catch;

Bolt: 250mm bright zinc mild steel padlock bolt, and drop bolt with ground socket to each leaf

Gate stop: 1 no 20mm x 95mm softwood fence boards returned to meet gate at both sides, nailed to vertical rail and end of runners.;

Steel Gates

044 Steel single leaved Bow Topped gate 910mm x 825mm high constructed from:

40mm x 10mm mild steel frame surround with top rail holed at 112mm centres with 13mm diameter holes; top and bottom rails to over-run gate width on hinge side for form gate hanging lugs, each lug with 6mm diameter hole, gate fixed to lugs of post with 2 no 6mm diameter x 40mm long hardened steel zinc plated hexagon bolts (half threaded) with lock not and washers;

13mm diameter mild steel uprights with bow tops overall height 815mm, welded to horizontal top and bottom rails;

2 no 40mm x 10mm x 50mm long mild steel lugs, welded to gate frame;

100mm long x 90mm x 10mm mild steel plate as stop, rounded corners on exposed side and welded to gate frame;

Bolt: 12mm mild steel bolt with handle holed for padlock and 10mm thick back-plate, welded to gate frame and uprights, keeper designed to receive bolt and to be fitted on site with self-tapping/taping bolts;

All galvanised after manufacturer, and painted on site;

If Required:

Gate posts: 2 no 1175mm long x 40mm x40mm x3.2mm mild steel hollow section with 40mm wide x 10mm x 50mm mild steel lugs welded on to posts, each lug drilled for 6mm diameter bolt, 150mm x 150mm x 10mm mild steel base plate welded to bottom of posts, and solid mild steel capping welded to top;

Hangers for fixing to end posts: 2 no 40mm wide x 10mm x 50mm lugs, once holed for hanging lug, one end welded to end post;

Excavation for post holes 300mm x 300mm x 550mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

045 Steel two leaved Bow Topped gate each 1227mm x 825mm high constructed from:

40mm x 10mm mild steel frame surround with top rail holed at 112mm centres with 3mm diameter holes; top and bottom rails to over-run gate width on hinge side for form gate hanging lugs, each lug with 6mm diameter hole, gate fixed to lugs of post with 2 no 6mm diameter x 40mm long hardened steel zinc plated hexagon bolts (half threaded) with lock not and washers;

13mm diameter mild steel uprights with bow tops overall height 815mm, welded to horizontal top and bottom rails;

2 no 40mm x 10mm x 50mm long mild steel lugs, welded to gate frame;

100mm long x 90mm x 10mm mild steel plate as stop, rounded corners on exposed side and welded to gate frame;

Bolt: one leaf only, 12mm mild steel bolt with handle holed for padlock and 10mm thick back-plate, welded to gate frame and uprights, keeper designed to receive bolt and to be fitted on site with self-tapping/taping bolts;

Drop bolt: with ground sockets on 315mm 70mm x10mm mild steel back plate welded to both gates;

All galvanised after manufacturer, and painted on site;

If Required:

Gate posts: 2 no 1175mm long x 40mm x40mm x3.2mm mild steel hollow section with 40mm wide x 10mm x 50mm mild steel lugs welded on to posts, each lug drilled for 6mm diameter bolt, 150mm x 150mm x 10mm mild steel base plate welded to bottom of posts, and solid mild steel capping welded to top;

Hangers for fixing to end posts: 2 no 40mm wide x 10mm x 50mm lugs, once holed for hanging lug, one end welded to end post;

Excavation for post holes 300mm x 300mm x 550mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

046 Steel single leaved gate 900mm x 850mm high constructed from:

25mm x 25mm 3mm mild steel angle frame surround with corners mitred and welded;

7 no 10mm x 10mm mild steel balusters with ends welded to horizontal top and bottom rails;

2 no 75mm girth x 6mm diameter mild steel hanging lugs, once bent, welded to gate frame;

Bolt: 130mm long x 10mm x 10mm mild steel with stop welded on, 225mm girth semi-circular support with ends welded to frame, support and frame holed for bolt;

115mm long x 38mm x 38mm x 3mm mild steel angle as stop for fixing to concrete post rounded on four corners and holed for bolt, welded to 125mm long x 12mm diameter mild steel bolt with lock nut and washer and washer welded on as spot-welded to gate frame;

115mm long x 38mm x 38mm x 3mm mild steel angle as stop for fixing to brickwork rounded on four corners and holed for bolt, welded to 2 no 150mm long a 19mm x 5mm mild steel hanger having fishtailed end;

All galvanised after manufacturer, and painted on site;

Hangers for fixing to concrete post: 2 no x 450mm girth x 38mm x 6mm straps, each six times bent and twice holed for and closed with 6mm diameter bolts 50mm long with lock nut and washer, and having 25mm x 6mm diameter tube welded on;

Hangers for fixing to brickwork: 200mm girth x 12mm diameter hanger, fishtailed one end, other end bent for lug;

047 Steel two leaved gate each leaf 1205mm x 850mm high constructed from:

25mm x 25mm 3mm mild steel angle frame surround with corners mitred and welded;

10 no 10mm x 10mm mild steel balusters with ends welded to horizontal top and bottom rails;

2 no 75mm girth x 6mm diameter mild steel hanging lugs, once bent, welded to gate frame;

Bolt on one leaf only: 130mm long x 10mm x 10mm mild steel with stop welded on, 225mm girth semi-circular support with ends welded to frame, support and frame holed for bolt, other leaf holed for bolt;

Barrel bolt: one leaf only, 375mm long with socket;

Stop: one leaf only, 200mm long x 50mm x 6mm;

All galvanised after manufacturer, and painted on site;

Hangers for fixing to concrete post: 2 no x 450mm girth x 38mm x 6mm straps, each six times bent and twice holed for and closed with 6mm diameter bolts 50mm long with lock nut and washer, and having 25mm x 6mm diameter tube welded on;

Hangers for fixing to brickwork: 200mm girth x 12mm diameter hanger, fishtailed one end, other end bent for lug;

048 Paladin single gates 1065mm x 2000mm constructed from:

Gate frame: 50mm x 50mm x 3mm polyester powder coated galvanised mild steel with mesh as Clause 035 clamped to same with 6 no tamperproof bolts and threaded nut inserts, gate complete with adjustable hinges, drop bolt, ground sockets and latch incorporating slip-bolt for Client's padlock;

Colour: to be agreed with the Employer's Contract Manager;

If Required:

Gate posts: 80mm x 80mm x 6mm mild steel rolled hollow sections;

Excavation for post holes 500mm x 500mm x 600mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

Submit manufacturers and installer's certificates in accordance with the requirements of the applicable Standard;

049 Paladin double gates 3600mm x 2000mm constructed from:

Gate frame: 50mmx 50mm x 3mm polyester powder coated galvanised mild steel with mesh as Clause 035 clamped to same with 6 no tamperproof bolts and threaded nut inserts, gates complete with adjustable hinges, drop bolt, ground sockets and latch incorporating slip-bolt complete with 65mm padlock fixed by welding to gate frame with chain (links 40mm x20mm x 5mm);

Colour: to be agreed with the Employer's Contract Manager;

If Required:

Gate posts: 200mm x 2000mm x 6mm mild steel rolled hollow sections;

Excavation for post holes 600mm x 600mm x 750mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

Submit manufacturers and installer's certificates in accordance with the requirements of the applicable Standard;

050 Paladin double gates 5880mm x 2000mm constructed from:

Gate frame: 50mm x 50mm x 3mm polyester powder coated galvanised mild steel with mesh as Clause 035 clamped to same with 6 no tamperproof bolts and threaded nut inserts, gates complete with adjustable hinges, drop bolt, ground sockets and latch incorporating slip-bolt complete with 65mm padlock fixed by welding to gate frame with chain (links 40mm x20mm x 5mm);

Colour: to be agreed with the Employer's Contract Manager.

If required:

Gate posts: 200mm x 200mm x 6mm mild steel rolled hollow sections;

Excavation for post holes 600mm x 600mm x 750mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

Submit manufacturers and installer's certificates in accordance with the requirements of the applicable Standard;

051 Paladin single gates 1065mm x 2440mm constructed from:

Gate frame: 50mm x 50mm x 3mm polyester powder coated galvanised mild steel with mesh as Clause 035 clamped to same with 6 no tamperproof bolts and threaded nut inserts, gate complete with adjustable hinges, drop bolt, ground sockets and latch incorporating slip-bolt for Client's padlock; Colour: to be agreed with the Employer's Contract Manager;

If required:

Gate posts, 80mm x 80mm x 6mm mild steel rolled hollow sections;

Excavation for post holes 500mm x 500mm x 600mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

Submit manufacturers and installer's certificates in accordance with the requirements of the applicable Standard;

052 Paladin double gates 5880mm x 2440mm constructed from:

Gate frame, 50mm x 50mm x 3mm powder coated galvanised mild steel with mesh as Clause 035 clamped to same with 6 no tamperproof bolts and threaded nut inserts, gates complete with adjustable hinges, drop bolt, ground sockets and latch incorporating slip-bolt for Client's padlock;

Colour: to be agreed with the Employer's Contract Manager;

If Required:

Gate posts, 200mm x 200mm x 6mm mild steel rolled hollow sections;

Excavation for post holes 600mm x 600mm x 750mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

Submit manufacturers and installer's certificates in accordance with the requirements of the applicable Standard;

053 Palisade single gate 900mm or 1200mm x 2000mm high constructed from:

Pales: D section, 3mm fixed at 152mm centres, with rounded tops to pales if adjacent to over-hanging trees or buildings, otherwise triple pointed and splayed;

Rails: 2 no 50mm x 50mm x 2.75mm steel rails bolted with shear-nuts;

Gate: complete with adjustable hinges welded to gate and to post;

Lockable slip bolt and keep: welded to gate and post;

Drop bolt: welded to gate and keep cast into road surfacing;

Fixings; Galvanised steel;

All to be hot dipped galvanised to applicable Standard;

Colour: to be agreed with the Employer's Contract Manager;

If Required:

Posts: 100mm x 100mm x 8mm rolled steel square section;

Excavation for post holes 400mm x 400mm x 750mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

Submit manufacturers and installer's certificates in accordance with the requirements of the applicable Standard;

054 Palisade single gate 1065mm x 2400mm high constructed from:

Pales: D section, 3mm fixed at 152mm centres, with rounded tops to pales if adjacent to over-hanging trees or buildings, otherwise triple pointed and splayed;

Rails: 2 no 50mm x 50mm x 2.75mm steel rails bolted with shear-nuts;

Gate: complete with adjustable hinges welded to gate and to post;

Lockable slip bolt and keep: welded to gate and post;

Drop bolt: welded to gate and keep cast into road surfacing;

Fixings: Galvanised steel;

All to be hot dipped galvanised to applicable Standard;

Colour: to be agreed with the Employer's Contract Manager;

If Required:

Posts: 100mm x 100mm x 8mm rolled steel square section;

Excavation for post holes 450mm x 450mm x 600mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

Submit manufacturers and installer's certificates in accordance with the requirements of the applicable Standard;

055 Palisade pair of gate 3000mm x 2000mm high constructed from:

Pales: D section, 3mm fixed at 152mm centres, with rounded tops to pales if adjacent to over-hanging trees or buildings, otherwise triple pointed and splayed;

Rails: 2 no 50mm x 50mm x 2.75mm steel rails bolted with shear-nuts;

Gate: complete with adjustable hinges welded to gate and to post;

Lockable slip bolt and keep: welded to gate and post;

Drop bolt: welded to gate and keep cast into road surfacing;

Fixings: Galvanised steel;

All to be hot dipped galvanised to applicable Standard;

Colour: to be agreed with the Employer's Contract Manager;

If Required:

Posts: 100mm x 100mm x 8mm rolled steel square section;

Excavation for post holes 600mm x 600mm x 750mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

Submit manufacturers and installer's certificates in accordance with the requirements of the applicable Standard;

056 Palisade pair of gate 5880mm x 2000mm high constructed from:

Pales: D section, 3mm fixed at 152mm centres, with rounded tops to pales if adjacent to over-hanging trees or buildings, otherwise triple pointed and splayed;

Rails: 2 no 50mm x 50mm x 2.75mm steel rails bolted with shear-nuts;

Gate: complete with adjustable hinges welded to gate and to post;

Lockable slip bolt and keep: welded to gate and post;

Drop bolt: welded to gate and keep cast into road surfacing;

Fixings: Galvanised steel;

All to be hot dipped galvanised to applicable Standard;

Colour: to be agreed with the Employer's Contract Manager;

If Required:

Posts, 200mm x 200mm x 8mm rolled steel square section;

Excavation for post holes 600mm x 600mm x 750mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

Submit manufacturers and installer's certificates in accordance with the requirements of the applicable Standard;

057 Palisade single gate 1065mm x 2400mm high constructed from:

Pales: D section, 3mm fixed at 152mm centres, with rounded tops to pales if adjacent to over-hanging trees or buildings, otherwise triple pointed and splayed;

2 no 50mm x 50mm x 2.75mm steel rails bolted with shear-nuts;

Gate complete with adjustable hinges welded to gate and to post;

Lockable slip bolt and keep welded to gate and post;

Drop bolt welded to gate and keep cast into road surfacing;

Fixings; Galvanised steel;

All to be hot dipped galvanised to applicable Standard;

Colour: to be agreed with the Employer's Contract Manager;

If Required:

Posts:100mm x 100mm x 8mm rolled steel square section;

Excavation for post holes 400mm x 400mm x 600mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

Submit manufacturers and installer's certificates in accordance with the requirements of the applicable Standard;

058 Palisade pair of gate 5880mm x 2440mm high constructed from:

Pales: D section, 3mm fixed at 152mm centres, with rounded tops to pales if adjacent to over-hanging trees or buildings, otherwise triple pointed and splayed;

Rails: 2 no 50mm x 50mm x 2.75mm steel rails bolted with shear-nuts;

Gate: complete with adjustable hinges welded to gate and to post;

Lockable slip bolt and keep: welded to gate and post;

Drop bolt: welded to gate and keep cast into road surfacing;

Fixings: Galvanised steel;

All to be hot dipped galvanised to applicable Standard;

Colour: to be agreed with the Employer's Contract Manager;

If Required:

Posts, 200mm x 200mm x 8mm rolled steel square section;

Excavation for post holes 600mm x 600mm x 750mm deep, 75mm concrete base, backfilled with concrete to depth 100mm below finished ground level, remainder selected earth;

Submit manufacturers and installer's certificates in accordance with the requirements of the applicable Standard;

Employer's current manufacturers/suppliers/products

059 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

TECHNICAL SPECIFICATION

07-DRAINAGE

DRAINAGE

MATERIALS

Gullies

001 Ensure grating, sealing plates and other metal accessories used are cast iron.

002 Gullies are to be:

- Roddable trapped clay gullies are to be to applicable Standard with vertical back inlet, 100mm diameter outlet, galvanised 150mm x 150mm cast iron grating and concrete bed and surround;

- Roddable plastic trapped gully with horizontal back inlet, 100mm outlet, grating to suit and concrete (GEN3) bed and surround;

- Roddable plastic trapped gully with vertical back inlet, 100mm outlet, grating to suit and concrete (GEN3) bed and surround;

- Cast iron footway gully 300mm long, 230mm wide x 280mm deep channelled with 100mm diameter outlet and rodding eye, complete with hinged cast iron grating and concrete (GEN3) bed and surround;

- Road gullies for connection to combined sewage or storm-water systems are to be precast concrete gully chamber, 375mm diameter internal diameter, 750mm deep with 150mm trapped outlet and rodding eye and stopper to applicable Standard, kite marked certified complete with cast iron gully grating and frame to appliacble Standard Class D400, kite marked certified, hinged at one end so that it cannot be removed from frame, and concrete bed and surround;

- Road gullies for use with precast channels are to be precast concrete gully chamber, 375mm diameter internal diameter, 750mm deep with 150mm trapped outlet and rodding eye and stopper and frame to applicable Standard Class D400, kite marked certified, hinged at one end so that it cannot be removed from frame, and concrete bed and surround;

003 Galvanised cast iron gully gratings are to be 150mm square;

004 Plastic gully gratings are to be 190mm diameter;

005 Dished cast iron gratings and frames for use at pedestrian areas are to be applicable Standard Class B125 kite marked certified at one end so that it cannot be removed from frame;

006 Precast Concrete gully fenders or surround kerbs are to fit around a 150mm square gully and be bedded solidly in cement sand mortar (1:3) centrally over the gully;

Granular beddings

007 Ensure granular bedding for pipes is:

- Class B granular bedding consisting of broken stone or gravel to applicable Standard graded 20mm to 5mm for pipes up to 525mm diameter and 40mm to 5mm for pipes over 525mm diameter.

- Class S granular surround consisting of broken stone or gravel to applicable Standard graded 10mm to 5mm

Bricks for manholes etc.,

008 Ensure bricks for manholes are:

- Class B clay engineering bricks conforming to applicable Standard; or
- Concrete bricks conforming to applicable Standard.

Manhole Ironwork

009 General purpose pattern galvanised malleable cast iron manhole step irons with 230mm long tails to applicable Standard Type D Class 1, to be inserted during construction of brickwork to manholes.

010 Galvanised malleable cast iron precast concrete manhole pattern with 80mm tails to applicable Standard for precast concrete manholes.

011 Manhole ladders are to be installed to applicable Standard if invert of manhole deeper than 3.0m;

012 Where Instructed to be installed handrails for the edge of benching shall be formed from 25mm diameter solid mile steel bar, galvanised after manufacture in accordance with applicable Standard.

013 Manhole safety chains are to be galvanised mild steel short link chain to applicable Standard Class 1 with one end securely attached to a 16mm diameter galvanised mild steel eyebolt and the other end securely fastened to a suitable galvanised wrought iron hook for attaching to similar eyebolts; Safety chains are to be installed where the diameter of the outgoing pipe is 600mm or greater;

014 Access ladders to manholes are to be mild steel to applicable Standard galvanised after fabrication with 64mm x 19mm stringers and 25mm diameter bar rungs, galvanised surface coating to be at least 85 microns thick;

Precast Manhole Components

015 Precast concrete manhole rings are to comply with applicable Standard, with bitumen coated joints or preformed jointing strips applied in accordance with the manufacturer's technical data sheet to ensure watertight joints;

016 Precast concrete inspection chambers sections with internal dimension 450mm x 600mm to applicable Standard, with bitumen coated joints or preformed jointing strips applied in accordance with the manufacturer's technical data sheet to ensure watertight joints;

017 Clean all lifting holes in precast units and grout with cement mortar;

018 Do not use step irons for hoisting or lowering components;

019 Precast concrete cover slabs are to comply with applicable Standard and are to be reinforced with 12mm diameter mild steel bars at 150mm centres both ways.

Manhole Covers and Frames

020 Manhole covers and frames are to be non-ventilating, and be to the requirements of the applicable Standards, bedded on a gauged Class 1 (3:1) sand/cement mortar centrally over opening, level with surrounding finishes and square with joints in surrounding finishes or with any adjacent buildings.

021 Covers and frames to inspection chambers on house drainage (no vehicular loading) are to be class A15, galvanised steel single seal type covers, key lifted with four brass locking screws, 600mm x 450mm clear opening.

022 Covers and frames to inspection chambers on house drainage located in driveways /hard-standings are to be Class B125, black coated with 610mmclear opening with single seal, kite marked certified.

023 Covers and frames to manholes not adjacent to carriageways are to be Class B125, ductile iron black coated with 675mm clear opening with single seal, kite marked certified manholes for foul and surface water drains must have the letters FS and SW respectively cast on the lids, the letters must not be less than 35mm high.

024 Covers and frames to manholes in carriageways and public footpaths adjacent to carriageways are to be Class D400, ductile iron black coated single seal with 675mm clear opening, kite marked certified, manholes for foul and surface water drains must have the letters FS and SW respectively cast on the lids, the letters must not be less than 35mm high.

Manhole Channels

025 Manhole Channels generally:

Form main channel invert for sizes up to and including 300mm diameter with vitrified clay, precast concrete or PVC-u channel with secure anchorage system. Form channel invert for pies over 300mm diameter in granolithic (cement, sand, 20mm coarse aggregate (1:1:2) concrete 50mm thick, laid over concrete benching and trowelled smooth, the depth of the main channel must not be less than the diameter of the largest pipe;

Vitrified clay channels shall comply with applicable Standard, kite marked certified, and bedded and pointed in cement mortar (1:3)

Precast concrete channels sections shall comply with applicable Standard, kite marked certified, and bedded and pointed in cement mortar (1:3)

Plastic Inspection Chambers

026 Plastic inspection chambers are to be 450mm diameter chamber with preformed channels to the relevant applicable Standard for location, installed in accordance with the manufacturer's technical data sheet.

027 Plastic inspection chambers risers with sealing ring are to be 450mm diameter chamber with preformed channels to the applicable Standard for location, height of riser, overall height 460mm effective height 235mm installed in accordance with the manufacturer's technical data sheet.

Precast Concrete Inspection Chambers

028 Precast concrete inspection chambers are to be sectional units with internal dimension 450 x600mm to applicable Standard, set on and including 150mm concrete (Gen 3) base, make all joints between chamber sections with watertight using either a bituminous coating or a preformed jointing strip.

029 Cover and frame to be either to applicable Standard Class A15 for house drainage with no vehicular loading, galvanised steel single seal flat type cover and frame, key lifted with 4 brass locking screws, 600 x450mm clear opening, bedded in1:3 cement mortar centrally over the opening, and level with surrounding finished, and aligned with joints of paving etc.,

Or

030 Cover and frame to be to applicable Standard Class B125 for house drainage with vehicular loading with single seal black coated with 610 mm clear opening, bedded in 1:3 cement mortar centrally over the opening, and level with surrounding finish.

031 Step irons to be to applicable Standard to be inserted where depth of chamber greater than 600mm.

Pipelines

032 Pipes shall be constructed from:

- Clay pipes, bends and junctions for foul or combined drainage are to be vitrified clay to applicable Standard with flexible joints, kite marked certified;

- Clay pipes, bends and junctions for storm-water drainage are to be vitrified clay to applicable Standard with flexible joints, kite marked certified;

- Plastic pipes, bends and junctions for foul or storm drainage are to be PVC-u to applicable Standard with flexible joints, kite marked certified;

- Concrete pipes, bends and junctions are to be to applicable Standard with flexible joints, kite marked certified, strength Class 120;

Linear Drainage Channels

033 Linear drainage channels shall be constructed from:

- Proprietary precast concrete linear channel 155mm x 80mm deep x 1000mm long, with galvanised mild steel mesh locking grating, loading Class A15 to applicable Standard, maximum mesh width 10mm, channel to be bedded and haunched with concrete;

- Polypropylene “U” section linear channel 100mm x 75mm deep x 1000mm long and black plastic grating to applicableStandard loading grade A15 for pedestrian use, complete with vertical outlet to suit 110mm diameter PVC-u main drainage pipe, and end caps as required, channel to be bedded and haunched with concrete;

Road Gully Gratings

034 Road gully gratings and frames are to be “hinged” heavy duty ductile iron minimum grade D400 in accordance with applicableh Standard and be BSI kite marked.

Septic Tanks

035 Septic Tanks to single dwellings are to be:

- Proprietary pre-fabricated septic tank with lockable cover, capacity 3600 litres, with 110mm diameter inlet and outlet pies, and 100mm diameter vent pipe terminating 800mm above ground with a non-return air admittance valve, tanks to be designed and installed in accordance with the recommendations of the applicable Standard and BBA certified or equivalent, the design of the tank shall be such that sludge cannot be discharged through the outlet in any circumstances;

- Channel gratings are to be galvanised mild steel square mesh gratings and set in position;

WORKMANSHIP

Setting out

036 Set out all drains as Instructed by the Client's Representative and provide all profiles, etc., necessary for the execution of the Works.

Existing drains

037 Check the invert levels of existing drains, sewers and manholes before laying new drains. Notify the Client's Representative immediately if the declared invert levels are found to be inaccurate.

038 Before commencing excavation to expose existing drains, determine the exact line and level of the drain by excavating trial holes by hand. In any case carry out the final 300mm of excavation to expose the pipe by hand to ensure that adjacent lengths of pipe are not damaged by Equipment.

Excavation

039 Excavate trenches for pipes to a sufficient depth and width to enable the pipe and the specified joint, bed, haunch and surround to be accommodated.

040 Ensure that the widths of trenches are within the limits shown in the table below, to a minimum 300mm above the top of the pipe barrel.

041 The minimum width is that width between the faces of the soil required to ensure the correct placing and compaction of bedding material equally on either side of the pipe. All sheeting and supports are outside this width.

042 The maximum width is that width between the faces of the soil which has been used in the structural design of the pipeline and it includes an allowance for sheeting and tolerance.

Nominal Internal Diameter of Pipe	Minimum Trench Width	Maximum Trench Width
(mm)	(mm)	(mm)
100	430	630
150	490	690
225	580	780
300	680	880
375	950	1150
450	1030	1230
525	1120	1320
600	1240	1440
675	1330	1530
750	1400	1600
825	1490	1690
900	1920	2120
1050	2100	2300
1200	2290	2490
Above 1200mm	Outside diameter of pipe plus 800mm	Outside diameter of pipe plus 1000mm

043 Thin the bottoms of all excavations and consolidate to the correct levels. Fill unauthorised excavations below the required levels with Materials of the same composition as for drain beds.

044 Where the bottom is insufficiently firm, excavate until, in the Employer's Contract Manager's opinion, a firm bottom is obtained. Make up the level with Materials of the same composition as for drain beds or with a layer of concrete blinding if so Instructed by the Employer's Contract Manage.

045 Agree the particulars of such additional Works with the Employer's Contract Manager before covering up the Works, otherwise no payment is to be made for such additional Work.

Planking and strutting

046 Take care not to undermine the foundations of buildings. If so Instructed by the Employer's Contract Manager, plank and strut or adopt other means to protect the foundations.

Backfilling

047 Backfill trenches to sewers immediately the preceding operations have been completed. Do not backfill trenches for house drains before these have been inspected by Building Control.

048 No backfilling is to be placed in trenches containing water, In trenches in footways, gardens or open country, backfill with selected excavated materials. Selected excavated materials to be readily compactable material, free from tree roots, vegetable matter, building rubbish, frozen soil, clay lumps retained on a 75mm sieve.

049 Backfill may be placed by machine provided the method of operation ensures that the material slides or rolls into position and does not drop from a height.

050 Compact backfill materials in layers not exceeding 300mm thick but do not use heavy compactors before there is 500mm of material over pipe.

051 Make good any subsidence causing damage in surfaces or to adjoining structures that occurs after backfilling.

052 Rectify all damage caused to pipework during backfilling.

Concrete beds and surrounds to precast concrete manholes and road gullies

053 Concrete bed to precast concrete manhole rings is to be 150mm thick grade GEN3 concrete, laid on 75mm concrete grade 10 lean mix blinding concrete.

054 Concrete surround to precast concrete manhole rings is to be 150mm thick grade GEN3 concrete.

055 Bed and surrounds to road gullies to be 150mm thick grade GEN3 concrete.

Concrete beds, haunching and surround to drain pipes with rigid joints

056 Ensure beds are;

- a minimum of 150mm thick below the pipes;
- of the widths described in this Specification or the Schedule of Rates; and
- finished to the correct gradients.

057 After testing, haunch up the drains on both sides in similar concrete to half the diameter of the pipe. Where so Instructed entirely surround vertical clayware drains and other drains with concrete 150mm thick. Set all gullies, shoes, etc., on a base of similar concrete 150mm thick and the sides encased in concrete GEN3 150mm thick.

058 Provide flexible cleavage planes at each joint by means of 25mm thick bitumen impregnated fibreboard through the entire concrete surround.

Concrete beds and surrounds to clay and PVC-u drain pipes with flexible joints

059 Ensure concrete beds and surround to drain pipes with flexible joints are as described in this Specification.

Granular beds and surrounds to drain/sewer pipes with flexible joints

060 Dig out hard obstructions and soft pockets and remove the excavated materials. Fill the resultant void with granular bedding and consolidate it. Lay 75mm concrete blinding where trenches are in made up ground, or wet conditions are encountered.

061 Ensure drains specified to be "bedded and surround in granular material" are laid on a bed of granular material 150mm deep, spread and compacted and finished to the correct gradients and to the correct widths as Instructed by the Client's Representative. When compacted, form socket holes in the bedding material sufficient to allow the full length of pipe barrels only to rest on them.

062 After bedding, aligning, levelling and testing the drain pipes, place further granular bedding evenly and consecutively on each side to half way up the pipe. Then protect the pipe by a layer of similar granular bedding carefully consolidated by hand to 150mm above the top of the pipe for the full width of the trench.

063 Ensure backfilling for the next 300mm is with normal excavated Materials as described in clause 019 and carried out by hand with no mechanical ramming.

064 Ensure backfilling for the next 300mm after that is with normal excavated Materials as described in clause 019 and carried out by hand and/or light mechanical ramming.

Laying drains

065 Lay drains in straight lines to an even gradient from point to point, each pipe being "boned in" and the whole accurately laid and butted closely together at the joints.

066 Set drain pipes passing through foundations so that a flexible drain joint is not more than 150mm from the face of the wall foundations or manholes with a further joint 600mm from the last joint.

067 Commence drains at the lowest point with sockets leading up the gradient.

068 Rest pipes on solid and even foundations for the full length of the barrel with hollows formed in the granular bed or ground for the sockets.

069 Leave trenches open for inspection by the Employer’s Contract Manager until the drains have been tested and approved.

Gullies etc

070 Set gullies, etc., on concrete seatings, surrounded with concrete and jointed together and to pipes with gaskin and cement and sand mortar or with flexible coupling.

Brickwork in manholes

071 Bed brickwork in manholes in cement mortar (1:3) in an appropriate bond, built fair face with flush joints internally. Where built into manhole walls ensure pipes of 225mm diameter and over have half brick relieving arches over.

PVC-u inspection chambers

072 Ensure PVC-u inspection chambers including all fittings, covers and frames etc., have polypropylene mustow universal chambers.

Precast Concrete Manhole Rings

073 Manhole rings are to be bedded with mortar, proprietary bitumen or resin mastic sealant

Benching

074 Ensure benching in bottoms of manholes is in fine concrete to falls of at least 45 degrees to channels finished with cement and washed sand mortar (1:2) 25mm thick, trowelled hard and smooth with all angles rounded.

Bedding and sealing covers and frames

075 Bed frames to manhole covers in cement mortar (1:3) and the covers in grease and sand.

CCTV inspection of drains

076 Using CCTV survey all pipelines and drains as Instructed and record on digital media, all salient features of their structural and service conditions.

077 The CCTV Survey shall be carried out on new installations when:

- All planned laterals connections have been made and the remaining junctions and laterals are properly capped;
- All debris has been removed from both laterals and pipelines;
- All underground services are installed and no further excavation is planned in the vicinity of the pipeline;

078 The CCTV survey shall be carried out on existing drainage where Instructed by the Client's Representative following the reporting of consistently blocked or partially blocked drains. The Provider shall arrange for a copy of the video recording to be given to the Client's Representative.

079 All CCTV equipment and technical standards shall comply with the specification of the Water Research Centre.

080 Where defects are exposed in new pipelines or in pipelines still subject to defects liability, they shall be remedied by the Provider at his own expense, and a further CCTV survey carried out at his own expense. When a final survey acceptable to the Client's Representative has been carried out. The Provider shall arrange for a copy of the video recording to be given to the Client's Representative.

081 The video recording shall be high quality digital format acceptable to the Client's Representative. At the start of each manhole length the video shall clearly display in Alpha-Numeric form the following information:

1. Camera metreage position in the sewer line;
2. Sewer dimensions;
3. Manhole/pipe length reference number;
4. Date of survey;
5. Road name location;
6. Direct ion of survey;
7. Time of start of survey;
8. Sewer use;

082 Obtain Instructions from the Employer's Contract Manager on remedying any blockages or problems which may be revealed.

Septic Tank Installations

083 The single dwelling septic tank units are to be installed strictly in accordance with the manufacturer's technical data sheet and the recommendations of the applicable Standard;

084 The tanks are to be handled with care and lifted using a rope or sling passed through the lifting points provided;

085 Prevent superimposed loading by vehicles within a radius of 5m of the tank;

086 In dry ground conditions place tank on a base or 150mm thickness of broken stone or gravel to applicable Standard graded 10mm to 5mm, backfill and carefully compact the graded material, filling the tank with water to match the level of backfilling;

087 In wet or poorly drained ground, consolidate 250mm of crushed rock, cover with a polythene membrane and 150mm concrete (Gen 1). Lower the tank on to the concrete and puddle to form a cradle, carefully place and compact concrete (Gen 1) around the tank and bring up to a level 50mm below the outlet pipe, filling the tank with water to match the backfilling;

Septic Tank Sub-Surface Irrigation System

088 Pipes are to be: 100mm diameter perforated PVC-U complying with applicable Standards before perforation and laid to a gradient of 1in 200 or to a layout Instructed by Employer's Contract Manager, at a minimum depth of 500mm. Perforations shall be 8mm diameter, at 75mm centres in three rows giving an angle of perforation of 100%.

089 Pipes should be laid with perforations downwards on 250mm bed of clean filter stone graded 20-50mm, further filter material should be placed to 150mm above the crown of the pipe, and a 500 gauge polythene sheet laid on the stone foiling before backfilling with excavated material.

Testing

090 Test pipes and manholes generally by water test or air test to the satisfaction and in the presence of the Client's Representative and the Sewage Utility Provider.

- after haunching or bedding but before backfilling; and
- after completion of the Works.

091 Where possible test each pipe from manhole to manhole, test short branch drains connected to a main drain between manholes as one system with the main drain, test hung branches separately.

092 Water testing is to be undertaken by:

1. Applying a test pressure of 1.2m head of water above the invert of the drain at the high end but not more than 6m at low end by means of a standpipe;
2. Test steeply graded drains in stages in order not to exceed the maximum test pressure;
3. Allow a period of 1 hour for absorption;
4. Measure the loss of water over a period of 30 minutes by adding water from a measuring vessel at regular intervals of 10 minutes and noting the quantity required to maintain the original water level in the standpipe;
5. The average quantity of water added must not exceed 0.1 litre/100m.mm of pipe diameter;

093 Air testing is to be undertaken by;

1. Plug the length of drain to be tested and pump in air until a pressure of 100mm of head of water is indicated in a U tube connected to the system;
2. The air pressure must not fall to less than 75mm head of water during a period of 5 minutes without further pumping, after a period for requisite stabilisation;

094 Testing for Obstruction:

Check the bore, linearity and jointing of completed lengths of sewer less than 300mm diameter by drawing through a mandrel 750mm long and 12mm less in diameter than the nominal bore of the pipe;

095 Testing for Infiltration:

1. Test sewers for infiltration, the amount of infiltration shall not exceed 0.1litres per hour/100m/mm of pipe diameter;
2. Infiltration to manholes shall not exceed 5 litres per hour/manhole;

096 Water-tightness of Manholes, Chambers and Wet Well:

Manholes, inspection chambers and wet wells shall be inspected to ensure that they are watertight with no identifiable flow of water penetrating the chamber;

097 Provide all necessary testing apparatus and carry out any other tests required by the Client's Representative and the Sewage Utility Provider.

Land Drainage

098 Before starting work on land drainage, check invert levels and positions of existing drains, sewers, inspection chambers, manholes, catch-pits and watercourses against information shown on drawings and report any discrepancies to the Client's Representative.

099 Check position and levels of existing services before commencing excavation, hand dig carefully near to services. Notify the relevant Utility Authority if services are exposed by excavation or if land drainage work crosses the line of a service, follow the Utility Authorities instructions concerning work near services. Replace

any marker tape or protective covers disturbed by excavation work in accordance with the Utility Authorities instructions.

100 Excavate trenches to a gradient of not less than 1:200 and not more than 1:80. Ensure that the invert to the outfall to open watercourses is no lower than the seasonal peak or 150mm above normal water level, whichever is higher.

101 Perforated plastic pipes are to be twin walled PVC-u to applicable Standard with purpose made junctions etc., and flexible joints laid on granular bedding 150mm thickness and backfilled to within 50mm of finished ground level with clean gravel or crushed rock graded as table in Clause 066 below, and blind with 40mm bed of sand to applicable Standard: Gf 85 0/1 (FP) fine aggregate,

102 Perforated concrete sub-base land drainage pipes are to be to applicable Standard Class H with ogee joints and perforations not greater than 10mm or less than 3mm, total area of holes to be not less than 1000mm/square metre of pipe, laid on concrete bedding with perforations upwards, backfill with crushed rock grades as table in Clause 066 below, deposit filter media in layers not exceeding 225mm loose depth and length, compact each layer.

103 Grading of crushed rock for land drainage is to be as table below:

Applicable Standard Sieve Size	Range of Grading % by weight passing
63mm	100
37.5mm	85-100
20mm	0-20
10mm	0-5

Clean and flush all drains

104 Immediately before handing over manhole, thoroughly clean all drains and flush all pipelines not exceeding 400mm diameter with clean water while rodding from manhole to manhole with a rubber tipped plunger the same size as the diameter of the pipe;

105 Manholes and inspection chambers must be washed down, emptied and left to dry;

106 Core, clean and flush drains, gullies, manholes, etc. on completion of the Works.

Employer's current manufacturers/suppliers/products

107 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

TECHNICAL SPECIFICATION

08-CONCRETE WORK

CONCRETE WORK

GENERAL

001 Constituent materials, composition of mixes, production of concrete, information to be provided to the Employer's Contract Manager, sampling, testing and compliance to be in accordance with applicable Standards.

READY-MIXED CONCRETE:

002 The ready-mixed concrete production plant is to be currently certified by a body accredited by UKAS to applicable Standards for product conformity certification of ready-mixed concrete.
Source of ready mixed concrete: Obtain from one source if possible otherwise submit the following documentation to the Employer's Contract Manager.
- Name and address of depot: Submit before any concrete is delivered.
- Delivery notes: Retain for inspection.

003 Any declaration of non-conformity received from the concrete producer is to be notified immediately to the Client's Representative.

MATERIALS

Cement

004 Use ordinary "Portland" cement in accordance with applicable Standard delivered to the Property in sound condition. Store and protect it from deterioration due to moisture or other causes.

005 Storage of Cement:

- Arrange delivery in suitable small consignments so that cement will be used within 4 weeks of delivery;
- Store dry in weather-tight structures with a raised floor, or in suitable silos;
- Reject any cement which is set such that it cannot be easily crumbled between the fingers;
- Use cement fresh in the order of its delivery to site;
- Keep sufficient cement available in store to ensure that concrete work on any section can proceed without interruption.

Aggregates

006 For fine aggregate use only well graded coarse river sand of Grading Zones 1-3, clean natural sand or crushed stones.

007 For coarse aggregate use only natural gravel, crushed gravel, or crushed stone, well graded and of the nominal sizes as specified below.

008 If so Instructed submit samples of aggregates proposed to be used to the Client's Representative for approval. Ensure all subsequent deliveries conform to the approved samples. Arrange for ample supplies to be available of both fine and coarse aggregates of the quality and colour selected.

009 Storage of Aggregates:

- Wash fine and coarse aggregates and store them on a hard, clean, paved self-drained base or in suitable hoppers or containers'
- Ensure that stored aggregates will not become dirty or otherwise contaminated.
- Ensure when they are handled that they remain clean and well graded and keep them separate from each other until placed in the mixer;
- Check by visual inspection each load before tipping and each batch before mixing for consistency of particle shape, accuracy of grading, segregation of particle sizes and cleanliness;
- Ensure consistency of moisture content of fine aggregate at time of batching, if necessary by allowing stockpiles to drain for not less than 16 hours before use.

Water

010 When mixing concrete use only clean and fresh water from the main that is not below 4^0 Centigrade at the time of use.

011 Ensure water does not contain any matter injurious to concrete.

Rejected materials

012 Reject and remove immediately from the Property any Materials which have been damaged, contaminated or have deteriorated or do not comply fully with this Specification.

WORKMANSHIP

013 **Concrete mixes**

	Designated Concrete for Kerb Bases, Blinding etc.,	Designated Concrete for Mass Concrete Foundations, Beds etc.,
Designated Concrete	GEN 1	GEN 3
Reinforcement/embedded metal	None	None
Aggregates – Size (maximum)	20mm	20mm
Aggregates – Coarse recycled concrete aggregate (RCA)	Permitted	Permitted
Aggregates – Other requirements	None	None
Other requirements for cement and combinations	None	None
Consistence class	Provider's Choice	Provider's Choice
Chloride class	Cl 1.0	Cl 1.0
Other requirements for admixtures	None	None
Other requirements	None	None

	Designated Concrete RC 20/25	Designated Concrete RC 25/30
Designated Concrete	RC 20/25	RC 25/30
Reinforcement/embedded metal	Yes	Yes
Aggregates – Size (maximum)	20mm	20mm
Aggregates – Coarse recycled concrete aggregate (RCA)	Permitted	Permitted
Aggregates – Other requirements	None	None
Other requirements for cement and combinations	None	None
Consistence class	Provider's Choice	Provider's Choice
Chloride class	Cl 0.4	Cl 0.4
Other requirements for admixtures	None	None
Other requirements	None	None

	Designated Concrete RC 28/35	Designated Concrete RC 32/40
Designated Concrete	RC 28/35	RC 32/40
Reinforcement/embedded metal	Yes	Yes
Aggregates – Size (maximum)	20mm	20mm
Aggregates – Coarse recycled concrete aggregate (RCA)	Permitted	Permitted
Aggregates – Other requirements	None	None
Other requirements for cement and combinations	None	None
Consistence class	Provider's Choice	Provider's Choice
Chloride class	Cl 0.4	Cl 0.4
Other requirements for admixtures	None	None
Other requirements	None	None

	Designated Concrete for Rigid Pavement/Stepped Ramps
Designated Concrete	PAV1
Reinforcement/embedded metal	None
Aggregates – Size (maximum)	20mm
Aggregates – Type/Density	Normal weight
Aggregates – Coarse recycled concrete aggregate (RCA)	Not Permitted
Aggregates – Other requirements	Freeze-thaw resisting
Limiting value for composition – WC ratio (maximum)	0.45
Limiting value for composition – Cement combination content (minimum)	300kg/m^3

Limiting value for composition – Cement combination content (maximum)	Not applicable
Limiting value for composition –Air content minimum	4.5%
Consistence class	Provider's Choice
Cement combination	Main cement and combination type 11
Chloride class	Cl 1.0
Admixtures	For air entrainment see limiting value for composition item
Colour	Not required
Other requirements	None

Design/Batching and Mixing

014 For each designed mix, before making concrete for use in the Works and whenever a change in the materials or mix proportions is proposed, submit and obtain approval of:

- Details of proposed quantities of each ingredient per cubic metre of compacted concrete and proposed workability;
- Either existing data or details of appropriate tests on trial mixes to show that the proposed constituent Materials and method of manufacture will produce concrete of the required quality, which will not segregate or bleed and will be capable of being fully compacted.

015 In special circumstances, subject to the consent of the Employer standardised prescribed concrete mixes may be substituted for designated concrete.

- Substituted mix must conform to applicable Standard:,
- Substitution: In accordance with applicable Standard: table A.13. Submit for each substitution, stating reasons.
- Mixes: If standardised prescribed concretes are made on site, this must conform to applicable Standard.

016 Water content of concrete must be carefully controlled and adjusted to allow for moisture content of aggregates to give consistent quality and workability.

Identity Testing/Certification of Concrete

017 Testing of fresh concrete is to be to applicable Standards.

- Obtain Instructions from the Employer's Contract Manager immediately in the case of non-conformity.
- Test concrete on a regular basis for compressive strength at least one sample for each day of use of a particular mix, or as directed by the Client's Representative.
- Recording: - Maintain complete correlated records including:
  - Sampling, site tests and identification numbers of specimens tested in the laboratory.
  - Location of parts of the structure represented by each sample.
  - Location in the structure of the batch from which each sample is taken.

018 The testing laboratory: Is to be accredited by UKAS or other national equivalent. The Contractor is to submit the name of the testing laboratory and its UKAS reference number well in advance of concrete being supplied.

019 If a concrete sample fails to achieve specified criteria or to pass specified tests, The Contractor is to inform the Employer's Contract Manager without delay and submit:

- Confirmation of the validity of the test results, and/or
- Proposals for further tests to assess the strength of the concrete in the structure, as set out in the applicable Standard and/or
- Proposals for rectification.
- Obtain agreement with Employer's Contract Manager of all such evidence and proposals before proceeding. The Employer's Contract Manager may issue Instructions for the work to be stopped or delayed until reasons for the failure have been established; possible consequences assessed and appropriate preventative and remedial measures taken.

Placing and Compacting

020 Form construction joints as follows:

- Carefully brush and spray surface while concrete is still green to remove surface laitance and expose aggregate finish. Obtain agreement of the Employer's Contract Manager for any alternative method.
- Surface to be clean and damp when fresh concrete is placed against it.

021 At time of placing ensure that all surfaces on which concrete is to be placed are clean, with no debris, tying wire clippings, fastenings or free water.

022 Inform the Client's Representative before each pour of concrete to allow inspection of reinforcement and surfaces against which concrete is to be placed. Agree with the Employer's Contract Manager the period of notice to be given.

023 In placing concrete, the Contractor is to:

- Record time, date and location of all pours.
- Place while sufficiently plastic for full compaction. Do not add water or re-temper mixes. The temperature of concrete at time of placing must be not less than 5 degrees C. Do not place against frozen or frost covered surfaces.
- Place in final position in one continuous operation up to construction joints. Avoid formation of cold joints.
- Do not discharge from an excessive height or through reinforcement or other obstructions in a way which may cause uneven dispersal, segregation or loss of ingredients. Use suitable chutes or trunking to place concrete where necessary.
- Place in layers no thicker than can be effectively compacted with the equipment being used.
- Do not use vibrators to make concrete flow horizontally into position, except where necessary to achieve full compaction under void formers and cast in accessories and at vertical joints.

024 Fully compact concrete to full depth (until air bubbles cease to appear on the top surface), especially around reinforcement, cast-in accessories, into corners of formwork and at joints. Ensure amalgamation with previous batches, but do not damage adjacent partly hardened concrete. Use mechanical vibration for all reinforced concrete.

025 Sudden irregularities in the flatness of concrete floors is not permitted. When measured to applicable Standard, the variation in gap under a 3m straightedge placed anywhere on the surface to meet the following requirements:

- Floors which are to be self-finished, and floors to receive sheet or tile finishes directly bedded in adhesive: the floor surface regularity to meet Classification SR2.
- Floors to receive screeds/toppings/beds; the floor surface regularity to meet Classification SR3.

026 Inform the Client's Employer's Contract Manager of the number and type of vibrators to be used. Provide standby vibrators. Do not use external vibrators without agreement.

Curing and Protection

027 Curing Generally:

- Prevent surface evaporation from concrete throughout the period(s) specified below by:
  - Retaining formwork in position and, if necessary, covering exposed surfaces immediately after striking, and
  - Covering top surfaces of fresh concrete immediately after completion of placing and compacting, removing covering only to permit any finishing operations and replacing immediately thereafter.
- Maintain surface temperature above 5 degrees C throughout the periods specified below or four days, whichever is the longer;
- Maintain detailed records 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 may be suitable impervious sheet materials or a suitable curing compound with an efficiency of at least 75%, and:
  - Must be effective in preventing evaporation of water from the concrete, particular attention being paid to sealing at edges and junctions.
  - Must not disfigure permanently exposed surfaces.
  - Must not affect the satisfactory bond of subsequent construction and finishes.
- Until the exposed top faces of fresh concrete are in a state suitable to receive sheets in direct contact or a sprayed curing compound as applicable, cover with waterproof sheeting held clear of the surface and well-sealed against draughts at edges and junctions.

Curing Periods.

028 The curing periods, in days:

Concrete surfaces which will be exposed to frost or chemical attack. **Concrete wearing surface floors and pavements. Watertight concrete:**		
	Concrete made using OPC, SRPC, RHPC	Concrete made using PPFAC, PBC, PFA, GGBS
November to April	10	12
May to October	7	10
Other structural concrete surfaces:		

No special requirements if in damp weather and protected from sun and wind, otherwise as follows (cement as above):		
November to April	6	10
May to October	4	7

029 Obtain prior approval for curing periods for mixes using admixtures or other types of cement.

030 Prevent damage to concrete, including:

- Surfaces generally: From site, indentation and physical damage.
- Surfaces to be exposed in the finished work: From dirt, rust marks and other disfiguration.
- Immature concrete: From thermal shock, physical shock, overloading, movement and vibration.

031 Ensure there is no traffic over, or loading on, concrete for at least seven calendar days after placing.

Work in cold weather

032 Do not concrete when the air temperature is below 4^0C. Bear the entire risk of concreting done below this temperature.

033 Take adequate precautions to protect concrete from freezing. Bear all risks of damage to concrete from frost action.

034 Keep a reliable maximum and minimum thermometer at the site of any concreting Works.

Designed Joints in Insitu Concrete

035 All joints to be accurately located, straight and well-aligned, and truly vertical or horizontal.

036 Construction/Movement Joints:

- Form joints accurately to detail and in locations shown on the drawings or as Instructed.
- If modifications to any joint or location are necessary on site, agree revisions with the Client's Representative.
- Do not allow concrete to enter any gaps or voids in the formwork or to render the movement joints ineffective.
- Do not allow concrete to impregnate or penetrate any materials used as compressible joint fillers.
- Do not place concrete simultaneously on both sides of movement joints.

037 Additional construction joints in concrete exposed to view required by the Provider, will not be permitted, unless permission is given by the Employer's Contract Manager.

038 Construct using rigid, grout-tight side forms or stop ends designed to accommodate projecting bars or fabric without temporary bending or displacement.

039 Brush and spray surface of construction joints while concrete is still green and leave a thoroughly roughened exposed aggregate finish.

040 Tie bars are to be:

- To applicable Standard, clean and free from oil, dirt, loose rust or scale;
- Fixed securely at the stated centres, and at the required depth, placed centrally on the joint.

041 Dowel bars are to be:

- To applicable Standard, perfectly straight and clean with sawn ends;
- Coated half the length of each bar with suitable proprietary de-bonding compound or fit with a suitable plastic sleeve;
- Fixed securely at the required depth, level at right angles to and centred on the joint;
- Fitted with a cap at expansion joint, incorporating a compressible material, to de-bonded end of all bars.

042 Sheet joint filler for expansion joints is to be:

- Firm compressible, rot-proof, non-absorbent, non-extruding material;
- Fixed accurately in position;
- Ensure sufficient space is left for sealant.

043 Sealant for joints is to be:

- Cold-applied sealants complying with applicable Standard.
- Cured to manufacturer's recommendations to form a durable seal of low modulus elastomeric material.

Worked Finishes to Insitu Concrete

044 Carborundum dust is to be to applicable Standard.

045 Timing:

- Carry out all finishing operations at optimum times in relation to the setting
- and hardening of the concrete;
- Do not wet surfaces of concrete to assist surface working;
- Do not sprinkle cement on to surface.

046 Tamped finish is achieved by:

- Float concrete to an even surface with no ridges or steps, then immediately commence curing as specified in Clause 026;
- When the concrete is suitably stiff, tamp surface in one direction to give a uniform ribbed surface;
- Resume specified curing without delay.

047 Smooth floated finish is to be achieved by the use of a hand float; skip float or power float to give an even surface with no ridges or steps.

048 Trowelled finish is to be achieved by:

- Float concrete to an even surface with no ridges or steps, then immediately commence curing as specified in Clause 026.
- When the concrete is suitably stiff, hand or power trowel to give a uniform smooth but not polished surface, free from trowel marks and other blemishes, and suitable to receive the specified flooring material.
- Resume specified curing without delay.
- Adequately protect the surface from construction traffic until flooring material is laid.
- If, because of inadequate finishing or protection, the surface of the concrete is not suitable to receive the specified flooring material, it must be made good by application of a smoothing compound to the satisfaction of the Employer's Contract Manager. Allow for the cost of any such making good.

049 Trowelled finish for wearing surfaces is to be achieved by:

- Float concrete to an even surface with no ridges or steps, then immediately commence curing as specified in Clause 026.
- Successively hand or power trowel at intervals, applying sufficient pressure to close the surface, to give a uniform smooth finish free from trowel marks and other blemishes.
- Resume specified curing without delay.
- Complete a sample area of the finished work, size 1m. sq., in advance of the remainder, at a specified location, and allow inspection of appearance before proceeding.

050 Trowelled finish with non-slip additive is to be achieved by:

- Float concrete to an even surface with no ridges or steps, then immediately commence curing as specified in Clause 026.
- When the concrete is suitably stiff, sprinkle carborundum evenly over the surface at the rate of 1 kg/m sq. and hand trowel to give a uniform smooth, but not polished surface, free from trowel marks and other blemishes.
- Resume specified curing without delay.
- Complete a sample area of the finished work, size 1m sq., in advance of the remainder, at a specified location, and allow inspection of appearance before proceeding.

051 Brush surface textured finish is to be applied evenly across the concrete road slab or house path in one direction by the application of a wire brush not less than 450mm wide with wire tufts initially 100mm long.

052 Trowelled finish/brush textured finish to paths is applied evenly across the concrete path in one direction by the application of a wire brush not less than 450mm wide with wire tufts initially 100mm long, with a minimum 100mm wide margin trowelled smooth finish as Clause 046.

Surface finishes - Generally

053 Place concrete so that the face is free from voids and shows a uniform distribution of aggregate and uniform texture.

054 Use wrot formwork where a fair finish is required to the concrete surface. After removing the formwork, remove the feathers caused by the joints in the boards. Fill any holes or honeycombing which may have formed in the surface by first drenching with water and then filling the void with cement mortar composed of cement and washed sand in the same ratio as that in the concrete mix.

055 Use surface lined formwork where a perfect finish is required to the concrete. Immediately after removing the forms bring the concrete to a true, smooth and even surface, free from board marks, honeycombing, etc., by rubbing down with carborundum stone dipped in cement grout.

056 When no specific finish is required, tamp upper surfaces to a plain or evenly ribbed finish with tolerances suitable for subsequent Works. When a floated finish is specified, close the surface to produce an even slightly coarse texture free from ridges and depressions.

057 Trowel concrete to receive a thin floor covering by power float or other suitable method to produce a dense very smooth surface that is visually flat and suited to the direct application of thin floor coverings. Ensure there are no Defects in the finished concrete that show through the floor.

058 The maximum permissible deviation from flat is 3mm from a 3.00m straight edge.

Formwork for insitu concrete

Generally/Preparation

059 Design and construct formwork to withstand the worst combination of:

- Total weight of formwork, reinforcement and concrete.
- Construction loads including dynamic effects of placing, compacting and construction traffic.
- Wind and snow loads.

060 Temporary Works including propping shall comply with Health and Safety Executive Information Sheet No 56 and the applicable Standard Code of Practice for Temporary Works Procedures and the Permissible Stress Design of Falsework.

061 Provide adequate propping to prevent deflection and damage to the structure. Carry down such props to bearings strong enough to provide adequate support.

062 Temporary supports to the formwork shall not be cast into the concrete construction.

063 For work below ground:

- Vertical faces of strip footings, bases and slabs may be cast against faces of excavation, provided:
  - Prior agreement is obtained;
  - The faces are sufficiently accurate and stable.
- Adequate measures are taken to prevent contamination of concrete;
- Faces of walls must be cast against formwork.

064 Basic finish: No particular requirements, except those for tolerances and full compaction.

065 Formed finish: Where the surface is described as having a formed finish, the formwork shall be such as will give a perfectly smooth and even, but not polished surface, with neat sharp arrises.

066 Steelwork: Remove all loose mill scale and loose rust before encasing in concrete.

Construction

067 Construct formwork accurately and robustly with adequate supports to produce finished concrete to the required dimensions. Cast surfaces of concrete must be free from twist and bow (other than any required cambers), all intersections, lines and angles being square, plumb and true.

068 Joints in forms: Construct formwork, including joints in form linings and between forms and completed work, to prevent loss of grout, using seals when necessary. Secure formwork tight against adjacent concrete to prevent formation of steps.

069 Inserts, holes, mortices, chases:

- Confirm positions and details to ensure that alterations to and decisions about their size and location are not made without knowledge and agreement of the Client's Representative.
- Fix inserts or box out as required in correct positions before placing concrete. Form all holes, mortices and chases. Do not cut hardened concrete without permission.

070 Treatment of formwork:

- Remove, rubbish, debris, water, etc. from the interior of the formwork before concrete is placed.
- Coat inside surface of formwork with a mould release agent to prevent adhesion to the concrete.

071 Give sufficient notice of intention to place concrete to allow the Client's Representative reasonable time to check the construction and condition of formwork.

072 Use the same type and make of release agent throughout the entire area of any one finish. Use the minimum amount necessary to obtain a clean release and prevent excessive local collection. Prevent release agent touching the reinforcement or other materials not part of the form face or formwork.

Striking

073 Strike formwork without disturbing, damaging or overloading structure, and without disturbing props. Notwithstanding other clauses in this Specification and any checking by the Client's Representative, the responsibility for safe removal of any part of the formwork and any supports without damaging the structure rests with the Provider. When formwork is struck, any holes shall be filled with suitable concrete and fins shall be carefully removed so that a flat surface is presented.

074 Minimum Periods before striking:

The following periods (in days) for retaining formwork in position before striking apply to ordinary Portland cement concrete with no cement replacement materials or admixtures:

TABLE STRIKING TIMES.

	Average mean of daily minimum and maximum air temperatures during the period.		
	16 degrees C.	7 degrees C.	3 degrees C.
Vertical formwork to columns, walls and beams.	0.5	1	2
Soffit forms to slabs.	4	6	8
Props to slabs.	10	15	20
Soffit forms to beams.	10	15	20
Props to beams.	14	21	28

075 Submit details of proposed periods for mixes using admixtures or other types of cement.

076 Days during which the average air temperature is below 2 degrees C shall be disregarded in calculating the minimum time which shall elapse before forms are removed.

Reinforcement for Insitu Concrete

Reinforcement generally

077 Reinforcing steel must comply with applicable Standard, be cut and bent to applicable Standard and be obtained from a firm holding a valid certification of approval issued under a product certification scheme operated by a third party certification body with appropriate Category 2 accreditation from the United Kingdom Accreditation Service (UKAS).

078 Plain bar reinforcement is to be to applicable Standard Grade 250.

079 Deformed bar reinforcement is to be to applicable Standard grade 460.

080 Steel fabric reinforcement generally is to be to applicable Standard.

REFERENCE	MINIMUM LAPS
A142	400mm
A193	400mm
A252	400mm
A393	400mm

081 Store reinforcement clear of the ground and prevent contamination by other materials. At time of placing concrete, reinforcement to be clean and free of corrosive pitting, loose mill scale, loose rust, ice, oil and other substances which may adversely affect the reinforcement, concrete, or bond between the two.

Before Fixing

082 Reinforcement must not be roughly handled, dropped from a height, or subjected to shock loading or mechanical damage.

Bending reinforcement

083 Bend or straighten bars cold, gradually and evenly and in a manner that will not injure the Material.

084 Bend steel to the shape exactly as shown on the drawings. Ensure all bends have an internal radius of at least twice the diameter of the bar.

085 Provide on-site facilities for hand bending to deal with minor adjustments.

086 Projecting Reinforcement:

- Grade 250 bars may be bent to radii not less than indicated in the applicable Standard.
- Grade 460 bars must not be bent or straightened without the approval of the Client's Representative.

087 Reinforcement may be made up into cages. The cages shall be straight and out of winding when placed in position.

Placing reinforcement

088 Place reinforcement exactly as directed by the Employer's Contract Manager and use the correct concrete cover. Adequately support and bind the reinforcement at intersections with 16 swg soft pliable or annealed mild steel tying wire, steel clips or tack welding if permitted so that displacement does not occur when the concrete is deposited. Wire or clips must not encroach into the concrete cover. Ensure the lap:

- is at least 40 times the diameter of the bar size and at least 300mm; and
- to the mesh is at least 450mm.

TECHNICAL SPECIFICATION

09-BRICKWORK AND BLOCKWORK

BRICKWORK AND BLOCKWORK

MATERIALS

Cement

001 Use either normal setting ordinary or rapid hardening or sulphate resisting Portland cement or blast furnace cement. All cement must comply with applicable Standard and be manufactured by a firm with their capability assessed and registered with BSI or other quality certification body acceptable to the Client.

Lime

002 Use Class B hydrated lime, to applicable Standard

Sand

003 Sand for mortar is to be to applicable Standard FP or MP Category 3 unless specified otherwise. Sand for face-work mortar is be from one source, different loads to be mixed if necessary to ensure consistency of colour and texture'

Sand and aggregate Material Property Limits	applicable Standard Category for other aggregates and Sand	applicable Standard Category for Air cooled blast furnace slag
Acid soluble sulphate content	AS0.2	AS 1.0
Total sulphur	≤ 1% by mass	≤ 2% by mass
Water soluble content	≤ 1% by mass	≤ 1% by mass
Loss on ignition	PFA ONLY≤ 7% by mass	≤ 3% by mass

Cement mortar

004 Ensure all cement mortar used is composed of one part cement and three parts sand. Use this in brickwork built below ground level, copings, chimneys, parapet walls and any other brickwork in severely exposed situations.

005 In other situations unless otherwise Instructed, use only gauged cement mortar composed of:

- one part masonry cement;
- one part lime; and
- six parts sand.

006 Ensure all mortar used is fresh and made only in quantities sufficient to meet the immediate demand. Use mortar within 2 hours of mixing at normal temperatures. Do not revive or re-use any mortar which has been partially set. Measure materials accurately by volume using clean gauge boxes. Proportions of mixes are for dry sand, allow for bulking if sand is damp. Mix materials thoroughly to a consistency suitable for the work and free from lumps, do not over mix mortars containing air entraining admixtures. Keep plant and banker boards clean at all times.

007 Premixed lime:sand:mortar shall be obtained premixed in accordance with applicable Standard from a competent mortar manufacturer to the satisfaction of the Emploer, Ordinary portland cement is added on site by volume in accordance with the mix specification.

008 Coloured lime:sand:mortar, where required is to be made using a proprietary coloured ready-mixed lime:sand to applicable Standard; colour to be as specified or to match existing. Pigments used in lime:sand mortar are to conform to applicable Standard.

Ready to Use Retarded Mortars

009 Ready to use retarded mortars shall be in accordance with applicable Standard and Render/Plaster mixes to be in accordance with applicable Standard. The Employer is provided with CE Marked performance information to Annex ZA before mixing commences.

(i) All mortar storage containers are kept in good condition.

(ii) Storage containers are thoroughly cleaned out between fills.

(iii) Storage containers are clearly marked with mortar mix designation i.e. building/plaster/render, date and time of delivery.

(iv) Under no circumstances may partially full storage containers be ‘topped up’ with fresh mortar.

(v) The mortar is properly protected from adverse weather conditions, prior to, during and after use.

(vi) On no account should the mortar be re-mixed in a mechanical mixer

010 Under no circumstances can anything other than minimal amounts of water be added to the mix on site and this only to maintain workability during use i.e., by bricklayer on a spot board.

011 Absolutely no cement or any other additive may be added to the mix on site.

012 Care should be taken to ensure that the mortar is used in its 'fresh' state and that no remixing for use takes place after the period of retardation has passed.

013 All mortar, which has been contaminated in any way, shall be disposed of in such a manner as to render it unusable.

Waterproofing Agents

014 Waterproofing agent is to be to applicable Standard, supplied and installed in compliance with a current British Agrément Board certificate or other Quality system approved by the Employer. The quantities of agent to be used are to be strictly in accordance with the manufacturer's technical data sheet. The Provider is prohibited from using admixtures based on calcium chloride and ethylene glycol.

Bonding Agent

015 Bonding agent is to be Opaque white non-toxic externally plasticised PVA emulsion of high viscosity and manufactured to applicable Standard. The bonding agent is to be suitable for the exposure conditions and supplied and installed in compliance with a current British Agrément Board certificate or other Quality system approved by the Employer.

Air Entraining Admixture

016 Air entraining admixture is to be to applicable Standard, supplied and installed in compliance with a current British Agrément Board certificate or other Quality system approved by the Employer. The quantities of admixture to be used are to be strictly in accordance with the manufacturer's technical data sheet.

Water Reducing Admixture

017 Water reducing admixture is to be to applicable Standard, supplied and installed in compliance with a current British Agrément Board certificate or other Quality system approved by the Employer. The quantities of admixture to be used are to be strictly in accordance with the manufacturer's technical data sheet.

Common bricks

018 Use clay common bricks to applicable Standard

Location	Bond	Mortar mix
Superstructure Brickwork above DPC	Stretcher	1:1:6 cement lime mortar
Superstructure Brickwork above DPC	English	1:1:6 cement lime mortar
Substructure Brickwork below DPC	Stretcher	2:1:6 cement lime mortar
Substructure Brickwork below DPC	English	2:1:6 cement lime mortar

019 Use concrete common bricks to applicable Standard, with an average compressive strength of 20N/mm2 with no brick from any 10 no tested having a strength less than 16N/mm sq.

Location	Bond	Mortar mix
Superstructure Brickwork above DPC	Stretcher	1:1:6 cement lime mortar
Superstructure Brickwork above DPC	English	1:1:6 cement lime mortar
Substructure Brickwork below DPC	Stretcher	2:1:6 cement lime mortar
Substructure Brickwork below DPC	English	2:1:6 cement lime mortar
Substructure Brickwork below DPC	Honeycombed	2:1:6 cement lime mortar

020 Use concrete common bricks to applicable Standard, with an average compressive strength of 30N/mm2 with no brick from any 10 no tested having a strength less than 24N/mm sq.

Location	Bond	Mortar mix
Manholes	Stretcher	1:3 cement sand
Manholes	English	1:3 cement sand

Facing and Engineering bricks

021 Ensure facing bricks and engineering bricks are clay and of a size, type and colour to match the existing bricks.

022 Where approved by the Employer's Contract Manager and reuse sound facing and engineering bricks taken down as part of repair works.

Air bricks and wall ventilators

023 Use unglazed clay/concrete air bricks of a colour to match the facing bricks.

Cavity wall insulation – Built in Boards

024 Mineral fibre batt built in cavity wall insulation to applicable Standard generally made to fill the cavity, with conductivity less than 0.038W/mK, complete with a current BBA certificate or equivalent current quality system approved by the Client's Representative.

025 Expanded grey polystyrene injection moulding full fill board cavity wall insulation to applicable Standard with 10mm weathering space, and with conductivity less than 0.032W/mK, and compressive strength more than 70kPa at 10% compression, complete with a current BBA certificate or equivalent current quality system approved by the Employer's Contract Manager.

026 Composite, full-fill. Cavity wall insulation board, with polyisocyanurate foam to applicable Standard between foil skins faced with a vacuum formed or injected high density polystyrene moulding with weathering space 5mm nominal, thermal conductivity less than 0.023 W/mK, compressive strength > 70kPa at 10% compression, complete with a current BBA certificate or equivalent current quality system approved by the Employer's Contract Manager.

027 Foil faced polyurethane/polyisocyanurate (PUR/PIR) foam partial fill cavity insulation board to applicable Standard, thermal conductivity less than 0.023W/mK, compressive strength more than 120pKa at 10% compression, with a tongued and grooved edge profile, complete with a current BBA certificate or equivalent current quality system approved by the Employer's Contract Manager.

028 Foil faced phenolic foam partial fill cavity insulation board to applicable Standard, thermal conductivity less than 0.023 W/mK, compressive strength more than 120pKa at 10% compression, complete with a current BBA certificate or equivalent current quality system approved by the Employer's Contract Manager.

029 Closed cell polystyrene board wall insulation (for use below ground level) to applicable Standard, thermal conductivity less than 0.038W/mK, compressive strength more than 300pKa at 10% compression, complete with a current BBA certificate or equivalent current quality system approved by the Employer's Contract Manager. Boards fixed underground to resist uplift or displacement with flooding.

030 Closed cell foam glass board wall insulation (for use below ground level) to applicable Standard, thermal conductivity less than 0.038W/mK, Compressive strength more than 300pKa at 10% compression, complete with a current BBA certificate or equivalent current quality system approved by the Employer's Contract Manager. Boards fixed underground to resist uplift or displacement with flooding.

Installation Generally

031 Install in compliance with the manufacturer's technical data sheet and the relevant BBA certificate or equivalent quality system approved by the Employer's Contract Manager.

032 Neatly cut and fit insulation securely, with staggered vertical joints and no gaps, and temporarily support in position when necessary. Include for 300mm girth DPM as requires at external corners.

033 When available use tongues and groove edge profiled boards.

034 Ensure that board edges are not damaged, and all parts of the inner cavity leaf face are covered.

035 Protect top edges from mortar droppings and ither debris with a temporary batten.

036 Place and secure each course of insulation firmly against the inner leaf, before building up the outer leaf above level of previous course of insulation.

037 Wall ties are to be corrosion proof to suit manufacturer's board fixings including insulation retention clips as necessary and must **not be galvanised mild steel.**

Mastic compound and sealants

038 Sealants are to conform to applicable Standard:

- low modulus and mould resistant; or
- low modulus; or
- fire retardant

039 Before commencing application of sealants check suitability of joints to ensure that:

- Joint dimensions are within limits specified for the sealant;
- Surfaces are smooth and undamaged;
- Joints are to be to applicable Standard

040 Clean surfaces to which sealant is to adhere using methods and materials recommended by the sealant manufacturer's technical data sheet.

041 Remove all temporary coatings, tapes, loosely adhering material, dust, oil, grease and other contaminants which may affect bond.

042 Keep joints clean and protect from damage until sealant is applied.

043 Protect adjacent surfaces with masking tape to prevent staining and protect surfaces which would be difficult to clean if smeared with primer or sealant.

044 Backing strips, bond breaker and primer are to be of the types recommended by the sealant manufacturer's technical data sheet. Backing strips and/or bond breaker tape are to be inserted into joint leaving no gaps.

045 Use equipment and methods recommended by the sealant manufacturer's technical data sheet for the application of sealants. Sealants are to be applied within the recommended application life of primer and sealant and the recommended air and substrate temperature ranges.

046 Sealants are not to be applied to:

- damp surfaces (unless recommended otherwise);
- surfaces affected by ice or snow;
- surfaces during inclement weather;

047 Joints are not to be heated to dry them or to raise the temperature.

048 Fill joints completely, leaving no gaps, excluding all air and ensuring firm adhesion of the sealant to required joint surfaces. Tool the sealant to a neat, slightly concave profile unless otherwise specified, and protect till cured.

Wall ties

049 Wall ties are to be stainless steel 225mm to suit cavity and built in as work proceeds;

- Type; to applicable Standard
- Material: Austenitic stainless steel conforming to applicable Standard grade 1.4301 (304)

050 Wall ties are to be stainless steel 225mm to suit cavity and with suitable fixings for any partial fill boards and built in as work proceeds;

- Type: to applicable Standard
- Material: Austenitic stainless steel conforming to applicable Standard grade 1.4301 (304)

051 Wall ties are to be stainless steel 275mm to suit 150mm cavity and with tie mounted insulation retaining clips as recommended by insulation manufacturer and built in as work proceeds;

- Type: to applicable Standard
- Material: Austenitic stainless steel conforming to applicable Standard grade 1.4301 (304) Product to have BBA certification or equivalent.

052 Wall ties are to be stainless steel 275mm to suit 150mm cavity and built in as work proceeds;

- Type: to applicable Standard
- Material: Austenitic stainless steel conforming to applicable Standard grade 1.4301 (304) Product to have BBA certification or equivalent.

053 Wall ties are to be proprietary moulded black polypropylene wall ties 185mm long with a central 75mm x 9mm steel rod incorporating 3 annular collars and with 56mm wide fish-tail ends incorporating keying edges to suit 225mm cavity

- Type: to applicable Standard;
- Material: Plastic/steel;
- Supplied and installed in compliance with a BBA certificate or equivalent quality assurance system approved by the Client's Representative.

054 Wall ties are to be mineral fibre resin composite wall ties minimum 225mm and with suitable fixings for any partial fill boards

- Material: Mineral fibre resin composite;
- Supplied and installed in compliance with a BBA certificate or equivalent quality assurance system approved by the Client's Representative.

055 Wall ties are to be bedded not less than 50mm into bed joint of each leaf, sloping towards the exterior with drip centred on cavity, and evenly spaced at maximum 900mm centre horizontally, staggered in alternate rows and at 450mm centres vertically, provide additional ties within 225mm of sides of openings, at not more than 225mm centres vertically, (to suit blockwork courses).

056 Wall ties are to be stainless steel ties to timber frames are to conform to applicable Standard.

- Material: austenitic stainless steel conforming to applicable Standard;
- Fixing: Fix securely to timber studs with 50mm x 11 gauge stainless steel annular shank nails, bed not less than 50mm into bed joint of brick cladding sloping towards the exterior, ties evenly spaced at not more than 800mm centres horizontally, staggered in alternate courses and at 450mm centres vertically, and with suitable fixings for any partial fill insulation boards, provide additional ties within 150mm of sides of openings, at not more than 225mm centres vertically.

057 Spiral stainless steel ties for timber frames are to be austenitic stainless steel conforming to applicable Standard and installed in accordance with the manufacturer's technical data sheet and the Client's requirements.

058 Brick extension ties are to conform to applicable Standard

- Material: 22-gauge austenitic stainless-steel conforming to applicable Standard;
- Fixing: Fixing screws to be 50mm austenitic stainless steel with washers, 155mm austenitic stainless steel, plugs to be 8mm high density polyamide;
- Sealing: Sealing strip to be neoprene resin-impregnated micro-cellular polythene, self-adhesive 10mm x 20mm x 2.4mm;

059 Wall ties spaced at not more than 225mm centres vertically at vertical edges.

Chimney pots and cowls

060 Clay, clay louvered, and clay "H" type chimney pots as Instructed and approved by the Employer's Contract Manager are to be to applicable Standard, bedded and flaunched in cement mortar (1:3) incorporating a waterproofing agent and a bonding agent mixed in accordance with the manufacturer's technical data sheet.

061 Ventilating caps as Instructed and approved by the Employer's Contract Manager are to be vitrified clay, set in position in chimney cap with a neat fit joint.

062 Chimney cowls as Instructed and approved by the Employer's Contract Manager are to be aluminium, fixed to clay chimney pots in accordance with the manufacturer's technical data sheet.

063 Clay anti-draught terminals as Instructed and approved by the Employer's Contract Manager are to be to applicable Standard, bedded and flaunched in cement mortar (1:3) incorporating a waterproofing agent and a bonding agent mixed in accordance with the manufacturer's technical data sheet.

064 Galvanised steel anti-draught terminals as Instructed and approved by the Employer's Contract Manager are to be bedded and flaunched in cement mortar (1:3) incorporating a waterproofing agent and a bonding agent mixed in accordance with the manufacturer's technical data sheet.

Expansion joints

065 Movement joints are to be formed from 60mm x 18mm wide impregnated compressible insulation board, 25mm polyethylene foam strip and 10mm thiosulphide joint sealant pointed to finish slightly behind the brick face or concrete threshold.

Samples of bricks and blocks

066 Use only common, facing and engineering bricks and lightweight concrete blocks that conform to samples that have been approved by the Employer's Contract Manager.

Precast concrete components

067 Unless the Employer's Contract Manager Instructs otherwise, bed precast concrete components on mortar with a bearing of at least 150mm, packed on slate.

068 Precast concrete is to be:

Components	Copings, Pier Caps Chimney Capping's Lintels Door Thresholds
Designated Concrete	RC 25/30
Reinforcement	applicable Standard
Aggregate Size	20mm
Coarse recycled concrete aggregates (RCA)	Permitted
Chloride Class	C1.0.4
Finish Requirements	Fair face on exposed surfaces

Components	Window Sills,
Designated Concrete	RC 25/30
Reinforcement	applicable Standard
Aggregate Size	10mm
Coarse recycled concrete aggregates (RCA)	Permitted
Chloride Class	C1.0.4
Finish Requirements	Fair face on exposed surfaces

Prefabricated steel lintols

069 Unless the Employer's Contract Manager Instructs otherwise, bed steel lintols on mortar with a bearing of at least 150mm, packed on slate.

070 Lintels are to be hot dipped galvanised steel to applicable Standard BSI kite marked, BBA or equivalent certified quality system as approved by the Employer's Contract Manager.

Facing Brick Slips

071 Facing brick slips must be clay of a size, type and colour and to a bond to match existing facework to the property; subject to approval of the Employer's Contract Manager.

072 Acrylic brick blips must be of a size, type and colour and to a bond to match existing facework to the property; subject to approval of the Employer's Contract Manager.

WORKMANSHIP

Brickwork

073 Except where otherwise Instructed, lay new brickwork:

- to a gauge of 34 courses to 2550mm rise; or
- where existing brickwork is of a different gauge, to match the coursing of that brickwork.

074 Flush up solid horizontal and vertical joints with mortar throughout the thicknesses of the wall. Keep bed joints horizontal and quoins and perpends square and vertical. Lay bricks with single frogs with the frogs upwards.

075 Carry up walls in a uniform manner, with no part being raised more than 1 metre above another at one time. Rack back brickwork for jointing up (do not tooth it). Do not use bats except where required to bond.

076 Where the Schedule of Rates refers to “half brick thick”, provide half brick thick walls in either metric or imperial sizes, as required for the Works.

Cavity walls

077 Construct cavity walls:

- with a cavity minimum 100mm, maximum 150mm wide between the inner and outer casings;
- bonded together with austenitic stainless steel wall ties:
- spaced according to manufacturer’s technical data sheet and to suit cavity width but a maximum of 900mm apart horizontally, each row staggered and 450mm vertically; and
- spaced at a maximum 225mm apart vertically (to suit blockwork courses) within 225mm of vertical edge of opening.

078 Fit ties for batt type insulated cavity walls with an adjustable plastic anchor for securing the insulation in position against the inner skin of the wall.

079 Keep cavities clear of mortar dropping by draw boards across the cavity. Leave access holes at the bottom of cavities and over lintels for cleaning out. Fill them in after this has been done.

080 Close cavities of cavity walls with proprietary insulated cavity closers as Clauses 115 to 119, damaged brickwork closing cavities of hollow walls at sills and jambs of openings is to be repaired with brickwork to match existing, solid for a minimum depth of 100mm, and properly bonded to the surrounding work.

081 Take all precautions whilst undertaking the Works not to lose the integrity of the insulation in existing cavity walls that contain loose fill insulation materials.

Weather and protection

082 Adequately protect bricks on site and keep them dry. Where covers are used to protect bricks, ensure that there is sufficient circulation of air to prevent condensation forming. Ensure bricks are laid dry.

083 Do not carry out bricklaying:

- in driving rain; or
- when the temperature in the open is at or below 5^0 Centigrade.

084 Use plasticisers only with the Employer's Contract Manager's approval. Do not use antifreeze compounds.

085 Adequately protect new brickwork from damage by frost or excessive wet weather.

Fair face

086 Face surfaces of brickwork or blockwork described as "built fair face" with common bricks or blocks selected from bulk for even and unmarked faces and square undamaged arrises. Finish them with a neat flush joint as the Works proceed to match the existing brickwork. Protect them from mortar droppings and damage and ensure they are left clean on completion of the Works.

Facework

087 Joint facework as the Works proceed. Finish the vertical and horizontal joints with a convex jointer (bucket handle) or to match the existing framework. Keep the leading edge of damp-proof courses/cavity trays 5mm back from face of wall. Rake back mortar to fully expose edge of damp-proof course/cavity tray.

088 Keep facings free of all mortar splashes, droppings or other blemishes and leave hem perfectly clean on completion of the Works.

Damp-proof courses (Polyethylene DPM)

089 Lap damp-proof courses 150mm at all joints and full width at angles and intersections.

Bituminous and silicone waterproofing liquid

090 Ensure surfaces to receive the waterproofing liquid are thoroughly dry and clean.

Pointing

091 Match the pointing of new work to that of adjacent work, or to be flush or bucket handle pointing as Instructed by the Employer's Contract Manager.

092 Match pointing closely to the existing pointing in finish, colour and texture.

093 Carefully rake out existing brickwork joints by hand to form a square recess of 15mm – 20mm depth, remove dust, lightly wet and neatly point in cement lime sand mortar (1:1:6) of a colour to match existing to a neat weather struck profile to match existing in a continuous operation.

094 Carefully rake out existing stonework joints by hand to form a square recess of 15mm – 20mm depth, remove dust, lightly wet and neatly point in cement lime sand mortar (1:1:6) of a colour to match existing.

Work to chimneys and fires

095 Adequately protect the Occupier's finishes, fittings and furnishings from falling debris and soot during Works to chimneys and fires. Take all necessary precautions to protect existing fire appliances from damage. Rectify any damage caused.

096 Ascertain whether any flueways affected by the Works serve a gas appliance. If so, immediately notify the Client's Representative of this in writing, so that appropriate safety precautions can be implemented.

097 Remove all debris from flueways and from behind fires and appliances on completion of the Works.

Cavity Wall Insulation (CWI)

System Guarantees

098 The Contractor is to provide a 25 year, third party, insurance-backed guarantee to cover the cavity wall assessment, insulation materials, system and installation. For each property insulated, a guarantee certificate should be provided stating the exact address of the Property covered by the guarantee.

099 The guarantee must meet the following criteria:

1. Provide a minimum guarantee of 25 years.
2. Provide assurance that funds are available to honour the guarantee, including in the event the contractor/installer/manufacturer ceases to trade.
3. Cover the full replacement of a failed CWI system, including remedial works, materials and installation.
4. Have Trustmark accreditation in place whereby the quality of the system and its installation are independently assessed by a UKAS accredited body.

100 A list of appropriate guarantees can be found on the Ofgem website under their ECO Guidance. Please note this list is not exhaustive and other appropriate guarantees may be available.

101 All costs associated with providing the guarantee are to be borne by the Provider and the Provider must make the Employer's Contract Manager fully aware, in advance and in writing, of any maintenance regime required to uphold the guarantee.

PAS 2030

102 The installation must be undertaken by persons with appropriate skill and experience, approved by the manufacturer and in accordance with PAS 2030.

103 Evidence must be provided that the CWI installation contractor has PAS 2030 certification and Trustmark accreditation.

104 A pre-design survey of the dwelling is to be carried out by a competent person in accordance with PAS 2030 to assess its suitability to receive the insulation. The Employer's Contract Manager, Contractor and system designer should be made aware of any remedial works required and, if Work is to proceed, these should be carried out prior to installation.

105 Pre-design survey, method statements and the related requirements of PAS 2030 are to be provided to the Client's Representative prior to installation.

106 Clear records of Work undertaken must be kept and be presentable at the reasonable request of the Client's Representative to allow monitoring of installation Work.

107 On completion of the Work, a "Declaration of Conformity" to PAS 2030 standard shall be provided to the Client's Representative for their records.

Design Considerations

108 The proposed design and installation must not have a negative effect on the ventilation, air quality, humidity and comfort of the Property. When presenting designs, the Provider must make recommendations for any further measures required to prevent environmental changes occurring as a result of the insulation works, and to ensure the continued or improved comfort of the Customers. The proposed design must, satisfy or exceed the minimum standards in the Building Regulations.

109 The insulation system designer should:

- Calculate U-values in accordance with:
  - applicable Standard
  - BRE report BR 443

- Ensure that thermal bridges, air leakage and condensation are avoided or at least kept to a minimum within the acceptable parameters, in accordance with the following applicable Standard methods of calculation and assessment:
  - Hygrothermal performance of building components and building elements. Internal surface temperature to avoid critical surface humidity and interstitial condensation.
  - Thermal bridges in building construction. Heat flows and surface temperatures.
  - Thermal performance of buildings. Transmission and ventilation heat transfer coefficients.
  - BRE BR 262 – Thermal Insulation: avoiding risks.
  - Code of Practice for the Control of Condensation in Buildings.

- Assess the subject walls for the effects of wind-driven rain and the suitability of the proposed system in accordance with:

- Code of Practice for assessing the exposure of walls to wind-driven rain.

Cavity Wall Pre-Installation Inspection

110 Prior to any Works, the Employer's Contract Manager must receive evidence from the Provider that the Property has been inspected in accordance with, and independently verified by, the BBA Cavity Assessment Surveillance Scheme (CASS), or other UKAS accredited inspection body equal and approved by the Client's Representative. The inspection body must satisfy the requirements of PAS 2030, be independent of any system installer or designer and hold UKAS accreditation to either ISO 17065 or ISO 17020 'Type A'.

111 The inspection should include an external visual assessment of the elevations, and an internal visual inspection of the dwelling.

112 A rigid 90 degree optical borescope with attached digital SLR camera or another optical system of comparable image quality should be used to record clear photographs to the Employer's Contract Manager's satisfaction. The illumination, depth of field, and camera resolution will be sufficient to clearly identify defects and fibre and expanded polystyrene insulation up to one meter from the camera.

113 Longer focus images may be in black and white or a single illumination colour wavelength, provided that the materials shown in the images are identified. 10 different sample digital photographs of wall cavities, including mineral or glass fibre and cavity bottom debris, shall be submitted to become contractual image quality benchmarks and should include views of materials 1 meter away from the viewing prism or lens.

114 The CWI inspectors may, if they wish, use a thermal imaging camera with an appropriate scale to assist them in deciding where exactly to drill for the boroscope inspection but it should comply with the following pattern:

115 For single storey Properties this will include 3 boroscope readings per elevation:

- One of these will be at least 300mm above the damp proof course
- One will be within 300mm of the wall plate below the roof (For gable walls this should be along or just above the dividing line between the ground floor accommodation and the loft).
- One will be below a window sill (For gable walls where there are no windows, this can be halfway up the wall between the ground and roof space line)

116 For two storey dwellings this will include 4 boroscope readings per elevation:

- One of these will be at least 300mm above the damp proof course
- One will be within 300mm of the wall plate below the roof (For gable walls this should be along or just above the dividing line between the first floor accommodation and the loft).
- One will be at first-floor floor joist level (i.e., between ground and first floor)
- One will be below a second storey window sill (For gable walls where there are no windows, this can be halfway up the wall between the first floor and the loft).

117 Prior to any Work, the Contractor must produce a Property specific report on their findings to include confirmation of the following:

1. Address, postcode and Employer's UPRN of the Property being inspected.
2. The location of boroscope holes, each with a unique reference number, presented on sketch elevations or photographs.
3. Date stamped photographs from boroscope tests with images of similar quality to the benchmark digital images.
4. The construction type and its condition, including the build-up of the walls, the condition of masonry and pointing materials and the thickness of each element.
5. Condition and width of the cavity and wall ties, including the presence of mortar snots, debris etc., and whether or not it is deemed to be a Hard to Treat cavity.
6. Any visible evidence of continuing or developing structural problems, including steel lintel or wall tie corrosion, settlement or subsidence cracking, movement, failures in structural timber.
7. The presence of insulation and its type, e.g., mineral or glass wool (fibre), bonded bead, loose bead, Urea Formaldehyde foam, or insulation board.
8. Condition of insulation, including whether the cavity is filled to the correct density in accordance with the system designer specification.
9. The original injection drill pattern in relation to whether or not it conformed to the system designer specification for the type of insulation.

10. The U-value of the existing construction.
11. The presence of an adequate DPC.
12. The suitability of the cavity to receive CWI in relation to the property location and exposure, in accordance with applicable Standard and BRE Report 262.
    i. Any evidence of voids or other problems caused by insulation failure.
13. Where voids or other problems are evident, what are the reasons e.g. insufficient insulation (fibre or bead), settlement of fibre, insufficient glue for bonded beads, boards not properly fitted, etc
14. Locations and severity of any mould, condensation, water penetration or other obvious defects evident internally.
15. Locations and severity of any mould, condensation, water penetration or other obvious defects evident externally.
16. The presence of openable ventilators and adequate mechanical ventilation in relation to condensation/mould.
17. Adequate existing ventilation for any fuel burning appliances located within the property.
18. Any ventilation openings that would require remedial works to ensure they are not compromised during extraction or injection of insulation.
19. The location of flues to ensure they are not compromised during extraction or injection of insulation.
20. Injection drill holes were adequately filled upon completion of the original installation.
21. Boroscope drill holes were adequately filled with sand/cement and to closely match the colour and texture of the existing wall, upon completion of the inspection.
22. Any evidence of ingress of CWI materials in roof space/at services.
23. Relevant feedback from the Customer.
24. Any other information considered relevant e.g. absence of cavity barriers, etc.
25. Conclusions and any recommendations for remedial action to improve or replace insulation if considered appropriate.
26. Any Property constraints that would prohibit the execution of any recommended Works.

Cavity Wall Cleaning

118 Cleaning of cavity walls may only be carried out by a company currently registered with the BBA Cavity Cleaning Company Scheme, or other UKAS accredited body equal and approved by the Client's Representative, that includes for clearing rubble and other material from the cavity in addition to the extraction of insulation.

119 Cleaning may only take place when Instructed by the Employer's Contract Manager ve and is subject to the outcome of the surveillance scheme inspection.

120 Cleaning company must inform the Employer's Contract Manager of any remedial Works that are required, following the independently verified cavity inspection.

121 Cleaning company must include for the removal of rubble within the cavity and any other material that may bridge the cavity. The Employer's Contract Manager should be informed of any Material that cannot be removed and may compromise the integrity of the cavity.

Cavity Wall Insulation - Injected

122 Mineral fibre of a type currently certified by BBA, or other UKAS accredited certification body equal and approved by the Client's Representative, as suitable for the purpose and exposure. Only to be used to top up existing mineral fibre insulation, subject to the outcome of the surveillance scheme inspection. Thermal conductivity max 0.04W/mK, installed to the recommended density and in accordance with the quality assurance certificate and manufacturer's technical data sheet.

123 Expanded polystyrene beads/granules with grey/metallic additive, bonded by adhesive, and currently certified by the BBA or other UKAS accredited certification body equal and approved by the Client's Representative as suitable for the purpose and exposure. Suitable for both existing and newly constructed cavities, subject to the outcome of the surveillance scheme inspection. Thermal conductivity max 0.033W/mK, installed to the recommended density and in accordance with the quality assurance certificate and manufacturer's technical data sheet.

124 The installer must be trained and approved by the system designer, have Trustmark accreditation and carry out the installation in accordance with the:

- surveillance scheme;
- the BBA certificate;
- the certificate holder's instructions;
- any additional requirements of the insurance backed guarantee provider.

The completed installation is to be covered by an insurance backed minimum 25 year guarantee.

125 Form injection holes neatly to a regular pattern, preferably at the junction of vertical and horizontal mortar joints, and to sizes recommended by the cavity fill manufacturer. Drill additional holes as necessary to ensure a full fill. Avoid

damage to damp-proof courses, cavity trays, flues etc., and prevent debris falling into cavity. Form all holes in any one wall before commencing filling of that wall. Fill injection holes, replacing existing material where possible to ensure a close match of colour and texture with the existing surface. Obtain agreement from Employer's Contract Manager of finished appearance of first few holes before completing the remainder.

126 Check regularly during installation for leakages of insulation and seal immediately.

127 Check and confirm, following completion of the works, and at the end of each day if the work spans more than one day, that all ventilation outlets, flues etc have not been compromised by the injection of insulation and remain in working order, ensuring to clear any blockages immediately.

128 Check for and remove any wall insulation that has been blown up through the top of the cavity into the loft space.

129 Keep a detailed record of the installation including survey results, materials, weather conditions and any unusual features. Records shall be returned digitally to the Employer's Contract Manager as a spreadsheet or database in a format compatible with Microsoft Office and named with the Client's UPRN, as approved by the Employer's Contract Manager.

130 Submit copies of all certificates, records, guarantees and other documents to the Client's Representative on completion.

Fire-stopping Works – Proprietary Material

131 Fire-stopping material for use as a gap filling material where cables, non-combustible dusts or pipework services penetrates fire compartment floors and walls shall be a proprietary compound that is to be non-fibrous, non-toxic and to contain no asbestos, phenol's or halogen's, applied as a mortar to the following thicknesses.

Fire Resistance	Minimum Depth of Filling Material
One Hour	50mm
Four Hour	100mm

132 Use 50mm thick non-combustible mineral wool slab as permanent shuttering to fire-stopping compound mortars.

133 For horizontal barriers the mineral wool slabs are to be friction fitted into the opening and around the penetrating services, so that the compound mortar may be poured on top of the slab to the required thickness, temporary support may be needed until the compound mortar has achieved it setting requirements

134 For vertical or wall barriers the mineral wool slab should be installed at the centre line of the fire compartment wall by friction fitting around the penetrating services, the vertical slab is then to have the compound mortar applied either side of the slab to a maximum thickness of 25mm.

135 Apply the fire-stopping mortar strictly in accordance with the manufacturer's technical data sheet.

136 Fire-stopping material for use as a gap filling mortar around cable penetrations through fire compartment and separation walls and floors shall be a proprietary non-combustible material manufactured from lightweight aggregates, inorganic hydraulic binders and other fire protective additives which impart rheological properties. It is to be used in situations where the subsequent installation of additional cables through the wall or floor penetration is likely to take place and a flexible filling material would facilitate this event.

137 Mix the mortar by hand and applied strictly in accordance with the manufacturer's technical data sheet

138 Fire-stopping material for use as fire protection to fire compartment floors and walls penetrated by air conditioning ducts or service pipework shall be a proprietary non-combustible non-fibrous and non-toxic material manufactured from lightweight aggregates, inorganic hydraulic binders and other fire protective additives which impart rheological properties, applied in layers as a mortar to the following thicknesses.

Fire Resistance	Minimum Depth of Filling Material
Four Hour	160mm

139 Temporary shuttering may be required where the mortar is applied to wall penetrations, if there is likely to be movement in the pipes or ducts, the pipe or duct is to be wrapped in a 5 to 10mm thickness of mineral or ceramic wool.

140 Mix the compound by hand and applied strictly in accordance with the manufacturer's technical data sheet.

141 The Contractor or his approved subcontractor is to have FIRAS certification (www.firas-database.co.uk) and to produce certified copies of their registration as and when requested by the Client's Representative.

Fire-stopping – Non Proprietary

142 Fire-stopping material to party walls and similar situations can be either:

- Non-combustible mineral wool to applicable Standard, compressed fitted between timber members and fixed with large galvanised nails, cut to profile; or
- Non-combustible mineral wool with density ne 80kg/m^3 to applicable Standard, compressed fitted between timber members and fixed with large galvanised nails, cut to profile; or
- Non-combustible mineral wool with integral galvanised wire mesh with density ne 80kg/m^3 to applicable Standard, compressed fitted between timber members and fixed with large galvanised nails, cut to profile; or
- Asbestos free mineral fibre reinforced board, moisture resistant to applicable Standard, bedded in mortar to match walling;

142 Fire-stopping to loft access hatch door shall be asbestos free mineral fibre reinforced board, moisture resistant to applicable Standard.

143 Joint sealants are to be intumescent fire resistant mastic to applicable Standard installed in accordance with the manufacturer's technical data sheet;

144 Ensure that any imperfections of fit between building elements which are required to have fire resistance and/or resist the passage of smoke are completely sealed with non-combustible sealing material e.g. mortar, mineral filler paste or plaster, not plastic foam filler. Where not specified otherwise, tightly pack with mineral fibre.

Removal and Replacement of Failed Wall Tiles

145 Cut out corroded metal ties carefully, causing least possible disturbance to surrounding masonry and remove any associated rust debris.

146 Remedial wall ties shall be manufactured from austenitic stainless steel and be capable of meeting the test criteria for Type 2 wall ties.

Physically Inserted DPC'S to Existing Walls

147 When renewing damp-proof courses, cut out brickwork in short hit and miss lengths not exceeding 1.00m at any one time and prevent structural damage, installation is to form a continuous barrier to rising damp, finished flush with face of wall externally and to lap 150mm (minimum) with damp-proof membrane. Replace brickwork before commencing further lengths.

148 The installation is to form a continuous barrier to rising damp, the undertaking of joint cutting is to undertaken in such a manner as to prevent any structural damage. The damp-proof course is to extend the full width of the wall and any finishes. The damp-proof course is to finish flush with external face of wall, and internally is to lap 150mm (minimum) with damp-proof membrane.

149 Physically inserted damp-proof course system material is extend the full width of wall and finish and to be either:

- Polyethylene to applicable Standard, weight not less than 1.55kg/m2; or
- Bituminous Felt to applicable Standard, weight not less than 0.46kg/m2

Insulated Cavity Closers and Insulation to Jambs

150 Insulation to window and door jambs must comprise:

- 50mm minimum front to back dimension, notional width 100mm, insulation to be securely built in between inner and outer skins at jambs with vertical damp-proof course;
- Insulation to provide minimum 30 minutes fire resistance in terms of integrity and 15 minutes in terms of insulation when tested to applicable Standard;
- Thermal conductivity to be no greater than 0.038W/mK, insulation to be under compression within cavity and installed in accordance with the manufacturer's technical data sheet and the Building Regulations.

151 Built in insulated cavity closers must comprise proprietary insulated cavity closer to flush reveal, to bridge between inner and outer skins at window and door reveals.

- Cavity closers to be covered by a current BBA certificate or equivalent quality assurance certificate acceptable to the Employer's Contract Manager;
- Rigid PVC-u casing enclosing insulation with double flange to internal and external leaf to provide a key for rendering and plastering;
- Thermal conductivity of insulation to be no greater than 0.038W/mK;

- Cavity closer to provide minimum 30 minutes fire resistance in terms of integrity and 15 minutes in terms of insulation when tested to applicable Standard;
- Installed in compliance with current BBA certificate or equivalent quality system acceptable to the Employer's Contract Manager;
- Accessories: Manufacturer supplied compatible Polypropylene or PVC-u wall ties built in in accordance with the Manufacturer's technical data sheet.

152 Built in insulated cavity closers must comprise proprietary insulated cavity closer to check reveal, to bridge between inner and outer skins at window and door reveals.

- Cavity closers to be covered by a current BBA certificate or equivalent quality assurance certificate acceptable to Employer's Contract Manager;
- Rigid PVC-u casing enclosing insulation with single flange to internal leaf to provide a key for plastering;
- Thermal conductivity of insulation to be no greater than 0.038W/mK;
- Cavity closer to provide minimum 30 minutes fire resistance in terms of integrity and 15 minutes in terms of insulation when tested to applicable Standard.
- Installed in compliance with current BBA certificate or equivalent quality system acceptable to the Client's Representative;
- Accessories: Manufacturer supplied compatible Polypropylene or PVC-u wall ties built in in accordance with the Manufacturer's technical data sheet.

154 Built in proprietary insulated cavity closer to bridge between inner and outer skins at window sills:

- Cavity closers to be covered by a current BBA certificate or equivalent quality assurance certificate acceptable to the Client's Representative;
- Rigid PVC-u casing enclosing insulation with double flange to internal and external leaf;
- Thermal conductivity of insulation to be no greater than 0.038W/mK;
- Cavity closer to provide minimum 30 minutes fire resistance in terms of integrity and 15 minutes in terms of insulation when tested to applicable Standard;
- Installed in compliance with current BBA certificate or equivalent quality system acceptable to the Client's Representative.

155 Built in insulated cavity closers must comprise proprietary insulated cavity closer to bridge between inner and outer skins at window heads

- Cavity closers to be covered by a current BBA certificate or equivalent quality assurance certificate acceptable to the Client's Representative;
- Rigid PVC-u casing enclosing insulation with single flange to internal leaf;
- Thermal conductivity of insulation to be no greater than 0.038W/mK;
- Cavity closer to provide minimum 30 minutes fire resistance in terms of integrity and 15 minutes in terms of insulation when tested to applicable Standard;
- Installed in compliance with current BBA certificate or equivalent quality system acceptable to the Client's Representative

Employer's current manufacturers/suppliers/products

156 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

TECHNICAL SPECIFICATION

10-ROOFING

ROOFING

GENERAL

Generally

001 Stock adequate compatible Materials for the numerous types of tiled roofs that exist throughout the Properties.

002 Ensure tiles, slates and accessories laid or fitted are of a colour to match the existing.

003 Provide samples of the Materials as and when requested by the Employer's Contract Manager. The quality of Material be not less than that of the samples of the agreed standard. Materials shall be stored in a manner which will prevent damage and the introduction of deleterious matter.

004 Carry out tests on Materials as and when requested by the Employer's Contract Manager and supply certificates from a testing laboratory showing the results of each test.

005 Reinstate or replace any missing or defective battens and roofing felt when undertaking repairs.

MATERIALS

Dry and Wet ridge/hips/valleys/verges

007 Ensure mechanically fixed dry ridge and dry verge Works are compatible with the existing dry ridge and dry verge installation and existing roof coverings.

008 Ridges are to be designed and fitted in accordance with the applicable Standard and the manufacturer's technical data sheet and to be formed with either 240mm diameter x 457mm long concrete half-round ridge capping tiles or 237mm x 154mm x 457mm long concrete angled mono ridge capping tiles to the applicable Standards complete with plastic profile filler units to match tile profile, and plastic ridge end caps.

009 Hips are to be designed and fitted in accordance with the applicable Standard and the manufacturer's technical data sheet and to be formed with 240mm diameter x 457mm long half round ridge capping tiles to the applicable Standards.

010 Valleys are to be designed and fitted in accordance with the applicable Standard and the manufacturer's technical data sheet from neatly and accurately cut tiles to give a valley width of 125mm.

011 Dry cloaked verge systems are to be designed and fitted in accordance with the applicable Standard and the manufacturer's technical data sheet. Verge to be formed with one and a half tiles in alternate courses, with overhang kept to a minimum. Under-cloak is to be mineral fibre sheet 150mm x 12mm thick laid between the underlay and tiling batten.

012 Ensure wet ridge and wet verge Works are compatible with the existing wet ridge and wet verge installation and existing roof coverings.

Underlay

013 Lap roof tile underlay a minimum 150mm or length as stated in the manufacturer's technical data sheet at horizontal and vertical joints over adequately supporting members. Underlay should be sealed at penetrations through the roof and at the ridge to accommodate high level void ventilation.

014 As specified by roof designer, underlay to be either:

- Reinforced felt, in repairs only, to the applicable Standards; or

- 3 layer composite polypropylene membrane, composed of an impermeable polypropylene film sandwiched between 2 layers of spun-bonded polypropylene with:
  - Tensile strength: min 240N/50m (Longitudinal), 200N/50m (Transverse)
  - Tear Resistance: min 120N (longitudinal), 120N (Transverse)
  - Water Tightness: W1 to the applicable Standard
  - Certification: British Agreément Board (BBA) or equivalent; or

- Breather membrane: 3 layer composite membrane, composed of a water vapour permeable membrane, sandwiched between 2 layers of spun-bonded polypropylene. Product to have British Agrément Board certification (BBA) or equivalent.
  - Vapour resistance no more than 0.6MN s/g.
  - Tensile Strength: min. 240 N/50 mm (longitudinal), 200 N/50 mm (transverse).

- Tear Resistance: min. 120 N (longitudinal), 120 N (transverse).
- Water Tightness: W1 to the applicable Standard

015 Follow the applicable Standard Code of Practice for slating and tiling for guidance on the appropriate detailing of roofing components and installing underlay.

016 On timber structures use only inodorous sheathing felt or proprietary underlay as specified by the manufacturer as underlay for copper, lead and zinc roofing in a accordance with the applicable Standard.

Battens

017 For the tile battens use good quality deal, reasonably free from knots, clean and with no waney edges and in accordance with applicable Standard impregnated with an appropriate wood preservative before delivery to the Property, as specified under the 'Carpentry and Joinery' Section. Tile battens and counter battens to comply with applicable Standard.

018 Fix battens with staggered joints and square butt jointing. These are to span at least 3 supports.

Wood rolls

019 For wood rolls for copper, zinc or aluminium roofing use wrot seasoned timber to a tapered profile shown in Code of Practice 143:5, 143:12 and 143:15. Use common rolls approximately 45 x 40mm overall unless otherwise Instructed by the Client's Representative.

020 For wood rolls for lead roofing, use wrot seasoned timber to the smooth rounded profile shown in the applicable Standard. Use common rolls approximately 45 x 45mm with a 25mm wide flat base unless otherwise Instructed by the Employer's Contract Manager.

Mortar

021 Use cement mortar (1:3) for bedding and pointing as described in the "Brickwork and Blockwork" Section but slightly tinted in colour and specially mixed for the purpose.

Nails

022 Use galvanised steel clout nails for underlay and battens in compliance with the applicable Standard. Use the right size nails for battens to give a secure fixing without splitting the batten. For slates and tiles use aluminium alloy, copper, or silicon bronze nails to the applicable Standard or other nails approved by the Client's Representative.

023 Use copper jagged or ring shank nails, at least 20mm long with large flat heads for lead roofing.

Clips

024 Where roofing slates or tiles are described as fixing with clips, use lead or copper clips, approx. 300mm long x 20mm wide. Fix them to the roof batten beneath the slate or tile and bend them up and over the bottom edge of the slate or tile. Use aluminium alloy or stainless-steel clips to the applicable Standard for slates.

Steel hook bolts and nuts and roofing screws

025 Steel hook bolts for fixing corrugated sheets are to be cadmium or zinc coated steel bolts with plastic sleeves and washers to a standard and quality approved by the Employer's Contract Manager. Ensure the bolt profile and size suits the sheets and roof members.

026 For corrugated sheets use galvanised drive roofing screws complete with plastic sleeves and washers to a standard and quality approved by the Employer's Contract Manager. Seams to be fixed with self-tapping screws or bolts.

Plywood decking for flat roofs

027 Ensure plywood sheets are for structural use to the applicable Standard or equivalent material with Class 3 Bonding (external conditions) to the applicable Standard, durability Class H and to comply to a standard and quality approved by the Client's Representative. Sheets to be fixed at 150mm centres to supports with 50mm x 3mm annular ring shank nails.

Woodwool slab decking for flat roofs

028 Where appropriate, reinforce woodwool slabs to comply with the applicable Standard with pressed steel channels. Use galvanised steel large flat headed nails as fixings for the slabs of a length to suit the application of galvanised steel clips to the applicable Standard or such other fixings as the manufacturer of the slabs recommends. Slabs to be cut accurately and fixed with joints tightly butted and centred on supports, ends and cut edges are to be fully supported or reinforced in accordance with the slab manufacturer's technical data sheet.

Wood chipboard decking for flat roofs

029 Ensure chipboard conforms to the applicable Standard and is of an appropriate moisture resistant grade suitable for the purpose and fix it with galvanised nails to comply to the applicable Standard or screws to a standard and quality and of an appropriate size and gauge approved by the Employer's Contract Manager.

Lead

030 Use best milled Code 4 lead for lead roof coverings in accordance with the applicable Standard, flashings, soakers, rainwater chutes, valley gutter linings, hips, ridges and the like, colour marked for thickness and weight Provide tacks minimum 40mm wide of the same lead substance at not more than 1 metre centres to flashings.

031 Clips for leadwork are to be 50mm wide and of a length to suit Client's details and to be formed from either:

- Lead cut from sheets of the same code as the sheet being secured; or
- Copper cut from 0.7mm thick sheet to applicable Standard, temper grade ¼ H, dipped in solder, if exposed to view; or
- Stainless steel, cut from 28 gauge sheet to the applicable Standards, terne coated if exposed to view

Self-adhesive flashings

032 Use self-adhesive flashings in strict accordance with manufacturer's recommendations and only with the approval of the Employer's Contract Manager.

033 Fix self-adhesive flashings over existing flashing and fillets. Apply an appropriate primer before use to ensure complete adhesion and in strict accordance with manufacturer's recommendations.

Asphalt roofing

034 Use as rubbing sand clean natural coarse sand passing a 600mm micron test sieve.

035 For chippings use hard light coloured non-absorbent natural stone graded 6 to 10mm.

036 Use white solar reflective paint.

037 Ensure asphalt roofing subject to traffic is to the applicable Standard Type R988 undercoat with finishing coat to a standard and quality approved by the Employer's Contract Manager.

038 Use glass fibre tissue for the isolating membrane for roofing subject to traffic.

High performance felt roofing

039 Apply high performance felt roofing from an approved manufacturer to suit the relevant sub-surface and applied in strict accordance with the manufacturer's technical data sheet.

High performance "torch on" felt roofing

040 Prepare and apply high performance "torch on" felt roofing from an approved manufacturer to suit the relevant sub- surface and applied in strict accordance with the manufacturer's technical data sheet.

041 One-layer torch on mineral felt roofing is to be to the applicable Standard Class S3PS

042 Two-layer torch on felt roofing is to consist of an intermediate layer of torch on felt roofing to applicable Standard Class S2PS, and a top layer of torch on felt roofing to the applicable Standard Class S2PS.

043 Two-layer torch on felt roofing with ventilating layer is to consist of a ventilating layer equivalent to Type 3G glass-fibre reinforced bitumen, perforated venting layer and a top layer of torch on felt roofing all to the applicable Standard Class S2P3.

Bitumen primer

044 For felt roofing, use cut back bitumen primer with a maximum volatile solvent 60% by weight and Redwood No. 2 viscosity at 21^0 Centigrade 25 sec maximum.

Bitumen compounds

045 For felt roofing, use a bitumen bonding compound having a penetration of 20/30 at 25^0C and a softening point (R & B) of $80/100^0$ Centigrade. For the dressing compound use cut back bitumen to the applicable Standard. Use cold compounds dressing for bonding solar reflective chipping only with the approval of the Client's Representative. Ensure the bitumen coating for lead, copper or zinc roofing is a black coating solution to the applicable Standard.

WORKMANSHIP

Roof tiling

046 Lay roof tiling in accordance with the applicable Standards and in even courses to suit the existing gauging and laps. Secure tiles with the appropriate patent clips and/or nails.

047 Underlay to be laid and fixed with extra-large head nails parallel to eaves, cut neatly and accurately around pipes etc.,

on supports and must not occur more than once in any group of four batten at any one support, provide additional battens where necessary to prevent underlay being opened at laps by wind suction, fix each batten to each support with round galvanised steel nails 65mm long x 3.35mm.

049 Plain tiling is to be laid with each course to a half lap bond with tails aligned and joints slightly open, cut tiles the minimum necessary and then only with a masonry saw to give clean straight edges, nail tiles (minimum) every fifth course using two aluminium alloy nails per tile.

050 Nail fixed interlocking tiling is to be laid with tails aligned, cut tiles the minimum necessary and then only with a masonry saw to give clean straight edge.

051 Clip fixed interlocking tiling is to be fixed in accordance with the manufacturer's technical data sheet, tiling is tiling is to be laid with tails aligned, cut tiles the minimum necessary and then only with a masonry saw to give clean straight edges.

052 Form mechanically fixed dry ridge with underlay overlapping by not less than 150mm, fit correctly sized ridge batten along the apex of the trusses or rafters and secure to each rafter using stainless steel straps as supplied by the tile manufacturer and fitted in accordance with their technical data sheet, Fit top tiling batten on either side of ridge, fit top row of tiles to either side of ridge and fix to batten with two aluminium alloy nails per tile. Fit the plastic profile filler units in accordance with the manufacturer's technical data sheet, form ridge with ridge capping tiles and secure to ridge batten through the preformed hole in the ridge to ridge seal using the provided screw and washer. Fit the plastic ridge end caps.

053 Ridges spanning a party wall are to have a firestop formed by filling the ridge void with a suitable non-combustible material.

054 Form mechanically fixed dry hip with underlay overlapping by not less than 150mm, form ridge with ridge capping tiles. And neatly and accurately cut mitre tiles at junction with ridge.

055 Ventilating roof tiles are to proprietary ventilated in-roof ventilator tiles to match interlocking tiles in pattern, colour and texture and to be approved by the Employer's Contract Manager, to provide ventilation to the applicable Standard, product to have BBA certification or equivalent. Tile to provide 20,000mm^2 free opening and to exclude driven rain and large insects, openings are not to be more than 4mm. Tile to be installed approximately 300mm above the level of the insulation. Tile to have an integral apron and spigot for connection to flexible ducting and fixed in accordance with the manufacturer's technical data sheet.

056 Ridge ventilators are to be a proprietary concrete ridge ventilator tile to provide ventilation to the applicable Standard, product to have BBA certification or equivalent. Profile and colour to match adjacent ridge tiles, and mechanically fixed and bedded in accordance with the manufacturer's technical data sheet.

057 Form eaves with a double course of tiles.

058 Form verges with tile and a half in alternate courses including any under cloak and pointed in cement mortar to match the existing mortar. Ensure there are no exposed cut edges of tiles.

Roof slating

059 Close joint natural slate roofing with horizontal and alternate vertical joints ranging through perfectly straight.

060 Head nail slates with two nails to each slate in every course. Secure slates to eaves, verges, ridges, hips, valleys and abutments with two nails to each slate. Ensure there are no exposed cut edges of slates.

061 Form eaves with double course of slates.

062 Form verges with slates and “slate and a half” slates in alternate courses including any undercloak and bedded, jointed and pointed with mortar, tinted to match the colour of the slates. Ensure there are no exposed cut edges of slates.

063 Ensure ridges and hips are of the type stated in the Schedule of Rates. Bed, joint and point ridge and hip tiles with mortar tinted to match the colour of the tiles or slates.

Fibre cement sheet roofing

064 Where appropriate, incorporate end and side lap sealing strips in fibre cement sheet roofing to the applicable Standard.

Galvanised steel

065 Lay galvanised corrugated sheeting in accordance with Code of Practice 143 section 4 and 10 to allow slight movement between the structural frame and sheeting. Lap all sheets 150mm at the ends and two corrugations at the sides. Fixing by drive screws and washers at maximum 375mm centres, and 2 hook bolts at every purlin. All cut edges of sheets to be coated with acrylic paint

Reinforced plastics

066 Where specified use reinforced corrugated plastic sheets in limited areas in association with roof sheeting of another Material. Lap at the ends and sides, as for the main roofing Material, and seal with approved woven fibre sealing strip.

Fixing sheets

067 Secure the sheets to steel with galvanised steel hook bolts and nuts, and to timber with galvanised steel roofing screws. Do not drill steelwork.

Holing sheets

068 Drill sheet fixing holes through the crown of the corrugations 1.5mm larger in diameter than that of the bolt or screw shank.

Safety precautions

069 Prevent unauthorised persons having access to the area below the roof whilst corrugated sheet roofing is under construction. Do not allow any person to go on to roofing without using crawling boards.

Insulation

070 Butt joint insulation quilts and lay them up to wall plates, leaving sufficient space to maintain adequate ventilation of the roof space. Lay the quilt under electrical cables and over horizontal pipes wherever possible. Do not lay quilt under water storage tanks. Bag quilts to hatches in polythene and securely fix them to the hatch. Insulation to be turned over eaves.

General

071 Clear all debris resulting from roof Works from all gutters.

Leadwork

072 Ensure sheet lead Works are undertaken by skilled leadworkers in accordance with Lead Development Association recommendations and in accordance with the applicable Standard. Do not use solder without the approval of the Employer's Contract Manager. Undertake close and open nailing with copper nails at 25mm and 75mm centres respectively. Do not use lead pieces larger than 3.00m in length or 2.20m2 in area.

073 Clips to be fixed with two fastenings not more than 50mm from edge of lead sheet, Clips welted around edges of sheet are to be turned over 25mm.

074 Ensure laps to finishings are no less than 100mm.

075 Form welted joints with a 50mm overlap, 25mm underlap and copper or stainless-steel clips at no more than 450mm centres, welt overlap and clips around underlay, loosely turn over and lightly dress down.

076 Dress underlap to drips with splash lap into rebate along top edge of drip, fix to lower level base with two rows of nails, 25mm and 50mm from face of drip, at 75mm centres in each row, evenly spaced and staggered, dress overlap over drip and form a 75mm splash-lap, secure with lead clips, lead burned to underlap at not more than 300mm centres, with not less than 2 clips per bay.

077 Dress underlaps to drips without splash-laps into rebate along top edge of drip and fix with one row of nails at 50mm centres on centre line of rebate, dress overlap over drip to just short of lower level.

078 Form roll joints without splash-lap over wood core rolls, dress under-cloak three quarters over core roll, fix copper or stainless steel clips to roll at not more than 450mm centres, dress lead over cloak around core roll with edge welted around ends of clips, finishing 5mm clear of the main surface.

079 Form roll joints with splash-lap over wood core rolls, dress under-cloak three quarters over core roll, and fix with nails at 150mm centres for a distance of about one third of the length of the panel starting from the head of the sheet, dress over-cloak around core roll and extend on to main surface to form a 40mm splash lap.

Lead flashings

080 For flashings use milled sheet lead to comply with and be in accordance with the applicable Standards.

081 Dress lead flashings to the appropriate profiles without reducing the thickness of the lead sheet.

082 Turn the top edges, which should be welted of all cover flashings 25mm into grooves chased or cut into brick, blockwork or other cladding material, securely wedged and pointed with low modulus silicone mastic in brick, block, masonry and concrete and in other cladding where appropriate.

Asphalt roofing

083 Lay asphalt roofing generally in accordance with the applicable Standard and the recommendations and publications of the Mastic Asphalt Council. Lay underlay loose and with 50mm laps.

084 Lay asphalt roofing in two coats with 150mm laps. Properly bond it to the edges of existing sound asphalt and unless otherwise Instructed by the Employer's Contract Manager maintain all existing planes. Provide fillets 50mm on the face at all internal angles. Unless otherwise Instructed by the Employer's Contract Manager, ensure that the asphalt surface finish matches the existing surface.

Felt roofing

085 Roofing felt to comply with the applicable Standard unless otherwise specified or guided. Immediately seek Instructions from the Employer's Contract Manager if, when removing any defective felt, the base is found to be defective or unsuitable in any way to receive the new felt and that repair of the base is outside the scope of the Order.

086 Lay felts 90 degree to the direction of the roof gradient starting at the lowest point with 75mm side and 100mm end laps, and breaking joints between layers. Apply by mopping, brushing or spraying to achieve an even and full cover of the surface a priming coat recommended for the purpose by the felt manufacturer to all concrete and screed base surfaces. Other than where the Order is for Emergency Works, allow 24 hours to elapse before laying the felt.

087 Partially or fully bond the first layer of felt to the base with oxidised bonding compound to the applicable Standard Bitumen and bituminous binders Framework for specification of oxidised bitumen. Grade as recommended by the felt manufacturer, and heated in thermostatically controlled kettles, to a temperature not exceeding 215^0 Centigrade, but sufficient to provide a 200^0 Centigrade laying temperature.

088 Effect any partial bonding system by spot, strip or frame bonding the first felt layer with hot bonding compound.

089 Fully bond the perimeter of the roof for a width of 450mm, leaving 150mm wide ventilation channels at appropriate centres.

090 Effect a fully bonded system by applying a continuous even coating of hot bonding compound to the base at the rate of 1.5kg/m2. Apply the first layer of felt to provide a complete bond excluding all trapped air. Bond subsequent felt layers to match the underlayer excluding all trapped air. If any air bubbles become apparent in the Works, cut back and renew the felt.

091 Renewing or making good existing roofing:

- Remove existing chippings and clear roof of all dust, dirt, debris, moss and grease;
- Star cut blisters, dry out and re-bond;
- Fill ponded areas of sound roofing to level surface with compound recommended by the felt manufacturer;
- Cut out defective areas of felt, dry out base and patch repair level with existing finish with three layers of matching felt lapped not less than 100mm;
- Cut back to base 150mm width of felt over cracks and splits, dry out and insert 150mm strip of bitumen polyester felt bonded to base at edges only. Fully bond a further layer of bitumen polyester felt over the first strip and lap not less than 100mm onto the existing felt at each edge;
- Remove rainwater outlet gratings and set aside for reuse on completion;
- Cut out all existing skirting's and make good as for new work;
- Renew damaged insulation;
- Remove waterproof coverings from existing skirtings and re-cover as specified.

092 For chippings use coloured non-absorbent natural stone graded 6 to 10 mm/nominal 14 mm single size 6. Ensure gravel guards are fitted to all outlets, scatter chippings at rate of approximately 16kg/m2, on completion remove loose chippings.

093 Use cut back bitumen or a suitable cold applied bitumen-based adhesive to applicable Standard as a dressing compound for chippings applied at the rate of 1.5kg/m^2.

Torch on felt roofing

094 Ensure the existing roof is clean and dry. Cut out and patch blisters, nicks etc. If necessary, prime the surface and allow it to dry. Lay sheeting with 75mm side and 100mm end laps. Loose lay the first specified layer to roof surfaces, but do not carry up angle fillets and vertical upstands. Apply flame to the lower surface directed at the junction with the substrate so as to melt the adhesive across the roll width. Unroll felt onto the molten bitumen and press down firmly. Seal laps with wide bladed scraper and seal the plain finish (not mineral surface) by applying heat from above.

095 Use hard light coloured non-absorbent natural stone chippings graded 6 to 10 mm/nominal 14 mm single size 6. Ensure gravel guards are fitted to all outlets, scatter chippings at rate of approximately 16kg/m2, on completion remove loose chippings.

096 Use cut back bitumen or a suitable cold applied bitumen-based adhesive to the applicable Standard as a dressing compound for chippings applied at the rate of 1.5kg/m^2.

Asphalt coverings to balconies and walkways

097 Lay asphalt to balconies and walkways in accordance with the applicable Standard and the recommendations and publications of the Mastic Asphalt Council. Lay underlay loose and with 50mm laps.

098 Use a glass fibre tissue isolating membrane approved by the Employer's Contract Manager.

099 Use bitumen coated 'plain expanded' steel lathing of a minimum 26 swg and a minimum 10 mm short way of mesh.

100 Use a high bond primer as approved by the Employer's Contract Manager.

101 Use oxidised bitumen suitable for applying hot as bitumen based bonding compound for bonding vapour barriers and for general bonding purposes.

102 Use clean natural coarse sand passing a 60-micron test sieve for rubbing sand.

103 For chipping, use hard light coloured non-absorbent natural stone graded 6 to 10 mm/nominal 14 mm single size 6. Ensure gravel guards are fitted to all outlets, scatter chippings at rate of approximately 16kg/m^2, on completion remove loose chippings.

104 Use cut back bitumen or a suitable cold applied bitumen-based adhesive to the applicable Standard as a dressing compound for chippings supplied at a rate of 1.5kg/ m^2.

105 Use a reputable proprietary brand of solar reflective paint approved by the Employer's Contract Manager.

106 For aluminium edging, use a proprietary section profiled to suit asphalt manufactured from aluminium.

107 Asphalt concrete to be laid and compacted in accordance with the applicable Standard.

108 Hot rolled asphalt is to be transported, laid, compacted and tested to the applicable Standard.

Inverted Roof Insulation

109 Inverted roof insulation is to be 200mm thick extruded polystyrene board to the applicable Standard, conductivity 0.035 W/mK or less than, strength more than 250pKa at 10% compression, grade/density to be a minimum 30kg/cubic metre. Clean off all dirt and debris from base, lay boards tightly butted and to broken bond pattern, cut cleanly to fit closely around projections, upstands, rainwater outlets etc., lay surface protection.

Single layer plastic roof covering

110 PVC-u single layer membrane to the applicable Standard, minimum thickness 1.2mm laid in accordance with the manufacturer's technical data sheet with not less than 80mm head and side laps secured with the manufacturer's recommended thermal welding, break bond between layers with side laps staggered by one half sheet width, joint edges are to be completed with a bead of liquid PVC, membrane laid on separating layer as recommended by the manufacturer.

111 Warm deck roof designed in accordance with the applicable Standard and to comprise foil faced polyurethane /PIR foam insulation board to applicable Standard, conductivity less than 0.023 W/mK, strength more than 140kPa at 10% compression, boards fixed in accordance with the manufacturer's technical data sheet with minimum of 6 fixings per square metre, extra fixings may be necessary around roof perimeter.

112 All edge trims, upstands, flashings, verge trims are to be proprietary items supplied as required by the roof covering manufacturer and formed from PVC coated metal and fixed in accordance with the manufacturer's technical data sheet.

Single Ply Membrane Roofing Systems

113 Clean all stone chippings, moss and debris off the entire roof surface to be re-covered and remove from site, felt blisters to be cut open and the damaged are made good, lay 1000-gauge vapour barrier to be laid loose over the entire roof surface, lay 25mm insulation board or 25mm closed cell moisture resistant board, mechanically fixed to the deck before the roofing membrane is laid.

114 Butyl rubber-based membrane (Polyisobutylene) 0.75mm thick (fabricated in factory to cover the complete roof) laid on one layer of applicable Standard sheathing felt laid on existing roofing membrane or vapour barrier, the butyl membrane to be ballasted with 18mm diameter round gravel to a depth of 40mm over the entire roof area. The butyl membrane is to be dressed a minimum of 150mm and fully bonded to the upstands of the roof, at intersections between roof and walls the butyl membrane is to be carried up and fully bonded to the wall, turned and pointed into a wall chase for a minimum of 38mm deep, or dressed behind lead flashings, the edge of the membrane is to pointed with the appropriate mastic, the lead flashing is to carefully dressed down.

115 Eaves are to be finished with PVC coated metal "standard" edge trim and "GutterZ" edge trim to all perimeters, butyl membrane is to be stuck down to roof at eaves, a treated timber batten is to be fitted to the eaves where necessary for fixing the trim.

116 Where gutters are incorporated in the roof structure, the insulation is to be stopped at the edge of the gutter, the butyl membrane is to be stuck down to the roof surface in the gutter. The butyl membrane is to be dressed over the eaves and into the gutters or trunk heads and in the case of flat roof outlets, dressed over and into the outlets, fix a 50mm x25mm treated timber batten to all edges to form a stopping piece for the insulation, fixed with suitable fasteners at 400mm centres.

117 EPDM (Rubber Poymer) single ply membrane mechanically attached rubber sheeting, laminated to a non-woven polyester backing to be laid as specified by the Manufacturer's technical data sheet, delivered in sealed rolls and mechanically fixed to decking with galvanised steel discs and self-tapping screws. Fixing to be fully treated with a rustproof coating and have a minimum pull out force of 1.5kN per fixing and applied as 4 No fixings per m^2 on flat roof surfaces, 8 no per m^2 on edge zone and 12no per m^2 on corner zone. All joints are to be sealed by using hot bonding splicing machine with a 150mm wide splicing strip specially developed for hot-bonding application.

118 Fully bond the roofing membrane at intersections between roofs and walls with butyl adhesive applied to the wall. Lead flashings are to be fitted to prevent the ingress of rain, the roofing membrane is to be fully bonded to the wall surface under the lead flashing.

Metal Tile Roofing

119 Metal tile roofing shall comprise:

- Natural stone chip with acrylic overglaze finished proprietary metal roof tiles each size 1330mm x 450mm x 0.9mm thick, pantile in profile, and terracotta or charcoal or green or red in colour, each tile fixed with four no 50mm x 2.5mm coated fixing nails driven through the down turned nose of the tile into 50 x25mm sawn softwood applicable Standard battens fixed to each support with round galvanised steel nails 65mm long x 3.5mm, with additional battens where necessary to prevent underlay being opened at laps by wind suction.

- Underlay to be reinforced felt to the applicable Standards, laid with minimum 150mm horizontal and vertical laps and fixed with galvanised steel extra-large head felt nails parallel to eaves so that water will drain freely, laps to coincide with supports, including all abutments, eaves, verges, ridges, hips and valleys

- All to be in accordance with Code of Practice for Lightweight Metal Roofing.

Metal Profiled /Flat Sheet Claddings

120 Plain Galvanised corrugated iron sheeting is to be in accordance with CP 143-10:1973, 24 gauge in sheets each 1260mm x 370mm, laid in accordance with the Manufacturer's technical data sheets from ridge to eaves, with side-laps being at least 2 corrugations and 150mm minimum end laps, sheets to fixed with drive screws and washers placed at maximum 375mm centres to 38mm x25mm battens, and secured to purlins with at least 2 bolts. Seams to be made watertight with suitable lapping material and secured with self-tapping screws or bolts at maximum 450mm centres. Breathing felt to applicable Standard lapped and carried into gutter is to be installed under corrugated sheeting.

121 Ridge to be galvanised sheet 22mm gauge to comply with the applicable Standard, ridge capping to be formed from equal angle pieces with 200mm sides formed to fit securely on top of galvanised roofing sheet.

Plastic profiled Sheet Claddings

122 PVC-Ue planks (Open 'V' joint, shiplap or Tongued and Grooved) in cladding shall comprise:

- Lightweight foamed cellular core and homogeneous skin of PVC-UE having a nominal thickness of 0.6mm manufactured in accordance with the applicable Standards;
- Extruded Cellular Unplasticised (PVC-Ue) Profiles:
- Standard length: 5m
- Cover width: maximum 100mm
- Nominal thickness; 6mm
- Fire resistant to Class 1Y to applicable Standard;
- Weight: Not less than 0.50kg metre;
- Density: Not less than 500kg/m^3;
- Appearance: Self-coloured smooth semi-matt or glass finish;
- Fixing: Maximum 600mm centres, 5mm gap every 5m run and at abutments for thermal expansion of plank and joint ends;
- Method of fixing: 30mm hot dipped galvanised or stainless-steel jagged nails with staggered joints;
- Perimeter Trims: Single or two part PVC-Ue trims (capping's, angle pieces, closure pieces, flashings, trims, sill) as manufacturer's technical data sheet;
- Breather membrane; Spun bonded polypropylene BBS certified, vapour resistance to be no more than 0.6MN.s/g and fixed with galvanised or stainless-steel fixings every 300mm at studs and every 150mm at edges, horizontal laps to be 100mm, vertical laps 150mm and staggered to shed water away from substrate and structure;

123 PVC-Ue chipped finished planks in cladding shall comprise:

- Lightweight PVC-Ue not exceeding 7kg/m^2 and a density of between 0.5 and 1.5kg/m^3;
- Impact resistance strength: 30k/m^2;
- Yield Stress: at/more than 14.5N/mm^2;
- Tear Strength: at/more than 13.5N/mm^2;
- Bending Stress: 18N/mm^2;
- Elasticity module; at /more than 640/mm^2;
- Fixings pull out strength: at least 500N;
- Thermal Impact: in accordance with BRE Digest 228
- Surface spread of flame: both internal and external surfaces to Class O, tested in accordance with applicable Standards, All fixings to be non-ferrous
- Fixing supports to ETAG001 and ETAG 029
- Fire resistant to Class 1Y to applicable Standards;
- Weight: Not less than 0.50kg metre;
- Density: Not less than 500kg/m^3;
- Appearance: Self -coloured smooth semi-matt or glass finish;

124 The system will be required, under testing, to prevent transfer of water across the cavity to the masonry of the existing building under peak pressure testing to Class R7 as set out in applicable Standard.

125 If battens are used to create a minimum 25mm vented cavity they must be formed from the same material as the cladding planks; the vented cavity is to provide adequate ventilation to remove any condensation or water permeating through the system before it reaches the masonry with drainage openings of at least 10mm;

- Defection in accordance with the applicable Standards. All testing must be in accordance with current applicable Standards.

- The system must be able to accommodate building movement and must be secured to suitable non-ferrous cladding rails/support structure approved by the manufacturer;

- Aggregate: between 3 and 6mm incorporated into the surface of the cladding under strictly controlled factory conditions with the colour aggregate pre-mixed under quality controlled factory procedures to achieve uniformity.

126 PVC-Ue Fascia/Barge or Barge Overlay Board shall comprise:

- Profile: Bull nosed or square edge with ribbed back;
- Composition: Low density cellular (closed cell) core and homogeneous impact resistant skin of PVC-UE. Manufactured in accordance with the applicable Standard UV stability and UV aged impact resistance requirements;
- Dimensions: Width Minimum 175mm;
- Thickness: Minimum 9mm;
- Weight: Average density 500kg/m^3, Tolerance deviation of +/-12.5% per m length;
- Tolerances Width: 151mm – 250mm +/- 1.5mm;
- Tolerances Thickness: 5mm – 12mm +/- 0.5mm, over 12mm +/- 0.75mm;
- Tolerances Length: 5m =10mm-00mm;
- Flatness; Must not exceed +/- 0.6mm over 100mm;
- Thermal Movement: Linear thermal expansion of less than 7mm x 10.5 degree C. Tested in accordance with applicable Standard;
- Fire Resistance: Satisfy the requirements of the applicable Standards particularly Class 1 spread of flame;
- Colour Fastness: in accordance with the applicable Standard;
- Water Absorption: Less than 1% when tested in accordance with the applicable Standard
- Appearance: Self-coloured smooth gloss finish;
- Method of fixing: As specified by manufacturer
- Jointing/edge trims: matching colour, single or two part PVC-Ue trims as manufacturer's details and fixed in accordance with manufacturer's technical data sheet

127 PVC-Ue Fascia or Barge Board

As Clause 126 but minimum thickness 16mm

128 PVC-Ue Soffit Boards shall comprise:

- Profile: Flat solid board plain or shiplap profile sheet, depending upon application;
- Composition: Low density cellular (closed cell) core and homogeneous impact resistant skin of PVC-UE. Manufactured in accordance with the applicable Standards UV stability and UV aged impact resistance requirements;
- Dimensions: Width Variable, but not greater than 300mm;
- Thickness: Minimum 9mm;
- Weight: Average density 500kg/m^3, Tolerance deviation of +/-12.5% per m length;
- Tolerances Width: 151mm – 250mm +/- 1.5mm, 251mm – 350mm +/- 2.00mm;
- Tolerances Thickness: +/- 0.5mm;
- Tolerances Length: 5m - 10mm-00mm;
- Flatness; Must not exceed +/- 0.6mm over 100mm;
- Thermal Movement: Linear thermal expansion of less than 7mm x 10.5 degree C. Tested in accordance with applicable Standard;
- Fire Resistance: Satisfy the requirements of the applicable Standard particularly Class 1 spread of flame;
- Colour Fastness: in accordance with the applicable Standard;
- Water Absorption: Less than 1% when tested in accordance with the applicable Standard;
- Appearance: Self-coloured smooth gloss finish;
- Method of fixing: As specified by manufacturer
- Jointing trims: matching colour, single piece PVC-Ue trims as manufacturer's details and fixed in accordance with manufacturer's technical data sheet

129 PVC-Ue Pre-vented Soffit Boards shall comprise;

As Clause 128 but with flat solid board pre-vented depending on application;

130 A ten-year warranty on the performance and colourfastness of all PVC-UE fascia, barge, soffit board and wall cladding systems must be provided prior to installation.

131 Eaves Ventilators generally are to provide a continuous air gap of either 10mm or 25mm to the applicable Standard as required, to have BBA certification or equivalent, and to be proprietary preformed PVC-u, provided with fixing holes and with slots in ventilator being not more than 4mm to prevent entry of vermin. Eaves ventilators are to be fixed in accordance with the manufacturer's technical data sheet and are to be either:

- Proprietary behind facia ventilation system: with soffit attachment, fixed behind fascia; or

- Proprietary over fascia ventilation system: fixed to top of fascia board; or

- Proprietary over fascia ventilation system; with polypropylene felt support, and fixing to top of fascia and rafters; or

- Polypropylene twist and lock soffit ventilators, 70mm diameter, designed to exclude wind driven rain and large insects, openings not to exceed 4mm, to provide 10,000 mms/m, installed at 200mm centres, mechanically secured in accordance with manufacturer's technical data sheet;

- Polypropylene spring fitted ventilators (10-15 degree roof); soffit attachment size 285mm x 115mm, designed to exclude wind driven rain and large insects, openings not to exceed 4mm, to provide 25,000 mms/m, installed at 480mm centres to 10-15 degree roofs, mechanically secured in accordance with manufacturer's technical data sheet.

132 Proprietary rafter tray ventilation system: to have BBA certification or equivalent and to provide ventilation to the applicable Standard, with corrugated rigidised PVC-u spacer sheet inserted between rafters at eaves to maintain a continuous 25mm min air path parallel with the roof slope, to prevent insulation blocking the ventilation path to eaves ventilators, and to prevent condensation forming under the underlay. Fitted to project 100mm beyond wall plates. Insulation re-inserted over wall plates but not projecting beyond the end of the spacer sheet. Fitted 800mm along roof slope 25mm deep, cut as required to fit and tacked in place between the rafters at top with galvanised tacks/thick staples.

133 Proprietary rafter tray fly screened ventilation system: to have BBA certification or equivalent and to provide ventilation to the applicable Standard, with corrugated rigidised PVC-u spacer sheet inserted between rafters at eaves to maintain a continuous 25mm min air path parallel with the roof slope, to prevent insulation blocking the ventilation path to eaves ventilators, and to prevent condensation forming under the underlay. Fitted to project 100mm beyond wall plates. Insulation re-inserted over wall plates but not projecting beyond the end of the spacer sheet. Fitted 800mm along roof slope 25mm deep, cut as required to fit and tacked in place between the rafters at top with galvanised tacks/thick staples.

134 Proprietary rafter tray ventilation system for refurbishment, installed from underside of roof to avoid disruption of roof covering: to have BBA certification or equivalent and to provide ventilation to the applicable Standard, with corrugated rigidised PVC-u spacer sheet inserted between rafters at eaves to maintain a continuous 25mm min air path parallel with the roof slope, to prevent insulation blocking the ventilation path to eaves ventilators, and to prevent condensation forming under the underlay. Adjust to suit roof pitch, pull back existing insulation and push tray into eaves, ensuring not to project beyond the top of the rafters, Fix to wall plate as recommended by the manufacturer, relay insulation over the wall plate but not projecting beyond the end of the spacer sheet. Fitted 800mm along roof slope 25mm deep, cut as required to fit and tacked in place between the rafters at top with galvanised tacks/thick staples.

GRP Flat Roofing

135 GRP Flat roof specification will comprise the following activities: -

1. All existing stone chippings felt coverings etc. are to be cleared from the roof area. Substrate is to be stripped to expose the main roof joists.
2. Additional timber firring pieces are to be fitted to existing joists to give a fall to the new deck.
3. The roof is re-decked with 3/4" (20mm) exterior Grade Plywood securely anchored with 3" annular ring shank nails and /or 3" plated wood screws to the roof joists.
4. Purpose made, pre-moulded, edging trims, wall fillets, gully mouldings are to be supplied as necessary and installed in position.
5. Glass-fibre mat of 4oz / sg.m density is supplied and laid over the whole roof area. The glass-fibre mat is then impregnated with polyester resin onto the new deck to form a seamless GRP membrane.
6. Once curing time has elapsed, usually between 1- 4 hours depending on ambient temperature, a polyester resin gel coat in a chosen colour will be applied to the whole roof area.
7. Where a flat roof meets brick walls, a chase is to be cut into a chosen coarse approximately 1.5" deep. A glassfibre and resin flashing will be

tailor made to fit into the chase. The chase is then to be re-pointed with conventional sand / cement mortar.

8. Where a flat roof meets a tiled roof, as in the case of a dormer construction, the glass-fibre membrane is to be extended between 150 to 300mm up and under the tiled roof area

GRP Canopies

GRP PURPOSE MADE FRONT DOOR CANOPIES

136 GRP purpose made front door canopies are to meet the following criteria:

- Primary support structure: Existing concrete brick or block work.
- GRP components:
  - Construction: Designed to direct water away from the main structure/dwelling;
  - Finish: Standard smooth matt finish;
  - Colour: Dark Grey;
  - Nominal size: 1600mm long x 900mm wide x 200mm deep;
  - Fire rating:
    - Spread of flame (component external face): Class 0 (National class).
    - Spread of flame (component internal face): As external face.
- Fixings and fasteners: Fixings to be concealed and as tested and recommended by canopy manufacturer to withstand calculated wind and snow loads;
- Joints: Upper side to have standing seam effect finish at 600mm centres, underside to have timber tongue and groove effect finish; and
- Accessories/Other requirements: Drip bar to front soffit. Provide a sample canopy to the Client's Representative prior to installation.

137 Thermal Performance/Bridging Requirement: Complete thermal design to avoid excessive thermal bridging. Assessed to BRE Information Paper 1/06.

138 Weather Resistance Requirement: Weathertight, with full allowance made for deflections and other movements.

139 Colour Fastness/Appearance of GRP, Colour fastness of pigments: Not less than standard 6 when measured to the applicable Standard B01C:LFS6, The Provider is to submit evidence of compliance.

140 Colour Fastness/ Appearance Samples are to be provided as follows:

- Weathered samples: If available, submit naturally weathered samples, otherwise submit artificially weathered samples.
- Naturally weathered samples:
  - Pigments and resins: As proposed GRP.
  - Age: Not less than two years.
  - Action: Submit with new un-weathered control samples.
- Artificially weathered samples:
  - Pigments, resins and gel coat: As proposed GRP.
  - Test method: Accelerated weatherometer subjecting samples to moisture and ultraviolet light.
  - Duration: Not less than 1500 hours.
  - Action: Submit with new un-weathered control samples.

141 Canopy Design Samples are to be provided as follows:

- GRP samples: Before general manufacture obtain approval of appearance of fully tested compliant design samples.
  - Extent: Showing proposed colour, texture and incorporating a completed section of a joint.
  - Action: Obtain approval of appearance before proceeding. Retain as production control sample.

Manufacture of GRP Canopies

142 Quality of Work is to conform to:

- Manufacture: Compliant with design and performance requirements.
  - Materials: Appropriate and compatible.
  - Workmanship: Appropriate and in accordance with manufacturers' recommendations.
- Resins: Used as supplied and not adulterated.
- Standard of finish: Appropriate to end use and position in building.
  - Prohibited blemishes: Including, but not limited to, wrinkling, spotting, striations, fibre patterning, fisheyes, blisters, crazing, cracking, dry patches and uneven or inconsistent colour.

143 Manufacturing Accuracy to conform to:

- Finished dimensions of completed units when erected:
  - Ambient temperature: Measurements taken at 16-18°C.
  - Maximum permissible deviations as table below:

Overall dimension involved (m)	Up to 2 m	2-3 m
Width and height:	0-2 mm	0-3 mm
Straightness of edges: deviation from intended line, any variation to be evenly distributed with no sudden bends or irregularities.	3 mm	4 mm
Squareness: taking the longer of 2 sides at any corner as a base line, the deviation of shorter side from perpendicular; dimension involved is the shorter side.	3 mm	4 mm
Twist: deviation of any corner from the plane containing the other 3 corners; dimension involved is the shorter side.	3 mm	5 mm
Flatness - deviation under a 1 m straight edge placed anywhere on a flat panel surface:	3 mm	3 mm

144 Suitability of Structure:

- Contractor's survey:
  - Scope: Geometric survey of supporting structure, checking line, level and fixing points.
  - Give notice: If structure will not allow required accuracy or security of erection.
- Setting out: Establish erection datum points, lines and levels.

145 Installation of Interfaces

- General: Locate flashings, closers etc. correctly with neat overlaps to form weathertight junctions.

NFRC Competent Person Scheme for roofing

146 The Contractor or an approved subcontractor undertaking any aspect of the roofing works should be registered as a member of the NRFC Competent Person (CPS) to facilitate the self-certification of residential, industrial and commercial work that falls under the auspices of the Building Regulations 2010 Approved Document L1B (as amended 2010, 2011, 2013, 2016 and 2018).

147 The Contractor or the approved subcontractor must submit to the relevant local authority building control department, the relevant Building Regulations Compliance Certificate within 30 calendar days of the completion of any roofing Works that are covered by Approved Document L1B, these include but are not limited to:

- Slating and tiling and all other pitched works;
- Felt, single ply and GRP;
- Fully supported lead, copper, zinc and standing seam aluminium;
- Liquid applied waterproofing;
- Mastic asphalt;
- Reinforce bitumen membranes;
- Sheeting;
- Rooflights (inserted between rafters)

Employer's current manufacturers/suppliers/products

148 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

TECHNICAL SPECIFICATION

11-SCAFFOLDING AND MEANS OF ACCESS

SCAFFOLDING AND MEANS OF ACCESS

001 Provide scaffolding for the Works where required by Regulatory Requirements.

002 Moveable towers can be used where Regulatory Requirements allow this. This is also subject to the approval of the Employer's Contract Manager for scaffolding above the equivalent of the ridge line of a two storey Property.

003 Only light short-term Work may be done from ladders where this is in line with the Code of Practice for Ladders.

004 Working platforms required at heights of 2 metres and above must be carried by a properly constructed scaffold. Scaffold may be provided at lower levels.

005 Obtain:

- a licence from the highways authority where scaffold is to be constructed on or over the public highway; and
- permission from the adjoining landowner to occupy the space where scaffolding is erected over an adjoining property.

006 Where scaffold is to be constructed on or over the public highway the Conractor must:

- consult the highways authority as to whether lighting or any other form of warning is required;
- if so, provide this (with any electrical supply being of a maximum of 100 volts); and
- notify the police where, when and for how long, the scaffold is to be in place.

007 Before erecting any scaffold to which Clause 05 applies, the Conntrator must provide evidence to the Employer's Contract Manager that the permissions referred to in that Paragraph have been obtained and, where applicable, the notifications under Clause 06 have been given.

008 Ensure that any temporary roofs are properly designed and secured and must provide calculations and drawings to the Employer's Contract Manager (for checking and approval).

009 Before the erection of any scaffolding to three storeys and above, the Contractor must:

- submit an engineer's design of the scaffold to the Employer's Contract Manager for checking and approval;
- when erected, supply a certificate from a Member of the Institute of Structural Engineers indicating the scaffolding is in good condition and complies in all respects with all relevant Codes of Practice; and
- similarly certify any alteration to the scaffold.

010 Construct all scaffolds in accordance with:

- Work at Height Regulations 2005 (as amended);
- Applicable Standard; and
- either:
  - NASC Technical Guidance TG20 for tube and fitting scaffolds; or
  - the manufacturer's guidance for system scaffolds.

011 For all scaffolds:

- approved materials in good condition must be used;
- all components must be inspected prior to use;
- sole plates must carry a minimum of 2 standards and wherever possible be placed parallel to the face of the building;
- they must be rigid and constructed on a solid foundation;
- standards must be upright at all times;
- ledgers must be horizontal and fixed with load bearing coupler;
- gaps in working platforms must not exceed 25mm wide and where necessary the inside boards must be secured to achieve this. No gap is to exceed 6 square inches anywhere. Where third parties are at risk, no gaps are acceptable – nothing must be allowed to fall through or off the platform;
- sufficient positive ties to the main walls of buildings must be fitted;
- fans and/or working areas over entrances and exits must be fully double boarded with a continuous membrane between to stop any matter falling through;
- where hoists are erected in scaffold, extra ties must be used to prevent vibration of the scaffold; and
- toe boards and guard rails must be fitted to working or access platforms and to stairs where people working on them could fall 2 metres or more;
- Materials must not be thrown, tipped or allowed to fall off the scaffolds or working platforms;
- when partially erected or partly dismantled a notice saying “Do not use” must be displayed on the scaffold; and
- the scaffold must be made unclimbable at all times when not in use for undertaking the Works.

012 Scaffold requiring protection from lightning strike in accordance with the applicable Standards or equivalent, must be certified by a qualified electrical engineer, when first erected and with regular testing and a certificate being provided at not less than monthly intervals. Copies must be provided to the Employer’s Contract Manager.

013 Scaffold must be erected, dismantled and altered:

- by competent persons;
- where the scaffolding is over 5m high, under the supervision of a person trained and certificated under the Construction Industry Scaffolders Registration Scheme (or equivalent approved by the Employer’s Contract Manager);
- in accordance with either:
  - NASC Guidance Document SG4 for tube and fitting scaffolds; or
  - the manufacturer’s instructions for system scaffolds; and
- so that at all times windows are openable by the occupants from the inside.

014 Scaffolding must be inspected by the Contractor's 'competent person' at least every 7 (seven) days. The Contractor must correct any faults found immediately. A record of such inspections and the Contractor's report must be submitted to the Employer's Contract Manager within 1 (one) Working Day of each inspection.

015 Where the Employer's Contract Manager advises the Contractor of this, the Contractor must allow another contractor working directly for the Employer to use scaffolding erected by the Contractor, subject to that contractor agreeing to comply with any health and safety requirements in relation to the use of that scaffolding reasonably required by the Provider.

016 Scaffolding must be struck within 1 (one) week of the Employer having advised the Contractor that the Works have been satisfactorily completed, unless the Employer requires the scaffolding to be maintained for another contractor working directly for the Employer. In these circumstances:

- the scaffolding must be struck within 1 (one) week of the Employer having advised the Provider that the scaffolding is no longer required; and
- the Employer must pay the Provider for the use of the scaffolding by the Employer's other contractor at the rates payable for the use of scaffolding under the Price Framework (even where the payment for the scaffolding to be erected and maintained for the Works was included in the Rates).

017 Payment for scaffolding will be in accordance with the Schedule of Rates for Scaffolding and Means of Access.

018 The Rates for scaffolding are deemed to additionally include as appropriate for the following:

.1 Basing out, preparing and levelling of ground, provision of additional support, base plates, spreaders and the like as necessary.

.2 Protection of the structure fabric, finishings, roof coverings and the like.

.3 Provision of all requisite tubes and fittings of every description, delivery, handling and removal.

.4 Erecting, supporting, maintaining, adapting and dismantling as required.

.5 Bridging across structures and all other obstructions where necessary.

.6 Removal, temporary storage/resiting, protection and subsequent reinstatement as required of all TV, radio and telecommunication aerials, satellite dishes and the like.

.7 Fans, gantries, hoardings, sheeting and double boarding of working platforms to afford protection around/over entrances, paths, rights of way and other forms of access or thoroughfare unless specifically instructed by the Employer's Contract Manager.

.8 Working platforms to towers and chimney scaffolding.

.9 Toe boards, guard-rails, handrails, safe ladder access, ladders, warning signs, taping and the like.

.10 Ancillary plant and equipment such as tower feet/wheels, out-riggers, cross bracing, gin wheels, ropes and the like.

.11 Lighting and/or alarming where deemed necessary or appropriate and/or as specifically directed by the Employer's Contract Manager.

.12 Protection against lighting strike.

.13 Fixed handholds and physical ties to the structure where necessary, subsequent removal and making good.

.14 Provision of certified structural design calculations and erection certificates to the Employer's Contract Manager where required under the Contract.

.15 Reinstatement of ground and making good any damaged surfacing and/or paving's if necessary.

.16 Compliance with all Regulatory Requirements including provision of all associated licences, permits and the like and the payment of all related fees and charges.

.17 Additional lifts of scaffolding, working platforms, handrails, ladders, other access provisions and the like necessitated by structure/roof design, for example changes in roof pitches at mansards and anything similar.

TECHNICAL SPECIFICATION

12-CARPENTRY AND JOINERY

CARPENTRY AND JOINERY

GENERAL

Generally

001 Where necessary cut out for butts/hinges when replacing door or window frames/linings or piecing in new timber.

002 Note that all sawn timber sizes quoted in the Schedule of Rates are nominal sizes.

003 Stain or prime and undercoat all prepared timber all round before fixing, as described in the “Painting and Decorating” Section.

004 Comply with the “Painting and Decorating" Section where Works include items being painted, decorated, stained, touched up or prepared for decoration. Match the finish and type to the existing or surrounding finish as appropriate.

005 Where painted skirtings and architraves are specified, at the Provider’s option use an MDF equivalent where this is approved by the Employer’s Contract Manager.

006 Match any purpose made items (when specified) to the existing items as far as possible.

MATERIALS

Timber

007 Use only suitable, sound, well-conditioned, properly seasoned preservative treated whitewood from a source approved by the Employer's Contract Manager that is free from any defects making it unsuitable for its intended purpose. All timber to be FSC or PEFC certified or from equivalent independently verifiable sustainable sources.

008 Level and pack all structural timber. Structural timber shall comply with applicable Standard. The dimensions of a timber floor, ceiling or roof member may be determined by the guidance given in applicable Standard span tables for solid timber members in floors, ceilings and roofs for dwellings published by TRADA. Timber for floors and roofs shall comply with applicable Standards. Strength classes, species, grades and species combinations referred to be as defined in the applicable Standards.

009 Cross sectional dimensions are to be either basic sawn or regularised sizes as defined in applicable Standard. Trussed rafter roofs are to be braced to applicable Standard. Structural timber shall be C16 or C24 grade timber to comply with loadings and spans as set out in the current Approved Document A of the Building Regulations~~,~~ 2010 (amended 2013). The section sizes shall be in accordance with tolerance class 1 of the applicable Standard, or are CLS/ALS processed sizes in accordance with tolerance class 2 of the applicable Standard.

Graded Softwood for Structural Use:

- Stress graded to applicable Standard or other national equivalent and so marked.
- Strength class to applicable Standard.

010 Trussed Rafters generally are to be designed and fabricated to applicable Standard, truss members shall be 44mm (minimum) finished thickness, ceiling ties and top chord members shall have 97mm finished depth, all trussed rafters shall be nail plate connected.

011 Softwood for use with leadwork shall be planed, free from wanes, pitch pockets, decay and insect attack except pinhole borers, with a moisture content of not more than 22% at time of covering.

012 Cross section dimensions of timber shown on drawings are nominal sizes unless stated otherwise. reduction to finished sizes of planed/regularized timber to be to applicable Standard.

013 Moisture content of timber at time of erection to be:

- Structural timber 20% + or - 2%, kiln dried.
- Fascias barge boards and the like 18% + or - 2%.

014 Keep timber dry and do not overstress, distort or disfigure sections or components during transit, storage, lifting, erection or fixing. Store timber and components under cover, clear of the ground and with good ventilation. Support on regularly spaced, level bearers on a dry, firm base. Open pile to ensure free movement of air through the stack. Arrange sequence of construction and cover timber as necessary during and after erection to ensure that specified moisture content is not exceeded. Keep trussed rafters vertical during handling and storage

Preservative treatment of timber

015 Treat softwood described as "treated" or "impregnated" before delivery to the Property with either:

- an appropriate preservative under vacuum-pressure with an average net retention of at least 4kg of dry salts per cubic metre; or
- an organic solvent type preservative giving an overall retention of 16Kg of solution per cubic metre of timber.
- Generally - Structural Timber, Fencing and the like:
- Where subsequent cross-cutting or boring of the treated timber cannot be avoided all exposed surfaces shall be liberally swabbed with a proprietary end grain timber preservative to maintain the integrity of the protective system.
- All treated timber shall show only negligible dimensional change or distortion, otherwise it will be rejected.
- The end use of timber must be quoted by the Contractor to the treatment company.
- A certificate of treatment to cover all timbers processed shall be supplied by the treatment company to the Provider.
- A certificate of treatment shall be supplied by the Contractor for each batch of timber treated.

Fixings

016 Framing anchors are to be galvanised steel, fixed securely using not less than the number of nails recommended by the anchor manufacturer. Nails to be not less than 30mm x 3.75 mm galvanized or sherardized square twist unless recommended otherwise.

017 Truss clips are to be galvanised steel, fixed securely with 32mm x 3.5mm galvanised square twisted nails in every hole.

018 Anchor straps are to be galvanised steel, fixed securely to timber with three 30mm x 3.75mm galvanized nails and to masonry with four 50 mm x 8 gauge galvanised screws evenly spaced.

019 Lateral restraint straps are to be galvanised steel, ensure that cranked end is in tight contact with cavity face of wall inner leaf and is not pointing upwards. Fix noggings and packs beneath straps which span joists/rafters/ties running parallel to wall, noggins and packs to fit tightly and be not less than three quarters of joist/rafter/tie depth. Notch joists so that straps fit flush with surface. Do not notch rafters/ties. Fix straps to joists/rafters/ties with seven 50 mm x 1½ mm gauge galvanised countersunk screws, evenly spread.

020 Bolts and nuts shall be cup square with large washers and nuts, and comply with applicable Standard - Washers shall comply with applicable Standard.

021 Expanding bolts shall be Grade A4 stainless steel and shall be of a type to suit the purpose for which they are required, fixed security in position in accordance with manufacturers technical data sheet.

022 Canopy cleats are to be galvanised steel, fixed securely to timber with 50mm x 1½ mm galvanised screws.

023 Retaining strap to be galvanised steel, with site applied bituminous paint coating, and bedded securely in mortar.

024 Expanded metal fixing strip to be galvanised expanded metal lathing to applicable Standard zinc coated and fixed securely by building into position.

025 Fastenings for materials and components forming part of external construction to be of corrosion resistant material or have a corrosion resistant finish.

026 Fastenings for materials and components, forming part of external construction but not directly exposed to the weather to be of corrosion resistant material or have a corrosion resistant finish, directly exposed to the weather to be of corrosion resistant material.

027 Cartridge operated fixings are not to be used without the permission of the Employer's Contract Manager. Tools to be manufactured to applicable Standard and Kitemark certified. Fasteners, accessories and consumables to be types recommended by the tool manufacturer. Operatives to be trained and certified as competent by tool manufacturer. Ensure that operatives take full precautions against injury to themselves and others. Shot fixing is to give secure fixing at 750mm centres.

Nails, etc

028 Use sheradised nails for fixing joinery having an external exposed face in accordance with applicable Standard, punched in below the surface and filled with an approved filler.

Joinery Timber

029 Softwood planed finish joinery timber which will be exposed to view shall be European Redwood minimum density 510kg/m3, class J10 of applicable Standard.

030 The following defects shall not be permitted: pinholes shown on the surfaces; sloping grain exceeding one in eight; checks, splits and shakes in excess of those permitted by class J10 of applicable Standard; knots, excepting isolated sound tight knots of less than 20mm diameter or no wider than half the width of the section; any evidence of beetle attack or decay. Softwood not exposed to view will be accepted with minor defects with the exception of active beetle attack or decay.

031 Where hardwood is specified, use hardwood of one of the following species of the applicable Standard suitable for the purpose, un-replenish able tropical hardwoods are not to be used

Oak	North American	Density range 590-930 kg/m^3
Beech		Density range 700-900 kg/m^3
Ash	North American	Density range 650-850 kg/m^3
Maple	North American	Density range 600-750 kg/m^3
Cherry	North American	Density range 700-900 kg/m^3
Utile		Density range 650-725 kg/m^3
Mahogany	South American	Density range 500-650 kg/m^3
Mahogany	West African	Density range 500-650 kg/m^3
Dark Red Luan	Philippine	Density range 650-725 kg/m^3
Iroko		Density range 650-725 kg/m^3
Dark Red Meranti		Density range 650-725 kg/m^3

032 Tongued and grooved floorboarding is to comply with applicable Standard

033 Ensure the moisture content based products at time of installation: to be no more than:

- internal joinery is no more than 20% (8-12% when timber is in an existing Property which is centrally heated); and
- external joinery is no more than 18%.+ or-2%
- structural timber 20% + or -2%, kiln dried

Plywood, blockboard, particleboard, hardboard etc.,

034 Plywood panel products for structural use shall conform to applicable Standard for designs to applicable Standard plywood may be selected from those listed in applicable Standard or shall have certification from a suitable body such as the Agrément board.

035 Marine plywood shall comply with applicable Standard, marine plywood manufactured from selected untreated tropical hardwoods, durability class H, surface grade 11, and with sanded surface finish.

036 Plywood designed to applicable Standard shall be subject to the quality control procedures of one of the organisations listed in that standard, or to the controls listed by the certification body.

037 The specification for plywood shall state the following information where appropriate:

- type
- Standard
- grade
- Species
- nominal thickness
- number of plies
- finish (sanded/unsanded)

038 Plywood exposed to the weather shall have no open defects (e.g. checks, knots, holes, splits) on the exposed face(s) unless it is used only for a temporary application such as hoarding.

039 Prior to receiving a painted finish, plywood shall be adequately sanded.

040 All cut edges that may be subject to weather exposure shall be sealed with a suitable sealant or applied finish; typically these shall be one of the following:

- Special sealing compounds, such as pitch epoxy
- non-setting mastic, where the plywood is set in frames.
- timber beading bonded with suitable adhesives.

041 In construction the following procedures shall be observed:

- lower edges of boards shall be bevelled to promote shedding of water.
- plywood used as infill panels shall be fully painted before installation and/or assembly.
- cavities behind boards shall be adequately ventilated and drained to allow dispersal of moisture.
- clearance shall be allowed at selected joints to allow free drainage of water.
- plywood junctions with masonry shall provide adequate clearance to allow drainage, prevent capillary absorption of water and provide enough space for maintenance of edge sealing.
- the bottom edges of boards shall stand well clear of flashings, roof coverings, sills, and the ground.
- exposed and/or inadequately protected fixings shall be of non-ferrous metals and have adequate corrosion resistance.

042 WBP sanded and unsanded finished plywood is to be in accordance with applicable Standard, appearance classification E or I.

043 Oriented strand boards shall be in accordance with applicable Standard and supplied in accordance to use:

OSB/1 general purpose no loading boards and boards for interior fitments for use in dry conditions;

OSB/2 load-bearing boards for use in dry conditions;

OSB/3 load-bearing for use in humid conditions;

OSB/4 heavy duty load-bearing boards for use in humid conditions;

044 Particleboards shall be in accordance with applicable Standard Type 5, for chipboard flooring, use the appropriate waterproof moisture resistant grade suitable for the purpose.

045 Hardboard shall be to applicable Standard. Ensure hardboard used to form bath panels has an enamelled surface and Type TE Tempered.

046 Ensure all block-board complies with the applicable Standard and to be to a standard and quality approved by the Employer’s Contract Manager, lamin-board used is five-ply and veneer is of the specified species of timber (but where none is specified, it is an appropriate species of timber).

Priming

047 Prime timber in accordance with the finish coat specification. Use a primer recommended by the manufacturer of the surface coating.

Preservative treatment of timber

048 Treat softwood described as "treated" or "impregnated" before delivery to the Property with either:

- an appropriate preservative under vacuum-pressure with an average net retention of at least 4kg of dry salts per cubic metre; or
- an organic solvent type preservative giving an overall retention of 16Kg of solution per cubic metre of timber.

049 Generally - Structural Timber, Fencing and the like, shall be treated in accordance with Clause 015.

- Where subsequent cross-cutting or boring of the treated timber cannot be avoided all exposed surfaces shall be liberally swabbed with a proprietary and grain timber preservative to maintain the integrity of the protective system. All treated timber shall show only negligible dimensional change or distortion, otherwise it will be rejected. The end use of timber must be quoted by the Provider to the treatment company.
- A certificate of treatment to cover all timbers processed shall be supplied by the treatment company to the Provider. A certificate of treatment shall be supplied by the Provider for each batch of timber treated.

050 Generally - Joinery Components, Fascias and the like, shall be treated by spirit based double vacuum process and shall be machined to it's final dimensions before treatment and then assembled. All treated timber shall show only negligible dimensional change or distortion, otherwise it will be rejected.

051 Treat ground contact timber before delivery to the Property with an appropriate preservative under vacuum pressure with an average net retention of at least 5.4Kg dry salts per cubic metre of timber.

052 Cut timbers to their final dimensions before impregnation. Where this is not possible, liberally swab any sawn or cut faces or borings with an appropriate preservative from the impregnation plants.

053 After treatment, carefully open-stack the timber in a well ventilated covered space to enable surplus solvent in the preservative to dry out by evaporation. Ensure all treated timber is dry before incorporation in the Works.

054 Allow items of carpentry timber treated with an appropriate preservative a minimum of 3 weeks air drying period following treatment and before fixing. Allow joinery timbers similarly treated a minimum of 6 weeks air drying following treatment and before fixing.

055 Provide a copy of the relevant Preservation Treatment Certificate to the Employer's Contract Manager.

Adhesives

056 Ensure adhesives for:

- exterior use are synthetic resin type WBP; and
- interior use are synthetic resin type of moisture resistant durability ("MR").

Timber fillers for rotted woods

057 Ensure timber fillers for rotted softwoods and hardwoods are a complete system appropriate for the type of wood.

Storage of material

058 Protect joinery from the weather during transit. At all times before fixing, both before and after priming, store it under cover and clear of the ground.

Door frames and linings

059 Ensure external door frames without cills have 12.5mm diameter x 100mm long galvanised steel dowels housed into the bottom of each leg leaving 50mm projecting. Ensure the frames for fire resisting doors are of a type approved by the Client's Representative. Ensure frames for half hour doors have 25mm minimum stops.

Doors generally

060 Note that fire door ratings in the Schedule of Rates are shown in hours. Ensure the integrity of the door (including all hinges, ironmongery etc) achieves this when fitted to a frame with or without intumescent strips. Where it is necessary to use hinge packers or pads on fire rated doors, frames or door sets ensure that only intumescent types are used.

061 Ensure all external doors (other than flush doors) are from solid timbers. Do not use veneers or laminations.

Ledged and braced doors

062 Ensure ledged and braced doors consist of 3 No. 150mm x 25mm horizontal ledges with bevelled edges, 125 x 25mm, parallel braces and 100 x 19mm tongued and grooved and V-jointed matching with:

- the braces being obliquely jointed to the ledges with their lower ends adjacent to the hanging side of the door;
- each board being nailed to the ledges and braces using at least 2 No. nails 50mm long at each ledge and one at each brace;
- the ends of ledges being screwed back to the match boarding from inside and stopped in;
- all timber being primed before the door is assembled; and
- the end grain being primed with two coats of aluminium primer.

Framed, ledged and braced doors

063 Ensure framed, ledged and braced doors consist of 100 x 50mm stiles and top rail, 175 x 38mm middle and bottom rails, 100 x 38mm braces and 100 x 12mm tongued and grooved V-matching with:

- the top rail being haunched, morticed and tenoned to the stiles;
- the middle and bottom rails being bare faced, morticed and tenoned to the stiles;
- the top rails grooved to receive the tongues of the tongued and grooved V-jointed matching;
- the braces being stub tenoned into the rails and stiles;
- the tongued and grooved V-jointed matching being secured to the rails and braces by lost head nails hammered in from the faces;
- all joints being jointed with WBP glue to standard and quality approved by the Employer's Contract Manager;
- all boarding and timber faces covered being primed before assembly

including all rails, grooves and matching;
- the end grain being primed with aluminium primer;
- the frame being securely cramped;
- all mortice and tenon joints being secured with hardwood wedges well driven home; and
- the whole being assembled perfectly square and free from winding.

Flush doors

064 Ensure 35 or 40mm thick internal flush doors consist of a skeleton or honeycomb core, lipped on two stiles with hardwood strips – each lipping should be a minimum of 6mm and to be full thickness of the door.

065 Hardwood faced doors are to have selected hardwood veneered, MDF or High density chipboard of 3.2mm thickness, Veneer type: Koto, Beech, African Mahogany, Maple, Cheery, Oak or Sapele lippings to match or compliment face veneer, pre-finished factory applied clear lacquer to both faces.

066 Ensure 44mm thick external flush doors are faced on both sides with 6mm external quality resin bonded plywood, for painting or staining to applicable Standard on a solid core. Provide glazing apertures with a rebated, sunk and rounded Utile cover mould and Utile hardwood glazing beads with mitred angles. Ensure the glazing cover piece and beads are no less than that required by the relevant applicable Standard or equivalent for glazed apertures.

067 Opening for glass to be 400mm x 600mm high.

Half-glazed flush doors

068 Ensure the opening for glass in doors described as half-glazed:

- extends the full width between stiles; and
- is at least 680mm high.

069 Ensure:

- glazing apertures are provided with a rebated, sunk and rounded Utile cover mould and Utile hardwood glazing beads with angles mitred; and
- the glazing cover piece and beads are no less than that required by the relevant applicable Standard or equivalent for glazed apertures.

Panel doors

070 Ensure panel doors:

- are jointed with mortice and tenon joints and WBP glue;
- have ply panels that are a minimum of 6mm thick external quality WBP plywood for painting or staining; and
- have the joint between the ply, stiles and rails sealed at the time of assembly with primer.

Fire check flush doors

071 Ensure fire check flush doors are to the fire rating specified in the Schedule of Rates and this Specification.

Windows

072 Provide timber windows with guarantees as table below. Provide timber surrounds for steel windows as approved by the Employer's Contract Manager.

Timber Frames	30 year guarantee against fungal attack
Timber Window Manufacturing Defects	10 Year guarantee
Timber Window (Factory Painted External Joinery)	10 Year guarantee (as minimum)
Timber Window (Factory Stained External Joinery	6 Year guarantee (as minimum)
Hardware Components	10 Year guarantee (as minimum)
Double Glazed Units	15 Year guarantee (as minimum)

PVC-u doors and windows

073 Ensure all PVC-u windows and doors are:

- constructed from high impact modified PVC-u; and
- manufactured from base materials guaranteed against decomposition and for colour fastness for a minimum of 25 (twenty five) years.

074 Guarantee the fabrication of all PVC-u frames and sashes against failure of welds, mechanical joints etc., for a minimum of 25 (twenty five) years.

075 Guarantee double glazed units against failure of the unit for a minimum of 15 (fifteen) years.

076 Guarantee hardware components against failure of the unit for a minimum of 10 (ten) years.

077 Protect PVC-u items against damage during the course of fixing.

078 Ensure windows provided can be opened to allow a secure trickle ventilation.

079 Ensure the accurate measurement of the Works and correct any measurement errors. (Tolerances – the overall height and width of an assembled frame shall not differ from the work size by more than +/- 3mm when measured at (20 +/- 5) ˚C, with a maximum difference of 3mm at any point. For assemblies with outer frames having three or more joints per frame member, the deviation shall not be more than 4mm when similarly measured. Frame assemblies shall be such that they can be installed in a square opening with a maximum difference in the diagonal of 4mm).

080 Ensure all window frames show a 50mm-60mm face on the outside of the frame.

081 Construct doors from a profile with a minimum of 100mm width showing face.

082 Ensure doors:

1. are double panelled type 2XG or 2XGG;
2. have the top panel double glazed in toughened glass;
3. have a bottom panel similarly double glazed or PVC-u skinned/foam sandwich with PVC-u frame; and
4. have the panels screwed and wedged.

083 Use door and window furniture suitable for the doors and windows approved by the Client's Representative that meets the following requirements:

5. door locks and furniture comprise:
6. 1½ pairs of heavy duty hinges;
7. cylinder lock;
8. letter plate - white plastic gravity type (front doors only);
9. 1 No. heavy duty multi-point lift lever espagnolette locking system with return lever handle action to horizontal position when locked;
10. lever handles;
11. numerals (front doors only);
12. stormproof cill/threshold with integral weather seals; and
13. rain deflector/weatherboard;
14. turn tilt windows have:
15. a key operated 'tilt barrier' approved by the Client's Representative;
16. child locks, where the windows are fitted on or above the first floor level; and
17. a switch barrier; and
18. casement windows (outward opening) have:
19. friction hinges with espagnolette fittings and locking furniture on all opening windows irrespective of configuration; and
20. child locks, where the windows are on or above the first floor level.

084 Ensure door and window furniture is SAA or brass finished as approved by the Client's Representative or as specified on the Order.

085 Use only PVC-u windows/doors approved by the Client's Representative unless specified on the Order.

Sealant

086 For pointing around window and door frames use sealants:

1) to applicable Standard with fungicide;
2) coloured to match existing; and
3) that are suitable for sealing to timber, aluminium and PVC-u windows and doors, as applicable.

087 Silicone sealant to applicable Standard with fungicide.

088 Repointing existing door and window frames with silicone sealant is to be undertaken by cutting away the existing mastic pointing with a sharp knife, cutting away any existing sand/cement pointing, ensuring that the surfaces to be jointed are completely dry and clean, the depth of sealant is to fill all resulting voids.

Combustion air grilles

089 When repairing or renewing items which incorporate combustion air grilles:

- use either the salvaged air grille (if it is in sound condition) or combustion air grilles as approved by the Employer's Contract Manager; and
- ensure apertures are maintained in the repair or renewed items.

Fibre cement insulating board

090 Use insulating board that is asbestos free and has a sanded finish.

Boards and panels

091 Do not use cross joints in board coverings.

PVC-u fascias/soffits/cladding and components

092 Ensure PVC-u fascias, soffits, cladding and components are:

- cellular PVC-u with a low density (closed cell) core and homogeneous skin;
- with self coloured, smooth, semi-matt finish;
- of sections and profiles approved by the Employer's Contract Manager.

Architraves, reveal linings, window boards and mouldings

093 Ensure replacement items match the existing (which may be of varying profiles and shapes). Where painted softwood skirtings and architraves are specified, at the Provider's option use an approved MDF equivalent where approved by the Employer's Contract Manager.

094 PVC-u cill board is to be bull nosed or square edged, manufactured from low density cellular (closed cell) core and homogeneous impact resistant skin of PVC-u in accordance with to applicable Standard UV stability and UV aged impact, resistance requirements.

095 Cill board to be maximum 155mm wide and minimum 9mm thick.

- Weight: Average density 500 kg/m3.
- Tolerance deviations of: +/-12.5% per m, width +/- 1.5mm, thickness +/- 0.5mm.
- Flatness: Must not exceed +/- 0.6mm over 100mm. Linear thermal expansion of less than 7mm x 10.5 dgs. C.
- Tested in accordance with applicable Standard Method 13. Fire Resistance:
- Satisfy the requirements of applicable Standard Class 1 Surface spread of flame and Index 1 = 15.4 Fire propagation. Colour Fastness: In accordance with to applicable Standard.
- Water Absorption: Less than 1.0% when tested in accordance with applicable Standard.
- Appearance: Self-coloured smooth gloss finish.
- Method of Fixing: As specified by manufacturer.
- Generally proprietary brand of adhesive or low modulus silicon.
- Edge Trims: Matching colour.
- Edge Trims: Single part PVC-u trims as per manufacturers details and fixed in accordance with manufacturers' technical data sheet.

Polythene vapour barrier

096 For a polythene vapour barrier use a type of sheet approved by the Employer's Contract Manager and fixed with all joints lapped and made with double folds and taped.

Ironmongery

097 Carefully wrap and protect ironmongery until completion of the Works. Either replace with new or re-lacquer any defaced or damaged ironmongery as Instructed by the Employer's Contract Manager.

098 Use screws conforming to the applicable Standard, and of a suitable gauge and Material for the purpose and to match the article to be fixed.

099 Lubricate locks, etc., with graphite and leave them in perfect working order on completion of the Works. Properly label and deliver up all keys to or as Instructed by the Employer's Contract Manager.

100 Use black japanned tee hinges and Suffolk latches.

101 Ensure that letter plates comply with the Royal Mail's minimum size standards in accordance with to applicable Standard. Ensure letter plates provided in fire doors conform to the fire rating of the door.

102 Unless the Order states otherwise provide all ironmongery to new, renewed or replacement timber doors in accordance with the following:

for external front doors:

- 1½ pairs 100mm heavy duty satin stainless steel butt hinges to applicable Standard (to be fire rated if for fire doors);
- 1 No. cylinder security night latch with latch pull, with deadlocking arrangements;
- 1 No. 65 or 75mm 5-lever mortice deadlock and keep;
- 1 set escutcheons;
- or multipoint locking system
- 1 No. letter plate - gravity type to applicable Standard; (fire rated for fire doors)
- 1 No. security door chain;
- stormproof sill/threshold with integral weather seals;
- rain deflector/weatherboard;
- intumescent seals (fire doors only); and
- door numerals;

for external rear doors:

- 1½ pairs 100mm heavy duty satin stainless steel butt hinges to applicable Standard; (to be fire rated if for fire doors);
- 1 No. 100mm 5-lever mortice lock/latch and keep;
- 1 set lever furniture/handles;
- or multipoint locking system;
- 2 No. mortice security bolts;
- stormproof sill/threshold with integral weather seals;
- rain deflector/weatherboard; and
- Intumescent seals (fire doors only);

for internal doors:

- 1 pair 75mm medium duty mild steel with fixed pin (non removable) butt hinges (1½ pair fire rated heavy duty satin stainless steel hinges to applicable Standard for fire-check doors);
- 1 No. 65 or 75mm tubular mortice latch and keep;
- 1 set lever furniture/handles; and
- intumescent seals (fire doors only);

for bathroom/wc doors:

- 1 pair 75mm medium duty mild steel with fixed pin (non removable) butt hinges (1½ pair fire rated heavy duty satin stainless steel hinges to applicable Standard to communal W.C's and bathrooms opening onto a means of escape);
- 1 No. 65 or 75mm mortice bathroom lock/latch and keep with reversible solid brass latch bolt to applicable Standard;
- 1 set lever bathroom furniture/handles with snib/indicator, deadbolt operated by turn button with emergency release;
- intumescent seals (fire doors only); and

for external match-boarded doors:

- 1 pair 457mm steel tee hinges;
- 1 No. rim lock and keep; and
- 1 set knob furniture.

103 Ensure that all door hinges, ironmongery and other hardware has a minimum fire rating to match the door, frame or door set on which it is used.

104 Ensure all door furniture is SAA or brass finished as approved by the Employer's Contract Manager or as specified on the Order.

Kitchen units/worktops in Repairs

105 Ensure kitchen units are manufactured to meet strength specification level 'H' and have fully repairable carcassing.

106 Ensure worktops are manufactured using laminated moisture resistant chipboard core and are consistent with existing worktops. Ensure all post-formed worktops are constructed using particleboard with minimum ‘P5’ classification (but if ‘P5’ is not obtainable construct only square edge and double post-formed worktops using particleboard with minimum ‘P3’ classification).

107 Ensure metal fittings and screws conforming to the applicable Standard, used in manufacture are plated against corrosion. Use metal corner gussets as fixing posts.

108 Take all necessary precautions to protect units and worktops from damage. Either make good any damage caused or replace Materials as Instructed by the Employer’s Contract Manager. Ensure that, when fitted, all doors and drawers operate smoothly.

109 Where existing fixing holes cannot be used for hinges, use a steel cabinet strengthening plate, fixed four times to the unit and hinges fixed with self- tapping screws to the plate.

Chrome supporting leg

110 Ensure the worktop supporting leg is 30mm in diameter chrome plated and fixed to the worktop and floor with retaining plates and screws.

111 Aluminium square edge worktop end trim to applicable Standard, fixing with aluminium screws; bedding in silicone sealant.

112 Aluminium insert junctions to applicable Standard, bedding in silicone sealant.

113 Aluminium and rubber clip on cover beads to standard and quality approved by the Client’s Representative, fixing with aluminium screws.

114 Chrome cover fillets of an approved type and manufacture, bedding and twice pointing in silicone sealant.

Handrails etc.,

115 Handrail brackets are to be cast aluminium or mild steel and fixed securely to timber with appropriate screws, finish: as specified.

116 Fixing brackets are to be galvanised steel to comply with applicable Standard, fixed securely to timber frame with three 30mm x 1½ mm galvanised screws.

117 Newel brackets are to be galvanised steel, fixed securely with bolts

118 Aluminium angle bearers are to comply with applicable Standard, 6063tf standard, anodised finish to applicable Standard, fixed securely to floor with galvanised steel screws.

WORKMANSHIP

Generally

119 Ensure carpentry work is framed and put together in a substantial and workmanlike manner.

120 Ensure joinery work is accurately set out, framed and executed in accordance with manufacturer's drawings and finished off in a workmanlike manner.

121 Put together purpose made doors and other framed work immediately upon the general work being commenced, but do not glue and wedge them until the joinery is prepared in readiness for immediate fixing.

122 Finish off machine planning and moulding smooth by hand.

123 Ensure exposed faces of joinery are wrought and all arises slightly rounded.

124 Punch and putty nails and pins in exposed work.

Plugging

125 Note that in this Section 'plug', 'plugged' or 'plugging':

- means fix to concrete, brickwork or blockwork and similar surfaces;
- includes supplying and fixing with proprietary fixings; and
- includes shot fired fixing.

126 For bolted joints, locate holes accurately and drill to diameters as close as practical to the nominal bolt diameter and not more than 2 mm larger, place washers under all bolt heads and nuts which bear directly on timber, - tighten bolts so that washers just bite the surface of the timber and at least one complete thread protrudes from the nut. Check at agreed regular intervals up to practical completion and tighten as necessary to prevent slackening of joints.

127 Ensure that wall plates are positioned and aligned to give the correct span and level for trusses, joists, etc. Wall plate to be fully bedded in fresh mortar in lengths of not less than 3 m with half lap joints. Wall plates shall be treated in accordance with Clause 015.

128 Installing joists generally, position at equal centres not exceeding designed spacing and true to level. Install bowed joists with positive camber. Bed hangers directly on and hard against supporting construction, do not use packs or bed on mortar. Cut joists to leave not more than 6 mm gap between ends of joists and back of hanger, rebate joists to lie flush with underside of hangers, fix joists to galvanised steel hangers with a nail in every hole, hanger size to suit joist, design load and crushing strength of supporting construction.

129 Trimming openings when not specified otherwise, trimmers and trimming joists to be not less than 25 mm wider than general joists.

130 When installing trussed rafters, carefully inspect each truss before erection to ensure compliance with shop drawings and specification, including grades and sizes of members, types, sizes and positions of nail plates, - gaps between ends of members at joints, and full penetration of nails.

- Erect trusses plumb, at equal centres not exceeding designed spacing and in accordance with applicable Standard

131 Do not use damaged trusses and do not modify without consent of the Employer's Contract Manager. Fix securely with truss clips ensuring that rafters do not bear on wall plates. Do not fix ceiling chords to internal walls until roofing is complete and cisterns installed and filled.

132 Permanent bracing of trussed rafters is to be set out as shown on drawings. Fix bracing and binders to every rafter, strut or tie with not less than two 75mm x 3.35 mm galvanized round wire nails. Any lap joints must be side by side extending over and nailed to at least two truss members. Where a binder crosses a brace, interrupt and plate the binder.

Repairs to Redwood Sills of Timber Windows

133 Cut out decayed timber and carry out repair using 'Dry Flex System' or other equal and approved. All in accordance with 'Window Care Systems' recommendations, approved method of working using correct tools. Maximum dimension of each resin repair as opposed to timber splice to be agreed with the Client's Representative prior to works commencing.

Repairs to Hardwood Sills of Timber Windows:

134 Cut out decayed timber and carry out repair using 'a proprietary timber repair system approved by the Employer's Contract Manager. All in accordance with 'Window Care Systems' recommendations, approved method of working using correct tools. Maximum dimension of each resin repair as opposed to timber splice to be agreed with the Employer's Contract Manager prior to works commencing.

Repairs to Timber Internal Door Frames:

135 Cut out decayed timber along the grain for a distance of 300mm (min) beyond the last visible sign of attack. The joint of new and existing timber shall be formed by means of 45° - 60° splice. New timber to be jointed to existing by means of galvanised screws or nails and adhesive and plugged and screwed to wall. New timber members shall match profile of existing. ''Dry Flex System'' or other equal and approved may be used as a viable alternative to new timber section. Maximum dimension of each resin repair as opposed to timber splice to be agreed with the Employer's Contract Manager prior to works commencing. Dispose of defective timber immediately.

Repairs to Hardwood Sills of Timber Windows:

137 Cut out decayed timber along the grain for a distance of 300mm (min) beyond the last visible sign of attack. The joint of new and existing timber shall be formed by means of 45° - 60° splice. The new timber shall be hardwood to applicable Standard, Class 1 and all cut ends shall be dipped in similar preservative fluid before fixing in position. New timber to be jointed to existing by means of galvanised screws or nails and plugged and screwed to wall. New timber members shall match profile of existing. ‘’Dry Flex System’’ or other equal and approved may be used as a viable alternative to new timber section. Maximum dimension of each resin repair as opposed to timber splice to be agreed with the Employer’s Contract Manager prior to works commencing. Dispose of defective timber immediately.

Replacing Structural Members:

138 Cut out decayed/infested timber along the grain for a distance of one metre beyond the last sign of attack. The joint of new and existing timber shall be formed by means of a half lapped joint at least twice the length of the member in depth; the new timbers should make-up the bottom section of the joint if timbers are horizontally placed. For the new timber, use a preservative treated whitewood from a source approved by the Employer’s Contract Manager. Existing timbers ends exposed by cutting/jointing must be treated with preservative. New timber shall be jointed to existing by means of bolts. Connection to be affected with at least 4 number 12.5mm diameter mild steel bolts with locking nuts and dog washers. New timber members shall match profile of existing. Dispose of defective timber immediately.

Replacing Preservative Treated Structural Members:

139 Cut out decayed/infested timber along the grain for a distance of one metre beyond the last sign of attack. The joint of new and existing timber shall be formed by means of a lapped joint at least twice the depth of the member in length. New timber shall be jointed to existing by means of galvanised bolts. Connection to be effected with at least 4 number 12.5mm diameter mild steel bolts with locking nuts and dog washers. New timber members shall match profile of existing. Dispose of defective timber immediately.

Replacing Treads and Risers:

140 Remove any plasterboard and trimmings as necessary to underside of staircase. Defective treads and risers to staircase are to be removed. Replacement whitewood treads and plywood risers to profile of previous to be housed into string. Wedges and blocks to be adhesive fixed in position. Internal Grade 1-1 plywood risers to be adhesive fixed and screwed to back of treads. All work to be executed from underside. Dispose of defective timber immediately.

Softwood flooring/board flooring

141 Renew floorboards carefully so as to avoid damaging the ceiling below the floor. Remove tongued and grooved boards by carefully sawing through the tongues and forming a heading joint adjacent to a joist. When replacing the boards, provide additional support at the heading joint using timber 50 x 25mm secured to the joist.

142 Where a number of floorboards require renewal, well cramp up the new boards to form tight joints and nail them up with two lost head nails punched and putted per board, per joint. Fix access traps with screws. Take care when fixing the floorboards not to puncture or damage any existing services.

143 Provide all additional support battens, noggins etc., required to support the boards.

Timber door frames and door linings

144 For new door frames and linings, use a minimum of three sets of fixings to each leg, each set comprising two fixings (either timber plugs and nails or proprietary plastic plugs and screws as appropriate to the quality of the fixing background). Where external door frames do not have timber cills, provide galvanised steel dowels in the legs, grouted into the building structure with cement mortar (1:3).

145 Fix existing door frames or linings which have become loose through the frame using proprietary sleeved screw fixing devices approved by the Employer's Contract Manager.

146 Sink the heads of fixings below the surface of the frame and the recess and fill them with an approved filler.

Softwood window frames

147 Fix softwood windows and softwood window surrounds in the same way as for fixing door frames and lining legs.

Metal window frames

148 Bed metal windows in a butyl rubber sealant and fix them to wood window surrounds which have been treated to applicable Standard with galvanised or cadmium plated screws or alternatively by stainless steel fixing clamps or brackets and proprietary plastic plugs and approved rust proof screws.

Window/door replacement

149 All replacement windows and doors in repairs and ad-hoc renewals are to be to applicable Standard. Undertake window/door replacements that involve removal of the primary frame from the building and associated glazing in accordance with the current Building Regulations, Approved Document L.

Fire rated doors/frames/door-sets – repair, replacement and installation

150 Ensure that the repair, replacement and/or installation of internal/external fire rated doors, door frames, door-sets and any associated components such as stops, architraves, thresholds, trims, seals, ironmongery and the like is undertaken only by persons that are properly accredited to do so by having been certified by BMtrada, or other approved equivalent organisation.

Sealant

151 Before pointing around existing window and door frames, pick out all loose materials and insert a cellular backing appropriate to the type of sealant in the joint between the frame and wall. Use a sealant as specified, inserted by pressure gun to form a neat uniform beaded finish.

Stud partitions

152 For stud partitions use suitably sized softwood head and sole plates with studs at 400mm centres horizontally and noggins at 1200mm centres vertically. Butt joint quilts and fill the entire void.

Kitchen units

153 All kitchen units in repairs and ad-hoc renewals are to be to applicable Standard. Fix base units with proprietary metal or plastic fixing brackets, plastic plugs and screws and the joint between the worktop and wall pointed with a neat bead of anti-mould white silicone sealant.

154 Fix wall units with proprietary metal or plastic fixing brackets, plastic plugs and screws and also support them on full length softwood cleats of not less than 50 x 25mm.

Worktops

155 All worktops in repairs and ad-hoc renewals are to be to applicable Standard. Fix worktops to base units on metal or plastic brackets with self-tapping screws. Support worktops with a void under by 50 x 25mm softwood cleats securely fixed to any background on at least three sides. If this cannot be achieved, support the sides affected on a flanged tubular steel support fixed to the floor with proprietary plastic plugs and screws and to the worktop with appropriate self-tapping screws. Seal/treat all cut edges to prevent the ingress of moisture, square cut with matching veneer to exposed ends.

Fixing PVC-u doors and windows

156 PVC-u windows and doors in repairs and ad-hoc renewals are to be to applicable Standard and manufactured to applicable Standard. Take out the existing door/window and hack off render/plaster as far as necessary to accommodate the window fixing cramps in window reveals. Supply and install support lintels over the new window/door opening. Where the original brickwork is carried over the window/door i.e. soldier course, make good the brickwork as necessary. Remove all rubbish and leave the window/door opening ready to receive the new window/door. Lintels to be in accordance with current Building Regulations, Approved Document A.

157 Fix the PVC-u double glazed window/door with or without a cill directly into the prepared brick reveals using galvanised twist-in-lugs, approved by the Employer's Contract Manager, screwed to the reveals using galvanised screws. Seal the windows to the masonry openings with silicone sealant approved by the Employer's Contract Manager. Protect the windows during the course of the Works. Fix all windows directly to the inside face of the vertical DPC. Remove all old mastic from the brick face.

158 Where appropriate supply and fix an approved PVC-u cellular core window board, fixed with screw on lugs, fixed to the wall, together with 19mm PVC-u quadrant beading, glued to the window boards and window frame using an appropriate adhesive.

159 Make good to all internal window reveals with backing and finished plaster and leave ready for redecoration.

160 Replace the windows/doors that have been removed with new windows/doors and make them weather-tight before the Staff leave the Property at the end of each Working Day.

Fixings/Adhesives

161 Fixing generally: Use fixing and jointing methods and types, sizes, quantities and spacings of fastenings which are suitable having regard to nature of and compatibility with product/material being fixed and fixed to recommendations of manufacturers of fastenings and manufacturers of components, products or materials being fixed and fixed to materials and loads to be supported. Provide additional noggings/grounds/bearers as necessary to provide adequate fixing and support.

162 Adhesive types: As specified in the relevant section. Surfaces to receive adhesive to be sound, unfrozen, free from dust, grease and any other contamination likely to affect bond. Where necessary, clean surfaces using methods and materials recommended by adhesive manufacturer.

163 Ensure surfaces to be of sufficient smoothness and evenness to suit gap filling and bonding characteristics of adhesive. Adjust as necessary, ensure that operatives observe manufacturer's and statutory requirements for storage and safe usage of adhesives. Do not use adhesives in unsuitable environmental conditions or beyond the manufacturer's recommended time period. Apply adhesives using recommended spreaders/applicators to ensure correct coverage. Bring surfaces together within recommended time period and apply pressure evenly over full area of contact surfaces to ensure full bonding. Remove surplus adhesive using methods and materials recommended by adhesive manufacturer and without damage to affected surfaces.

164 Fixing Through Finishes: ensure that fastenings and plugs (if used) have ample penetration into the backing.

165 Pelleting: Countersink screw heads 6 mm below timber surface and glue in grain-matched pellets not less than 6 mm thick, cut from matching timber. Finish off flush with face.

Expanding Polyurethane Foam

166 Expanding polyurethane foam must be of an approved fire resistant type complying with applicable Standard and be of the correct fire performance rating for its intended use or application to ensure Building Regulations compliance.

Sun Pipes

167 Proprietary Rigid Sun Pipe to Pitched Roof

Generally, will supplied and installed to the following specification:

- Pipe material: Rigid aluminium.
- Diameter: 240 – 360 mm
- Tunnel length: Up to 6 m maximum.
- Tunnel reflectance: Greater than 97%.
- Roof terminal: Proprietary polycarbonate dome (opal / UV protected) or 4 mm toughened glass in polyurethane frame.
- Ceiling terminal: Double glazed diffuser.
- Accessories: 30° – 45° proprietary bends as required. (Total number of bends to be kept to a minimum).
- Proprietary extension sections as required.
- Flashing: To suit interlocking concrete roof tiling.
- Installation: In accordance with manufacturers' technical data sheet

168 Proprietary Flexible Sun Pipe to Pitched Roof

Generally will supplied and installed to the following specification:

- Pipe material: Flexible metallized polyester.
- Diameter: 350 – 360 mm
- Tunnel length: Up to 1.5 m maximum.
- Roof terminal: Polycarbonate dome (opal / UV protected).
- Ceiling terminal: Double glazed diffuser.
- Flashing: To suit interlocking concrete roof tiling.
- Installation: In accordance with manufacturers' technical data sheet.

169 Proprietary Rigid Sun Pipe to Flat Roof

Generally will supplied and installed to the following specification:

- Pipe material: Rigid aluminium.
- Diameter: 240 – 360 mm
- Tunnel length: Up to 6 m maximum.
- Tunnel reflectance: Greater than 97%.
- Roof terminal: Proprietary polycarbonate dome (opal / UV protected).
- Ceiling terminal: Double glazed diffuser.
- Accessories: 30° – 45° proprietary bends as required. (Total number of bends to be kept to a minimum).
- Proprietary extension sections as required.
- Flashing: To suit flat roof construction.
- Installation: In accordance with manufacturers' technical data sheet.

170 Proprietary Flexible Sun Pipe to Flat Roof

Generally, will be supplied and installed to the following specification:

- Pipe material: Flexible metallized polyester.
- Diameter: 350 – 360 mm
- Tunnel length: Up to 0.9 m maximum.
- Roof terminal: Proprietary polycarbonate dome (opal / UV protected).
- Ceiling terminal: Double glazed diffuser.
- Flashing: To suit flat roof construction.
- Installation: In accordance with manufacturers' technical data sheet

Servicing of Timber Window Frames

171 General servicing requirements for timber window frames

The degree of servicing required to timber window frames will be decided by the Employer's Contract Manager. The servicing should fall into one or other of the following categories.

172 Condition of the frame and sash

- The simplest form of servicing would be to ease and adjust the opening sash.
- Severely damaged opening sashes should be replaced as original.
- The fixed frame presents greater problems to repair but 'Window Care Dry Flex System' should be considered as a viable alternative to replacement.
- On completion the bare timber must be coated as original.

173 Conditions of surface coating

- Touching up is generally discouraged as weather conditions have an adverse effect on all surface coatings.
- The preferred option is to re-coat all window surfaces as original with light sanding between each coat.

174 Condition of ironmongery

- Damaged ironmongery should be replaced with matching or product similar to existing ironmongery and fitted as per manufacturer's technical data sheet
- Back flap or cranked hinges seldom require servicing, however service with light oiling with release oil/lubricant spray
- Friction hinges require light oiling with release oil/lubricant spray during servicing
- Replace all defective hinges as recommended by manufacture.
- Loose casement stays and handles should be re-fixed either by using longer screws or reuse the original screws by plugging the original screw hole.
- Tilt/turn and fully reversible gearing systems should be serviced by a qualified service engineer.
- Trickle vents should be cleaned of all paint, dirt, dust etc. and left in an operational state. Replace parts as necessary.
- Condensation holes/channels where present should be cleaned of all paint, dirt, dust etc. and left in an operational state.

- All existing safety restrictors to be checked for correct operation. Where correct operation is not being achieved, adjustments should be made. If adjustments do not prove adequate replace the restrictor. On finishing the dwelling/property, all opening sashes are to be fitted with a safety restrictor. Each dwelling should be fitted with similar restrictors throughout – thus removing possible confusion in the event of a fire.

175 Condition of glass and glazing

All damaged glass should be carefully removed before the removal of glazing slips or facing putty.

Cracked glass should be taped to prevent accidents.

When all glass is removed the rebates should be cleaned and primed with the appropriate primer before re-glazing.

When slip glazing is used the bottom slip must be bedded in 'Dry Seal Elastic

Glazing Sealant' to prevent ingress of water.

Linseed oil putty must NOT be used.

176 Glazing medium

'Elastic Glazing Sealant' is the only option for face pointing. Linseed oil putty must NOT be used.

177 Draught Proofing

Draught proofing to existing window frames can usually be effected by using one of five different methods:

Appropriately sized extruded foam with one side self adhesive; this if fitted to the frame rebate/inside face of sash.

A co-extruded flexible seal with the rigid section nailed to the sash and the flap touching the sash. This component may have a metal rigid section.

A bulbous extruded seal, again with the flat section nailed to the inside rebate of the frame and the bulbous section touching the sash.

Replacement nerprim seals (if fitted) to match existing profile and colour.

Silicon sealing. This method of draught proofing should be avoided and only undertaken after written advice and clarification is received from Policy and Standards.

In all cases some slight difficulty may be experienced when closing the sash and generally adjustment of ironmongery may be necessary.

Servicing of PVC-u Window Frames

General servicing requirements for PVC-U window frames

178 Ventilation and drainage:

All:

Trickle vents (either in-frame, in-glazing or other)

Condensation holes/channels (where present)

should be cleaned of all paint, dirt, dust etc. and left in an operational state. Replace parts as necessary.

179 Seals and gaskets:

Check neoprene seals and gaskets for wear/failure and replace seals/gaskets as necessary. Replacement seals to match existing profile and colour.

Clean of all paint, dirt, dust etc. from seals/gaskets and apply a spray coat of silicate lubricant (remove access lubricant).

180 Ironmongery:

Damaged ironmongery should be replaced with matching or product similar to existing ironmongery and fitted as per manufactures instructions.

181 Hinges:

Hinges should be cleaned of all paint, dirt, dust etc. and left in an operational state. Hinge oil/lubricant is to be applied and hinge restraint screws adjusted accordingly. Replace parts as necessary.

182 Safety restrictors:

All existing safety restrictors to be checked for correct operation. Where correct operation is not being achieved, adjustments should be made. If adjustments do not prove adequate replace the restrictor.

183 On finishing the Property, all opening sashes are to be fitted with a safety restrictor. Each Property should be fitted with similar restrictors throughout – thus removing possible confusion in the event of a fire.

Cleaning PVC-u window frames

184 Sash frames and window frames are to be fully cleaned of all paint, dirt, dust etc. and left in an operational state.

185 Dirty marks on frames can be easily removed by using cleaning materials as indicated on the following table.

186 Cleaning cloths should be unbleached cotton. Do not use cloths containing synthetic fibres.

187 Heavy stains and deep scratching can be removed from white profiles only by sanding with a 320/400 grit sanding disc and by polishing using a sisal rotary brush to restore surface finish.

188 On wood grain surfaces care must be taken when cleaning. Seek manufacturer's advice on damaged wood grain surfaces.

Condition of glass and glazing

189 Check condition of glass;

All damaged glass should be carefully removed before the removal of glazing slips.

Cracked glass should be taped to prevent accidents.

When all glass is removed the rebates should be cleaned

Typical problems and remedial action

190 Incorrect glazing and fixing of frames to masonry are the cause of most maintenance problems.

The following is an indication of typical problems and remedial action.

191 Opening sashes that have dropped during use:

Check hinges for wear/adjustment remove wedge gaskets.

Remove glazing beads internal or external.

Repack glass to manufacturers recommendations.

Refit glazing slips and gaskets.

192 Bowed cills/stiles:

Incorrect packing generally the case.

Re-glaze as Clause 175 and secure packers to prevent further movement.

Taking care not to block drainage/air circulation channels and/or slots.

193 Sashes not sealing properly or engaging keepers:

Check adjustment hinges and keepers.

Check that the glass is packed at locking points, if not packed carry out work as manufacturer's technical data sheet.

Check also that the glass is packed at the position of frame fixings.

Check gaskets for wear/failure.

194 Broken/cracked glass:

Remove if possible pieces of broken glass before removing glazing beads.

Cracked glass should be taped to avoid accidents, before removing gaskets or glazing beads. Remove gaskets, remove glazing beads.

Carefully remove damaged unit or sheet glass.

Replace and re-glaze as per manufacturer's instruction, taking care to fit packers as recommended.

195 Opening sash adjustment.

All necessary adjustment should be completed after glazing. All hinges should be lightly oiled at periodic intervals. If glazing is completed as per manufacturer's instruction, little or no adjustment will be necessary. However, should adjustment be necessary the following steps should be taken:-

Check margin of sash to frame.

Remove centre screw on friction arm.

Release two outer screws and then reposition the sash.

Check that the overlap sash to frame is sufficient (5 mm min).

Retighten the outer screws; replace the centre screw to ensure no further movement of the sash. The friction on the friction stay can be adjusted using the screw on the friction stay fixed member.

Where adjustable espagnolettes have been fitted the rollers can be adjusted to gain compression of the weather gasket with the use of an Allen key by turning the rollers about their eccentric cams.

196 Should problems still exist when the sash is closed and the overlap to frame is equal refer to the below table for possible cause.

Upgrading

197 When upgrading from single to double glazing units, consider the strength of the existing hinges with regard to the additional weight of the double glazed unit and replace if required.

198 NOTE: It is recommended that all servicing work is carried out by a specialist service engineer

CHECK LIST A

PROBLEM	CAUSE	ACTION
Sash hits keeper	- Frame bowed opening to rear	Re-glaze
Cam hits striker	- Striker in wrong place	Reposition
Handle operation stiff	- Cams not adjusted	- Adjust cam
	- Bowing members	- Re-glaze
	- Overlap incorrect	- Reposition
	- Gasket problem	- Repair or replace
Sash moves too easily	Friction screw set incorrectly	Tighten Friction screw
Sash binding	Friction screw set incorrectly	Loosen friction screw

CHECK LIST B

COMTAMINATION	CLEANING METHOD			
	Scrape off and Polish with Dry Cloth	Clean with water and mild detergent	Clean Off with non-abrasive detergent and water	Manufacturers specified cleaning agent
Bitumen			✓	
Pencil		✓		
Emulsion Paint	✓			
Felt Pen		✓		
Inorganic Grease			✓	
Plaster	✓			
Wood stain		✓		
Ball Pen		✓		
Cellulose Paint				✓
Rust				✓
Soot			✓	
Cement Mortar	✓			
Wax Pen			✓	

199 Manufacturers specified cleaning agents should only be used by authorised service providers and with extreme care.

Loft Insulation

200 Mineral Fibre Loft Insulation laid between ceiling ties/joist or over existing quilt shall comprise:

- Mineral fibre insulation to applicable Standard, manufactured in accordance with applicable Standard as certified under BSI kite marked or other certification scheme acceptable to the Employer's Contract Manager;
- Installed in accordance with all the provisions of applicable Standard. The Provider should pay particular attention of the applicable Standard provisions for ventilation to roof space and; avoidance of overheating of electric cables.
- Thermal conductivity of insulation no more than 0.040 W/mK;
- Debris to be removed and any sealing of holes for pipes, lighting drops etc., completed before the installation of the insulation; Insulation to be fitted tightly with closely butted joints, leaving no gaps and extending over wall plates;
- Ensure that eaves ventilation is unobstructed and electric cables are not covered;
- Do not lay insulation directly below water cistern platform(s) – platforms should be elevated above ceiling joist/trusses
- Lay insulation in two layers where necessary;
- Install 800mm long plastic spacers to maintain a continuous 25mm minimum airspace above the insulation at the eaves. These are to be secured by tacked to rafters at both sides with galvanised thick staples or tacks, projecting 100mm (measured horizontally) beyond the wallplates. Insulation should cover the wallplates but shall not to project beyond the end of the spacer (described above)

201 Glass Fibre Loft Insulation laid between ceiling ties/joist or over existing quilt shall comprise:

- Glass fibre insulation to applicable Standard, manufactured in accordance with applicable Standard as certified under BSI kite marked or other certification scheme acceptable to the Employer's Contract Manager;
- Installed in accordance with all the provisions of applicable Standard. The Contractor should pay particular attention of the applicable Standard's provisions for ventilation to roof space and; avoidance of overheating of electric cables.
- Thermal conductivity of insulation no more than 0.040 W/mK;
- Debris to be removed and any sealing of holes for pipes, lighting drops etc., completed before the installation of the insulation; Insulation to be fitted tightly with closely butted joints, leaving no gaps and extending over wall plates;
- Ensure that eaves ventilation is unobstructed and electric cables are not covered;
- Do not lay insulation directly below water cistern platform(s) – platforms should be elevated above ceiling joist/trusses
- Lay insulation in two layers where necessary;
- Install 800mm long plastic spacers to maintain a continuous 25mm minimum airspace above the insulation at the eaves. These are to be secured by tacked to rafters at both sides with galvanised thick staples or tacks, projecting 100mm (measured horizontally) beyond the wallplates. Insulation should cover the wallplates but shall not to project beyond the end of the spacer (described above)

202 Loose mineral fibre loft insulation suitable for blowing only to applicable Standard, used to manually fill gaps;

203 Insulated loft access boards shall be supplied and installed as additional loft access boards for inspection/access situated above walls where possible. Boards to be 1210mmx 475mm (minimum) x 18mm OSB Structural/Flooring grade bonded to 70mm high density insulation, strength 150 kPa at 10% compression, conductivity less than 0.041 W/mK fixed with 4 no long galvanised screws at least 20mm into ceiling joists. Generally allow 2 boards per dwelling. Leave existing loft boards in position, insulating underneath where possible.

204 Loft Hatch /Door Insulation and Sealing shall comprise:

- Mineral fibre loft access hatch insulation to applicable Standard, conductivity less than 0.04W/mK, 200mm thick compressed to 120mm minimum held in place with woven fibreglass fabric and galvanised staples fixed to hatch lid frame, area 0.50m^2 nominal area, provide and install an easily compressible rubber self-adhesive 'P' seal fixed onto the timber hatch surround, refit or provide a hook and eye to prevent uplift;

- Mineral fibre loft access door insulation to applicable Standard, conductivity less than 0.04W/mK, 200mm thick compressed to 120mm minimum held in place with woven fibreglass fabric and galvanised staples fixed to door frame, area 0.70m^2 nominal area, provide and install an easily compressible rubber self-adhesive 'P' seal fixed onto the timber door surround, where necessary nail a 25mm x 38mm PAR softwood batten at 300mm centres round the door to provide a background for the compressible seal 3.4m maximum, refit or provide a small bright finish bolt to compress seal;

- Phenolic foam loft access hatch insulation to applicable Standard, conductivity less than 0.023W/mK, 100mm thick, strength more than150kPa at 10% compression fixed to hatch lid frame, area 0.50m^2 nominal area, if the hatch is of combustible material nail 12mm plasterboard over before gluing insulation board over, provide and install an easily compressible rubber self-adhesive 'P' seal fixed onto the timber hatch surround, refit or provide a hook and eye to prevent uplift;

- Phenolic foam loft access door insulation to applicable Standard, conductivity less than 0.023W/mK, 100mm thick, strength more than150kPa at 10% compression fixed to hatch lid frame, area 0.70m^2 nominal area, if the hatch is of combustible material nail 12mm plasterboard over before gluing insulation board over, provide and install an easily compressible rubber self-adhesive 'P' seal fixed onto the timber hatch surround, where necessary nail a 25mm x 38mm PAR softwood batten at 300mm centres round the door to provide a background for the compressible seal 3.4m maximum, refit or provide a small bright finish bolt to compress seal;

206 Proprietary white factory finished polypropylene insulated drop-down hinged loft access hatch to minimum opening width of 520mm, with insulation having a maximum U value of 0.25W/mK with integral draught and vapour seal in accordance with applicable Standard, and secure catch to resist wind uplift, installed in accordance with the manufacturer's technical data sheet.

Insulation Boards

207 Insulation boards shall comprise:

- Expanded white polystyrene board to applicable Standard, material to have BBA certification or equivalent, conductivity 0.035W/mK or less than, strength more than 100kPa at 10% compression, neatly cut and fit with no gaps and temporarily support in position where necessary, cut into insulation where this is needed to allow it to bend and rest directly on substrata;

- Expanded grey polystyrene board to applicable Standard, material to have BBA certification or equivalent, conductivity 0.031W/mK or less than, strength more than 100kPa at 10% compression, neatly cut and fit with no gaps and temporarily support in position where necessary, cut into insulation where this is needed to allow it to bend and rest directly on substrata;

- Foil faced polyurethane/PIR foam board to applicable Standard, material to have BBA certification or equivalent, conductivity 0.023 W/mK or less than, strength more than 100kPa at 10% compression, neatly cut and fit with no gaps and temporarily support in position where necessary, cut into insulation where this is needed to allow it to bend and rest directly on substrata;

- Closed cell extruded polystyrene insulation board to applicable Standard, material to have BBA certification or equivalent, conductivity 0.035W/mK or less than, strength more than 100kPa at 10% compression, neatly cut and fit with no gaps and temporarily support in position where necessary, cut into insulation where this is needed to allow it to bend and rest directly on substrata. Where fixed to external walls underground, use suitable adhesive paste to fix, using lines of paste at edges and to form closed shapes no more than 250mm wide/tall, applying pressure until the adhesive sets. Finish the exposed upper edge and its junction with the wall with paste. Use 2 no additional stainless steel screws and 20mm washers and plug fixings per m^2 to prevent uplift with any later failure of the adhesive;

- Foam glass rigid closed cell insulation board to applicable Standard, material to have BBA certification or equivalent, conductivity 0.041W/mK or less than, strength more than 400 kPa to EN826 Annex A. Where fixed to external walls underground, use suitable adhesive paste to fix, using lines

of paste at edges and to form closed shapes no more than 250mm wide/tall, applying pressure until the adhesive sets. Finish the exposed upper edge and its junction with the wall with paste. Use 2 no additional stainless steel screws and 20mm washers and plug fixings per m^2 to prevent uplift with any later failure of the adhesive;

- Foil faced Phenolic foam rigid sheet insulation board to applicable Standard, material to have BBA certification or equivalent, conductivity 0.023W/mK or less than, strength more than 120kPA at 10% compression, neatly cut and fit with no gaps and temporarily support in position where necessary.

- Expanded Polystyrene insulation board fixed to studs to applicable Standard, material to have BBA certification or equivalent, conductivity 0.032W/mK or less than, strength more than 100kPa at 10% compression, cut and fit neatly with tongue uppermost, leaving no gaps, fix sheets to each support at no more than 600mm centres with 12mm diameter flat head galvanised nails at least 12mm longer than thickness of insulation;

- Foil Faced polyurethane/PIR foam insulation board fixed to studs to applicable Standard faced with plasterboard, material to have BBA certification or equivalent, conductivity 0.023W/mK or less than, strength more than 120 kPa at 10% compression, cut and fit neatly leaving no gaps, fix sheets to each support at no more than 400mm centres with flat head galvanised nails at least 12mm longer than thickness of insulation, fit additional plasterboard so as not to leave vertical faces of insulation board exposed;

- Foil faced rigid sheet polyurethane/PIR foam cavity wall insulation board to applicable Standard, conductivity 0.023W/mK or less than, strength more than 120 kPa at 10% compression, neatly cut and fit with no gaps and temporarily support in position where necessary, install in compliance with any relevant BBA certificate or equivalent quality system approved by Employer's Contract Manager;

- Mineral fibre vertical insulation mats to applicable Standard, manufactured under applicable Standard as certified under BSI kite marked or other certification scheme acceptable to the C Employer's Contract Manager, to vertical studding in un-floored loft areas, complete with galvanised mild steel 50mm mesh x 19swg gauge and used from 600mm rolls, 100mm

mineral fibre insulation secured behind galvanised light wire mesh tied back to studs every 400mm horizontally and vertically, fixed with 2mm x20mm galvanised mild steel staples to applicable Standard at 400mm maximum centres, all installed in accordance with applicable Standard;

- Mineral fibre vertical insulation mats with integral metal mesh facing to applicable Standard, manufactured under applicable Standard as certified under BSI kite marked or other certification scheme acceptable to the Client's Representative, to vertical studding in un-floored loft areas, tied back to studs every 400mm horizontally and vertically, fixed with 2mm x20mm galvanised mild steel staples to applicable Standard at 400mm maximum centres, all installed in accordance with applicable Standard;

- 50mm Foil faced Phenolic foam rigid sheet insulation board to applicable Standard, material to have BBA certification or equivalent, conductivity 0.023 W/mK or less than, strength more than 120kPa at 10% compression, to vertical studding in un-floored loft areas, nailed in position over studs;

- 25mm Minimum mineral wool insulation with aluminium foil outer layer, maximum thermal conductivity of 0.04W/mK, wrapped around ductwork in unheated roof-space, taped securely in accordance with manufacturer's technical data sheet;

Thermal and Sound Insulation Quilts

208 Thermal Insulation quilts shall comprise:

- Mineral fibre thermal insulation mat quilt to applicable Standard, conductivity less than 0.040W/mK, compression fit, no gaps fixed between timber studs;

- Semi-rigid mineral fibre batts to applicable Standard, conductivity less than 0.040W/mK, compression fit, no gaps fixed between metal studs;

209 Sound insulation quilts shall comprise:

- 25mm minimum mineral fibre sound absorbing quilt , no facing, minimum density 10kg/m3, fixed to one side of partition, joints butted, gaps < 5mm,

securely fixed in place, can be glued or wire reinforced for fixing, head fixing to with galvanised large staples or large headed nails;

Employer's current manufacturers/suppliers/products

210 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

TECHNICAL SPECIFICATION

13-REPLACEMENT EXTERNAL, COMMUNAL AND FIRE DOORS

REPLACEMENT EXTERNAL DOORS - SURVEYING AND INSTALLATION

[TOP TIER]

REPLACEMENT EXERNAL DOORS – SURVEYING AND INSTALLATION

General

001 It should be noted that in order to reduce possible errors/confusion due to conflicting repeat clauses etc. the Replacement External Door specification sections have been sub divided into tiers as per the table below;

Top tier	Middle Tier	Lower Tier
Replacement external doors – surveying and installation etc.	Replacement External, Communal and Flat Entrance Doors – General	GRP External Door sets and Screens
		Fire Door Sets
		Pre-finished Timber External Door sets and Screens
		Aluminium External Doors and Screens
		Replacement Undecorated Timber External Door Sets and Screens

002 In this manner each completed product will be required to meet the specification of 3 No tier documents.

003 Example; if work to be undertaken is a GRP External Door, then the 3 No tier documents to be used will be;

Replacement external doors – surveying and installation etc.

Replacement External Communal and Flat Entrance Doors – General

GRP External Door sets and Screens

Initial Survey

004 A list of Properties will be given to the Contractorr with access details and the Contractor is then responsible for arranging access, visiting the Properties, taking measurements and forwarding existing external door dimensions and the Provider's proposed style of replacement door to the Employer's Contract Manager for approval.

005 External Doors - Whether the new doors are to be GRP, aluminium or timber replacements is dependent on the condition of any existing external door (if present) and therefore matching new proposals with the existing Property and surrounding Employer owned Properties.

006 The drawings are to include ‘sketch elevations’ of each door showing the position of each proposed door type and to include details of glass type for each door.

007 The proposals are to be approved by the Employer’s Contract Manager before the Contractor commences manufacture.

Site Measurements

008 The Contractorr is responsible for ascertaining the correct dimensions and sizes of every existing external door in each Property.

009 The dimensions noted on any schedule issued by the Employer’s Contract Manager are for guidance only and are approximate measurements. The Contractor is responsible for taking all site sizes and measurements for each and every external door opening, and for manufacturing doors accordingly and to the applicable Standards. (Windows and doors - Code of practice for the survey and installation of windows and external door-sets) and as recommended in the GGF (Glass & Glazing Federation) “Good Practice Guide for the Installation of Replacement Windows and Doors”.

010 This procedure requires a minimum of 8 No measurements both internally and externally to determine the difference between internal and external reveal sizes. Therefore, internal access to the Property must be gained before manufacturing the doors – this will also allow for full Customer consultation and agreement of intended Works. It is the Contractor’s sole responsibility to obtain the Customers approval to receive the Works before manufacturing is commenced.

011 External doors are in the main fitted from the outside, although the nature of some reveals will permit replacement doors to be fitted from the inside.

012 The measurement and fitting of doors must in every case respect the existing cover/rebate to the outer frame of the doors by virtue of any “reverse brick detail” or “check reveal” that may pertain to existing Employer Property.

013 Where a check reveal is present for weathering purposes, the door manufacturing sizes should be based on achieving a minimum frame overlap of 12 mm on the external leaf. A hole may be drilled thorough the existing frame jamb rebate to establish the check reveal size. A frame may also be built into the check reveal at the head by use of a rebated lintel, and again a minimum frame overlap of 12 mm should be provided where practicable. If an overlap of 12 mm cannot be achieved, this should be discussed with the Employer’s Contract Manager and an agreement reached regarding the size of the overlap for particular properties. As the Emplyer owns a large stock of Properties, which vary in construction detailing, long term standard agreements to the amount of overlap will not be made with exception to the dimension stated here.

014 The Contractor’s attention is drawn to the fact that similar external doors in similar Property types may vary in size.

015 The Contractor is responsible for ascertaining the correct dimensions and sizes of every existing external door in each Property. Measurements for each door (and its location) must be clearly identified on any delivery schedule and each door shall have a clear labelling system to reflect this.

016 The use of make-up pieces (clip-on’s) will not normally be permitted except with the express written authority of the the Employer’s Contract Manager. Written authority does not transfer to the entire Contract, if gained; it must be acquired for individual Property and/or phases.

017 Any existing external door opening which will present the Contractor with a problem in compliance with the Specification, or in manufacture of a door to suit, must be brought to the attention of the the Employer’s Contract Manager before the door is fabricated. The the Employer’s Contract Manager will issue a written Instruction informing the Contractor of what action is to be taken.

018 Obtain signed consent from the Employer before manufacture of any external door is undertaken. The Contractor should be aware payment will only be made on completion of the door being installed into the Property.

Guarantees

019 In addition to the Employert's rights under the Contract, the Contractor is to provide the minimum guarantee tabled below against manufacturing defects etc., on all new GRP, aluminium and timber external doors upon completion of the Works. The guarantee is to include for all profiles, joinery, and for the double glazed units.

020 Manufacturers guarantees in all instances are to be for the years stated below with no exceptions attached (i.e. end user servicing expectations etc.), this will assure the Employer that the manufacturer is confident of their own products durability.

PVC-u profiles	25 Years
Timber frames	30 Years guarantee against fungal attack
Timber Door Manufacturing Defects	10 year guarantee
Timber Door (Factory Painted External Joinery)	10 Year guarantee (as minimum)
Timber Door (Factory Stained External Joinery)	6 Year guarantee (as minimum)
Hardware Components	10 Years (minimum)
Double Glazed Units	15Years (minimum)

021 Doors are to be manufactured under guidelines ISO 14001 (Environmental Management) and ISO 9001 (Quality Management Systems) with manufacturing companies holding the relevant accreditation. Manufacturers should promote and maintain an Environmental Policy and be committed to it. They should be able to demonstrate that all operations proactively comply with all applicable environmental laws and regulations.

022 The manufacturer shall provide a good practice guide relating to aftercare and maintenance of their manufactured doors etc. and its component items. The Contrator shall ensure that each Occupier receives a copy of this.

General Design of External Doors

Doors - Street Properties

023 Each Property case may be different and therefore approval will be required for each Property. In all cases, the proposed new style of external doors will need to comply with Building Regulations and in particular fire egress in terms of all habitable rooms.

Timber External Doors

024 The Contractor is responsible for ascertaining the correct dimensions and sizes of every existing external door in each Property.

General External Door Installation

025 All sidelights are to achieve an 'A' energy rating certificated by the British Fenestration Rating Council (BFRC).

026 All replacement doors and sidelights must achieve Building Control standard of Maximum U-Value = 1.8 W/m2K for units with >50% internal face glazed.

027 U-values of external doors and sidelights glass and frames must meet the Building Regulations and must be BFRC Certified and have an "A" Rated Energy Index. Centre Pane "U Value" of 1.2W/m²K (or better). Thermal Transmittance Whole Window "U Value" of 1.4 W/m²K (or better)

028 All External Doors must pass testing undertaken to PAS 24 and be Secure by Design certified. All certification documents are to be forwarded to the the Employer's Contract Manager and kept updated – this must include test certificate, report and list of tested ironmongery with product manufactures names, type etc. Evidence of compliance with PAS 24 (Specification for Enhanced security performance requirements for door-sets and windows in the UK) will be a condition of tender.

029 All new external doors and door frames are to match existing size openings in existing positions (i.e. brick reveals to be maintained externally where necessary on all occasions).

030 Before installing the new door frame, the existing structural opening should be checked to ensure its stability and existing lintels checked to ensure their condition soundness. Any large repairs should be reported to the Client's Representative.

031 It is permissible to "chip back" a small area of plaster (typically 25mm) extending full height up the existing reveals and immediately adjacent to the door frame; this will both facilitate removal of existing door frame and installation of replacement door frame.

032 All openings should be cleaned of debris etc., and any minor making good is expected to be carried out as part of the external door replacement works.

033 All metal fixings should be at least as corrosion-resistant as applicable Standard Grade 3. 13.5.

034 Door frames shall be secured in accordance with the recognised "fixing distances" for strap / lug fixings and through-frame fixings as recommended in applicable Standard.

035 Sills must be properly supported and fixed to ensure there is no likelihood of water penetration.

036 All internal reveals should be made good and plaster or decorations made good to match existing.

037 External sealing should be by means of a cement/sand pointing around the new door frame to conceal larger gaps and then a low modulus white silicone sealant to applicable Standard. Only silicone sealants recommended by the manufacturer/supplier should be used and not general purpose mastics. All abutments of the door frames should have silicone sealant applied.

038 Prior to installation, the doors are to be supplied with adequate protection against damage caused by slippage, distortion etc. They must be stored under cover in a dry and secure position, stacked vertically, not horizontally.

039 The door frame dimensions must be checked with those of the opening before removal of the existing door frame.

040 A craft knife should be used to score around the perimeter of the existing frame in order to minimise damage to plaster/decoration.

041 External doors and frames to be removed and all existing mastic and debris cleaned away. The Contractor is to ensure that the work is carried out in a neat and tidy manner, with all rubbish removed to a lockable skip at the end of each working day.

042 The damp proof course is to be checked by the Contractor to ensure one is present and in good condition. Any defects present are to be brought to the attention of the Employer's Contract Manager immediately.

043 The new door frames must be installed in accordance with the manufacturer's requirements, taking into account the construction of the Property. Fixing methods should take into account thermal movement. The method of fixing will generally be either through frame fixing or lug fixing.

044 Door frames must be installed plumb and square without twisting, racking or distortion of any member in accordance with the manufacturer's installation tolerances.

045 The door frame must be centred in the aperture and be positioned so that it does not bridge the damp proof course. The amount by which the new door frame is set back from the outer face of the wall is determined by the requirement to set the internal face as close to the existing internal finishes as possible and by the bridging of the damp proof course.

046 The door frames must be secured so that the corner fixings are a minimum of 150mm and a maximum of 250mm from the corner of the frame and the intermediate fixings at centres no greater than 600mm.

047 Should the manufacturer require more onerous fixing requirements then these must be adhered to. Care should be taken not to overtighten bolts and that packers/shims are not allowed to fall away. Care should also be taken to ensure that water tightness is maintained where lintels have to be drilled for fixing.

048 All screw fixing heads which pass through the profile are to be spot sealed with appropriately coloured or clear silicone sealer or a PVC-u cap.

049 Where electrical, television, telephone wires etc., enter a Property either through a hole in the existing door frame, or adjacent to it, then such services must be routed around the door frame. A split plastic tube of suitable diameter and length for entry into the Property should be slipped over the cable so that connections do not have to be disturbed on the appliances, with the ends of the tube sealed with white silicone sealant on completion of the external door installation.

050 Where any internal plaster work is disturbed when the existing door frames are removed, the Provider must make good the plasterwork. PVC-u cover mouldings may be used to a maximum width of 30mm.

051 Internally the door frame must be well caulked and the gap between the reveal finish and the frame flush pointed with a one part white emulsion acrylic painter's caulk.

052 Each sidelight must be permanently marked or labelled in an unobtrusive position (not visible when the opening light is closed) showing details of the manufacturer, the job number of the sidelight and the date of manufacture.

053 The standard for glass units is applicable Standard –part 2 (also part 3 for gas filled types)

054 Special care and attention must be taken to protect and avoid any damage to external doors and frames. Any damaged external door or frame must be replaced with a new external door or frame and it must be at the the Employer's Contract Manager's sole discretion as to whether a repair to an external door or frame is acceptable.

Safety Laminated Glass

055 All glazing in doors in critical locations as defined by the Building Regulations (i.e. glazing below 1500mm height in doors with a zone of 300mm either side of the door) is to have both skins of glass units glazed with laminated low E glass – assumed to be 2 No. skins of 6.8mm laminated safety glass.

056 Internal and external panes in sidelights, double glazing units to be laminated glass as default. An exception may be made where a staircase ends or turns immediately inside the doorway – in this instance the internal pane may be toughened (i.e. to reduce impact pressure) – written notification must be given to the Client's Representative. External pane must always be laminated to provide security and satisfy PAS 24.

057 All safety glass is to be permanently marked on both panes with applicable Standard kite marks, which are to be visible after installation.

058 Both sheets of glass making up the sealed double glazed unit must be safety glass where required by the above descriptions.

059 Details of external doors in critical locations are to be stated in the Provider's proposals for each new external door when proposed drawings are forwarded to the Employer's Contract Manager for approval.

Glazing - General

060 External doors and sidelights must be manufactured so that glazing or re-glazing on site is possible without the need to remove the outer frame from the structure of the building.

061 All glass and insulated glazed units should be carefully examined for damage, especially at the edges, prior to installation. Defective items must not be used.

062 The two panes of glass in the double glazed unit are to be held apart with warm edge technology, spacer bars to improve thermal efficiency and reduce the possibility of condensation forming around the perimeter of the sealed double glazed unit.

063 The glazing of the doors or sidelights must be carried out immediately after the installation of the frames and casements.

064 On completion of external door installations, all glass to be cleaned internally and externally and left clean and free from blemishes.

065 Any glass with scratches cracks or defects to be replaced by the Provider at no charge.

066 All external doors and sidelights to be INTERNALLY GLAZED in argon filled sealed units in low Emissivity glass, using pre-formed gaskets inserted during the profile extrusion and secured by knock-in PVC-U glazing beads with mitred corners.

067 All doors/sidelights will be totally dry-glazed with minimum 12mm wide x 3mm thick double-sided PVC foam closed cell high density security glazing tape on the inside frame rebates. Co-extruded EPDM corded glazing gaskets on the frame are acceptable as an alternative provided that bead security clips are used in conjunction with it.

068 Glass shall be at least the minimum thickness to meet wind load requirements indicated in the applicable Standards.

069 Glazing beads are to be able to withstand the design wind loading in accordance with applicable Standard Part 1 and the tests specified in the applicable Standard.

070 Fans are not permitted in sealed units.

071 Details of all glass types are to be stated in the Contrator's proposals for each new external door or sidelight when proposed drawings are forwarded.

Fire rated doors/frames/door-sets – replacement and installation

072 The replacement and/or installation of internal/external fire rated doors, door frames, door-sets and any associated components such as stops, architraves, thresholds, trims, seals, ironmongery and the like must be undertaken only by persons that are properly accredited to do so by having undergone and passed an approved "Fire Door Installation Awareness Course" such as that developed by the British Woodworking Federation (BWF) with the National Open College Network (NOCN), or equivalent.

Certificate of Test Sidelight/doors

073 All manufacturers of sidelight/doors etc. shall be required to have a "sample" submitted for testing at an accredited testing station. These samples must be inspected against the requirements set out above. All manufacturers are required to have "third party" registration provided by BBA, BSI or equivalent recognised accredited quality licensing authority for the manufacture sidelights/doors etc.

074 A copy of the respective Certificate of Compliance for Secure by Design and PAS 24 must be made available at the time of submitting for inspection, which confirmations that the manufacturer can produce the product to the required standards, along with all testing data. The Provider should be aware these certificates may form part of the document handover pack and if not supplied on completion and handover of the Work, will incur a financial penalty.

Delivery to site of sidelights/doors etc.,

075 In each option, primary consideration must be given to current health and safety at work legislation in respect of site practices.

Option 1 – Pre-glazed

Will be valid where the external door manufacturer is commissioned on a supply only basis; the installation, therefore, being undertaken by the Contractor.

Option 2 – Un-glazed

Will be valid where the external door manufacturer is commissioned on a supply and fit arrangement. This will involve the supply of insulating glass units and pre-formed glazing gaskets to be applied on site in accordance with the manufacturer's technical data sheet.

076 Critical considerations to be observed:

All glazing must conform to the recommendations contained in the applicable Standards. The setting and location block positions, frame to glass and bead to glass gaskets etc. with any glass or insulating glass units must be installed in accordance with the relevant manufacturer's technical data sheet and as per the recommendations in the applicable Standard;

All insulating glass units shall be examined for damage prior to installation; defective units shall not be used;

Insulating units with "low emissivity coatings" shall be oriented in accordance with the manufacturer's technical data sheet; and

Where safety glazing forms part of an glazing unit, it remains a legal requirement to ensure that the marking remains visible after installation.

Protection, Transportation, Storage & Pre installation check

077 The Contractor must ensure the manufacturer/supplier is responsible for ensuring that all sidelights/doors are suitably protected to avoid damage during transportation and storage.

078 Sidelights/doors/glazing units (if applicable) shall not be flat-packed, but stood vertically during transportation.

079 Sidelights/doors/glazing units in storage to be “kept apart” preferably with soft packing to reduce risk of transport/handling damage.

080 The Contractor must ensure that all sidelights/doors stored on site are housed within a secure weatherproof storage facility on-site until the time of fitting. Pre-finished joinery shall not be stored in direct sunlight.

081 Prior to commencement of installation, the Contractor should undertake the following checks -

Consult survey sheets and ensure these are correct and clear;

All survey measurements are recorded;

The doors/sidelights supplied; are of the correct fenestration and design and in accordance with the external door schedule approved by the Employer’s Contract Manager;

The glass type and pattern are correct;

External door and glass sizes are compatible;

All trims, gaskets etc., are correct and fitted correctly; and

Consult survey sheets to ensure external doors supplied are correctly marked and identified to those Properties being replaced.

Site Approval on delivered

082 Previous to the benchmark Properties being set, a sample Pre-Finished, GRP, Aluminium or Timber external door/sidelight shall be delivered to site by the preferred manufacturer/supplier for inspection and acceptance by the the Employer's Contract Manager.

083 The manufacturer/supplier in providing the sample for acceptance must demonstrate full compliance with the specification requirements. Evidence of thermal efficiency standards being offered must be available to the the Employer's Contract Manager for verification.

084 The sample external door/sidelight (upon acceptance) will form the "benchmark external door/sidelight" for the remainder of the project.

085 The Employer's Contract Manager shall reserve the right (at any stage) to have any external door/sidelight which is delivered to site, subsequently removed for further inspection/audit and/or independent testing to ensure that the specification requirements are being complied with.

Remove and Install on same Day

086 Existing doors to be removed are most likely to be timber in nature, although a small percentage of properties may have original PVC-u external doors and frames. The Contractor should make every effort to have all existing external doors and frames recycled and provide waste disposal reports to the the Employer's Contract Manager.

087 Replacement external doors and frames must be installed on the same day that the original external doors and frames are removed in order to maintain security and weather tightness of the structure. The existing door frames should be removed with care in order to avoid damage to the Property structure and its finishes and without permitting any subsidence of the structure during or after the operation.

088 When providing more than one replacement external door to a single Property the Works should be undertaken on one set day to reduce the amount of disturbance to the Occupier.

089 Any defects that become apparent in the integrity of the structure upon removal of any door frame should be reported to the the Employer's Contract Manager immediately.

090 If there is a sub-sill or threshold, e.g. Concrete, slate, brick or tile, below the existing door frame it must be left in position unless otherwise specified.

Protection of existing fixtures etc.

091 Allow for protection of floor coverings, furniture and Occupier's belongings throughout the duration of the Works.

092 The Contractor is responsible for moving any furniture, fixtures, Occupier's belongings and fittings that may be damaged during the installation of the external doors, prior to commencement of the replacement of any external door and repositioning such items upon completion of the installation to each Property.

093 The Contractor will be responsible for both internal and external protection. After the removal of the existing door, frame and sidelight the Contractor is to carefully cut back any internal or external flooring, finishings, cladding, wallpaper and decorations to allow for the installation of the new frames etc. The Provider is responsible for making good all structures, finishings and decorations up to 100mm from the face of the frame or sill.

094 The Contractor must ensure that clean and sufficient dust sheets or protective coverings are used, when carrying out any Works. The Contractor must ensure he has taken all adequate provisions to ensure that the soiling or damage to floor coverings and needless damage to decorations are avoided. The Contractor must allow for any cleaning of floor coverings required as a consequence of the Works and this should be reflected in the tender Rates submitted.

095 It is recommended the Contractor undertakes a Schedule of Condition and agrees this with the Occupier prior to undertaking any Works. It is therefore considered prudent to take photographs of any damaged Occupier's belongings within the vicinity of the Work prior to commencement and, where appropriate, to obtain a signed disclaimer.

Fixings

096 Screws used for fixing non-reinforced PVC-u sections will be of carbon steel with a suitable corrosion protective coating and feature a double helical thread, spoon point with a countersunk head.

097 Fixings must incorporate a combination square/cross recess drive to provide a non-magnetic stick fit.

098 All screws, nuts, bolts and other fastenings must be of corrosion resistant material, or be treated to give corrosion resistant properties. When subject to the acetic acid salt spray test specified in the applicable Standard for a period of 144 hours, the corrosion resistance of treated mild steel must be equal to or better than that of stainless steel samples subjected to the same test conditions.

099 All ironmongery, fixtures and fittings must be of materials resistant to, or protected against atmospheric corrosion. Metals in contact with each other must be compatible so as to prevent galvanic corrosion of dissimilar metals by electrolytic action.

100 The use of expanding polyurethane foam is not acceptable as a sole method of fixing any door frame into a structural opening, nor is it acceptable to be used as bedding for the door frame.

101 Fixing to be as recommended by in the applicable Standard, below is a brief summary, actual fixing recommendation should be taken from the applicable Standard and its example diagrams:

Secured on all sides (where practicable);
Corner fixings – 150 – 250mm from external corner;
Minimum of 2 fixings per reveal;
If head is fixed with expanding polyurethane foam, then head fixings can be – • Frame width up to 1200mm – no fixings • >1200mm to <2400mm – one central fixing • >2400mm to 3600mm – two equally spaced fixings

102 The use of expanding polyurethane foam is permissible in terms of “foam filling” and as a useful addition to mechanical fixings. When the external door is completed and finished there should be no visual evidence of polyurethane foam either internally or externally.

103 Installation “packers” should be used to set the door frame onto to allow sealant/mastic to be used as a full fill bedding material. The colour should match the door frame finish.

104 Intumescent foam filling is to be used in all external door installations to provide a closure to possible cold bridge of gaps between the wall and the frame. It is only to be used within the depth of the door frame profile i.e. it should not be used to fill gaps to reveals etc. which are to be plastered. Form filling is only in regard to the following situations –

1) To the head of a door frame, where the presence of pre-cast concrete or steel lintels make it impracticable or pose significant difficulties in achieving the recommended fixing distances	Up to 10mm maximum
2) To the sides of door frame to make up expansion/contraction gap left either side as a result of manufactured size of door frame	

105 Foam filling must be to the full depth of the frame using only an approved fire-resistant expanding polyurethane foam complying with the applicable Standards and be of the correct fire performance rating for Building Regulations compliance.

106 All components should be supplied by a manufacturer complying with ISO 9001 accredited quality systems. A certificate passing warranty to the Employer is to be issued by the hardware manufacturer on completion of the project.

107 Written confirmation of compliance with all of the above should be given to the Employer’s Contract Manager in advance of commencement on site and will be a condition of the tender.

Fire barriers

108 In all methods of construction it is important to ensure that the cavities between internal and external skins are protected at openings for external doors from the spread of fire. If these openings are not protected, in the event of a fire, smoke and fire can spread through the cavity, causing danger to occupants in other parts of the Property not immediately affected by the fire. This issue is of particular concern in timber and metal framed buildings. Attention is drawn to the Building Regulations in respect of the requirement for suitable fire barriers to be present in such buildings. Guidance is given in the applicable Standards, and the current Building Regulations Approved Document B.

109 The method of construction should be identified, and where the building is of timber or metal frame construction, the type of cavity barrier should be established. Where the barrier is a cavity sock or similar, and is likely to become dislodged or damaged by the removal of the existing frames, this should be noted on the survey sheet, and instruction given to the installation team to ensure that the cavity barrier is either repaired or replaced to maintain the original level of fire protection for the Property.

110 NOTE; Timber and metal frame constructions usually have a moisture barrier included in the area around openings, to resist moisture ingress into the cavity that could affect the timber sheathing or metal studwork."

Making Good

111 The final covering and treatment of surfaces and their intersections are fundamental to the overall replacement of external doors.

112 The primary objective of making good damaged areas adjacent to the external doors is to maintain the;

Weather-tightness; and

Thermal performance characteristics

As required in and around reveals.

113 This protocol described below applies to all external door replacements and shall be undertaken as the primarily aim to negating the need for any redecoration during/after external door installation.

114 There will be a number of situations (i.e. age of the Property; thickness of plaster reveals; and to some extent “build issues” associated with system-built dwellings) that it may not be possible to observe all or part of this protocol. Therefore more damage may be required to the reveals and/or the door frame wall to undertake the required door frame replacement. This could result in the need for some redecoration. Where this is likely to occur, firstly the Provider is required to notify the Employer’s Contract Manager at Design stage. If however this is not identified until on-site stage the Provider must note the Properties affected and alert the the Employer’s Contract Manager before work commences.

115 Where full plaster reveals are to be undertaken – i.e. Internal and external making good; this may take place on subsequent days, but the whole operation from start to finish of each door frame must not exceed 3 No. consecutive working days.

116 Plaster-Patching - This process will require a small degree of plaster-patching. This will include the following areas -

All the reveals immediately adjacent to door frame etc.;

Part of the reveals where strap / lug fixings have been employed.

117 Finishing Trims are to be Cellular extruded PVC-UE trims/beads and must conform to the applicable Standards and as the below table;

	Internal Reveal (3 sides)	External Bead (3 sides)
Single bull-nosed PVC-UE trim typically 5–7mm maximum thickness	□	
Trim width must not exceed 100mm		
Quadrant / Bead typically 12x12mm or 18x18mm maximum OR Single bull-nosed PVC-UE trim typically 5 – 7mm maximum thickness		□
Trim width must be in range 20 – 25mm maximum		

118 Trims are not to be used to simply provide or enhance the weather tightness of the door frame or any perimeter joints. Finishing trims shall be used to neaten the interface between frames and opening, they are only to be used in conjunction with the “plaster-patching” / making good situations as stated above. All joints must be left ‘neat and tidy’ with an acceptable tolerance of +/- 2/3mm on all joints/trim abutments and sealed with sealant of matching colour.

119 Internal finishing trims shall be compatible with the Material of the door frame and must be colour-matched

120 External finishing beads/trims shall satisfy the above criteria and be of an exterior quality Material used in accordance with the manufacturer’s technical data sheet. External beading is not required where the external reveal has been re-plastered to match existing.

121 For the avoidance of doubt, door frames should be measured and fitted as described above and beads/trims should only be fitted to the opposite side of the determined cover/overlap. Only in exceptional cases where reveals are determined as flush will internal and external beads/trims be acceptable.

Fixing of Trims/Beads

122 All internal trims shall be secured in every case to a firm backing (junction of frame and reveal) with a low modulus silicon sealant (as below) and sealed all round.

123 All external beams/trims shall be secured in every case to a firm backing (junction of the frame and plaster reveal) with the low modulus silicon sealant (as below) and sealed all round.

Sealants

124 Sealants must comply with applicable Standard and be low modulus grade

125 Perimeter joints externally and internally around the “as installed” door frame shall be sealed with a low modulus silicone sealant and “smoothed” to provide a good seal.

The sealant shall be appropriate to –

The frame surface and colour;

Any substrate material;

The specific joint size and configuration; and

Potential joint movement and weather exposure.

Implications – Customer's Blinds etc.,

126 The inclusion of a finishing trim to existing reveals and sill may in certain circumstances create an issue around the re-fitting of Occupiersr's blinds etc. The Contractor shall pay due regard to the existing sidelight dressing(s) and where finishing trims are required that a "slim-line" version (5mm or less) is used.

Repairing damaged prefinished coatings on site

27 Localised repairs to coatings shall be affected by brush application on site using the same coating Material and build-up as the factory application with no discernible difference upon completion. All repairs shall be carried out in accordance with the joinery manufacturer's technical data sheet, by a competent person and to the satisfaction of the manufacturer and the Employer's Contract Manager to ensure continuance of the warranty.

Cleaning of External Doors

128 The protective tapes shall be removed from the as installed external doors, frames and sidelights immediately or as soon as practicable after installation and the door (frame and glazing) cleaned with a suitable cleaning agent.

Final Completion Checks

129 Upon final completion of each and every external door installation, the Contractor is to confirm and check the following:-

All glazing beads are adequately fitted and in good order;

All hardware functions and locks operate correctly and are not stiff to use;

All frames and glass are free from cracks, breaks and scratches etc. All frames and glass are cleaned and all internals of frames are swept clean.;

All openings are square and operate correctly;

There is no movement to the door;

All hinges etc. are clean and operate correctly;

All making good internally and externally are completed; and

All trims are clean and sealed;

130 Once all the above items are completed, the Provider is to demonstrate the operation of the external door to the Occupier and provide the Occupier their own operating instructions for the external doors. In addition, the Contractor is to provide a Customer Satisfaction Card (to be supplied by the the Employer's Contract Manager) which the Occupier is requested to complete and return by free postage to the Employer. In due course the Contractor will be required to provide any means necessary to allow the Occupier to sign Satisfaction Card electronically for uploading to the Employer's Asset Management software.

Photographic Evidence – Removal/Installation of Sidelights/Doors

131 Take digital photographs of each completed sidelight/door installation.

132 The photograph should clearly show the completed internal reveals and identified by address and room (i.e. this may be done by placing an address and room labelled clipboard against the external door at the time of taking the photograph – ensure clipboard does not block image of door).

133 The photographs should be retained electronically by the Contractor and if requested provided on an individual basis to the Employer i.e. in the event of any Occupiers making a claim against the Employer.

134 The Contractor should note that the the Employer's Contract Manager will from time to time ask for evidence of these photographs and how and where they are stored. The Contractor is required to retain these images for at least 6 years after the Date of Completion (in accordance with the Employer's Retention of Documents Policy and legal timeframe for a Occupier to make a claim).

Employer's current manufacturers/suppliers/products

135 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

REPLACEMENT EXTERNAL, COMMUNAL AND FLAT ENTRANCE DOORS – GENERAL

[MIDDLE TIER]

REPLACEMENT EXTERNAL, COMMUNAL AND FLAT ENTRANCE DOORS - GENERAL

Secured by Design:

201 This section is to be read in conjunction with the general specification for ‘Replacement Windows and External Doors – Surveying and Installation’ section, which provides details of surveying, sampling, installation, finishing etc. - generally as applicable Standard (Windows and Doors – Code of Practice for the survey and installation of windows and external door-sets).

202 All new external doors must meet the requirements of "Secured by Design" (SBD) certification. External Doors; PAS 24 Doors of Enhanced Security

203 All new external doors complete with frames and factory installed double glazing must be high performance proprietary door sets supplied by a certified SBD manufacturer. Fire doors must have additional testing certification in accordance with the applicable Standards.

204 These may be PVC-u, timber or timber/steel faced, composite door sets complete with a Secured by Design approved locking mechanism.

205 PVC-u external doors, timber composite or steel faced composite doors are suitable for areas where high security or severe exposure rating requires greater durability and a multi-point locking mechanism.

206 Sample doors complete with proposed locking mechanisms are to be supplied for the approval of the Client’s Representative.

Door Sets

207 The Door sets must meet the performance standards set out in this Specification. The Contractor must provide to the the Employer’s Contract Manager a copy of the Secure by Design certificate and PAS 24 test certificate along with the list of door components/ironmongery as supplied by a UKAS test house prior to commencement of the Contract.

208 The door-sets supplied must be to exactly the same specification as those tested.

209 All timber doors to be to the Employer's schedule of standard external doors.

REF	DOOR TYPE
SE.1SG	Single, small, glazed top panel.
3P.1SG/2SP	Three panel door, top panel double glazed with safety glass, two bottom panels with solid hardwood panels
4P.2SG/2SP	Four panel door, top two panels double glazed with safety glass, two bottom panels with solid hardwood panels
5P.2SG/3SP	Five panel door, top two panels double glazed with safety glass, three bottom panels with solid hardwood panels
6P.2SG/4SP	Six panel door, top two panels double glazed with safety glass, two middle and two bottom panels with solid hardwood panels
6P.6SP	Six panel door, top two panels, two middle and two bottom panels all with solid hardwood panels
FL.1SG	Flush door with 1 single panel of double glazed safety glass
LBS	Ledged, braced and sheeted door
FLBS	Framed, ledged, braced and sheeted door

210 Each door-set shall have the name of the manufacturer and date of manufacture clearly stated on one rebate by means of a discrete permanent label to aid future traceability if required.

211 The fitting tolerance must be plus or minus 5mm, it is the Provider's responsibility to take all site dimensions for pricing purposes and for fitting purposes.

212 Door sets which are deemed to be outside the fitting tolerances must be remade at no further expenses to the Client.

213 Where existing door sets are removed, the new assembly must be installed and left in full working order before the end of the same day.

214 The manufacturer of the door sets must be stated on the Contractor's tender and a guarantee must be supplied indicating the life of the components.

215 Door Frames are to be fitted with weather seals of low density cellular core encased in low friction liner which are capable of taking up reasonable seasonal movement in all temperatures and returning to original profile. The weather seals shall be inserted into a plough within the door frame rebate while being fitted in one piece with lower ends extending to bottom of trapper bar.

216 Door Frames to be either:

white reinforced PVC-u to applicable Standard; or

hardwood complying with applicable Standard (density range 650-725 kg/m cu) with factory applied coating to match door.

Level Access Thresholds

217 All external door sets (main and secondary entrances including doors leading onto a patio) must have level access thresholds (max 15mm high threshold).

218 Weather bar should be capable of renewal in-situ i.e. without the need to remove the door frame. The weather bar unit shall have a performance rating to comply with the applicable Standard.

Door Performance Requirements

219 All the external doors must meet the following minimum performance criteria for weather resistance as defined in applicable Standard -Classification for Weather tightness.

Air Permeability	Test Pressure Class 300 Pa Test Method as applicable Standard
Water Tightness	Test Pressure Class 200 Pa Test Method as applicable Standard
Wind Resistance	Test Pressure 2000 Pa Test Method as applicable Standard

230 All doors must be completely draught free when closed. The doors are to meet the Severe Exposure Rating category

Side Lights to Living Room External Doors

231 If the glazed opening door is in a living room, the sole means of natural daylight and ventilation must not be from that door.

232 Additional opening side light windows with trickle ventilators and security restriction, must be provided in order to allow ventilation to the room without opening the door all year round.

Double Glazing

233 All double glazing to any external doors and their associated side lights (or, within 400mm of the door lock) must be have at least one pane of laminated glass to comply with Secured by Design.

234 Door and side light glazing must be 24 mm hermetically sealed double glazing units manufactured with laminated glass.

Front door to be in small panels and be obscured.

Front door must incorporate facilities to view callers

Glazing to rear doors to be clear

Door Frames

235 Door Frames to door handle relationship to allow for a min of 50mm from the frame edge to the lever handle. Lock back-set to accommodate this dimension.

236 All frames must have a factory fitted removable weather-strip to frames and weather-strip to the bottom edge of doors.

237 Door frame set back must be 65 mm minimum reveal to external face of wall.

238 New lintels to windows and external doors must be insulated galvanised steel to applicable Standard manufactured by an approved manufacturer and have an Agrément Certificate. End bearings must be a minimum of 150 mm.

239 All external door frames are to have mastic pointing provided all around. Such mastic pointing must be specified to be applied strictly in accordance with the manufacturer's technical data sheet and good practice. The Employer has a preference for two part polysulphide mastics in areas that are vulnerable to vandalism.

Door Ironmongery

240 Ironmongery must be provided in full compliance with "Secured by Design". Handles and locks must be easy grip type suitable for use by disabled persons.

241 The requirements of Secured by Design (SBD) and the approved and tested locking mechanism of the selected SBD Door Licence Holder may override this section.

242 All external doors must be hung on 3 no stainless steel grade SS202 or coated zinc alloy patent hinges (having stainless steel) pins butt hinges.

243 Non-adjustable hinges to be fitted to flush doors.

244 Rebated door set hinges to incorporate lateral adjustment.

245 Fire door hinges must be CE Marked and tested to applicable Standard. Hinges shall have high corrosion resistance, greater than applicable Standard grade 4.

246 A minimum of 2 no hinge bolts must be fitted to all external access doors providing hinge side enhanced security to PAS 24.

247 Doors to have multi-point lever handle security locking mechanism meeting the applicable Standard and tested to PAS 24 and to comply with (and stamped) Secured by Design. Front doors to be provided with a security chain.

248 Multi-point locking espagnolette system to be provided

249 Cylinder and Keys: All cylinders to be nickel plated on brass finish. Cylinders should have a large thumb turn to suit the elderly. All cylinders to be double profile and a minimum five pin tumblers, 1000 differs, anti-bump flush. Minimum of 3 keys supplied with each cylinder.

250 Doors generally fitted with level handles operational both sides of door.

251 Pull Handles and Push Plates: To be provided only where elements of communal accommodation occur.

252 Pull handles must be 230mm x 19mm dia. bolt through fixed and nylon or plastic coated finish. Push plates to be 300 x75 x 1.5mm drilled and countersunk fixed, finishes to match the Pull Handles.

253 Letter Plates: Front doors to Properties are to have a telescopic letter plate with external flap (finish to match door ironmongery) and an inward sprung flap, on the inside of the door.

254 Letter Plates must be draught and fire proofed internally and have a finger hood to prevent access to door locks (minimum distance from door locks 400 mm).

255 Intumescent Liners and Smoke Stopping must be provided to fire doors.

256 Internal flat entrance door off communal corridors must have a fire and acoustic rated letter plate with integral intumescent liners and a smoke stopped internal letter flap. Fire tested to satisfy the requirements of the applicable Standard. Acoustic tested to satisfy the requirements of applicable Standard to 29db/Rw.

257 Door numerals must be provided to the front entrance door of each Property.

258 Door Stops: All doors are to be provided with floor, wall or skirting mounted rubber stops on a nylon or plastic coated shoe where appropriate to prevent damage to walls or plaster.

259 Door Closers: Where required, all self-closing fire doors should have size 2 - 6 adjustable strength and back check function overhead closers.

and flats if approved by Building Control.

261 Closers to Frail Elderly flats must be the ‘swing-free’ type operated by the activation of the fire alarm.

262 Cabling and transformers must be provided to all wheelchair Property external entrance doors for the future installation of ‘power operated‘ door closers.

263 All overhead closers must carry a 10 year guarantee to applicable Standard.

264 Door Viewer: Front doors to Flats should have a 180 degree chrome plated door viewer fitted at:

1500mm above finished floor level for accessible dwellings

1050mm above finished floor level for Wheelchair Units

265 Door Bolts: Bolts to double doors, french windows and the like, should be of brass material satin chrome or satin nickel plated. Flush blots should be fixed in the leading edge of the second opening leaf of a pair of doors with a flat plate at the head and an easy clean socket in the floor.

266 Kick Plates: To be provided only where elements of communal accommodation occur.

267 Provide 450mm high coloured plastic kick plates to match the ironmongery on the push side of internal doors in communal and circulation areas and to all flat entrance doors on the corridor side. Flat entrance door kick plate to achieve fire resistance of door set.

268 Wall Protection: For internal communal areas only

269 Provide flame retardant corner protection to all external wall angles to a height of 1000mm using proprietary PVC-u corner protectors.

Composite Doors -Generally

270 It is intended to renew main front doors and frames on all single family Property houses with composite doors installed by the PRP or Pre-finished Timber manufacturer/contractor.

Doors -Generally

271 Generally all front doors to be styled with upper panels double glazed with laminated safety glass sealed units.

Generally all rear doors to be panel door style with upper panel double glazed with laminated safety glass sealed units.

272 Occupiers to be given the option of cat flaps to be installed to lower panels of rear door.

273 Doors within Conservation Areas will be renewed with a pre-finished timber door

Composite Front Doors to Houses not within Conservation Areas

274 Style and choice of front doors is to be agreed with Occupier and the Employer's Contract Manager on each individual project. The Contractor is to provide each Occupier with a sheet listing and showing the style of doors available and five colours available, and the Occupieris to choose and sign the list as to which door they wish, and copy of the signed sheets to be forward to the Employer's Contract Manager. Door colour should be either be translucent coatings or from a manufacturer's heritage range. Due to on-site issues with expansion etc., dark coloured doors should be avoided.

275 All existing door bells are to be re-fixed

276 Where fanlights are above the doors, the fanlights and frames are to be included as part of the renewal.

277 All glazing doors to be double glazed laminated safety glass sealed obscure units unless otherwise Instructed.

278 All doors to have brass numbers on the outside and brass draught-proof letter boxes.

279 All doors to have brass multipoint lever handles.

280 All doors and locks to meet Secure by Design applicable Standard and tested to PAS 24 Standard.

Timber Front Doors to Conservation Areas

281 All statutory consents and permissions required to complete the Work to be obtained and/or checks to be made to ensure these are in place before ordering Materials and commencing Corks.

282 All new timber front doors where requested are to be purpose made pre-primed minimum 44mm thick softwood doors, with hardwood painted frame.

283 It is anticipated that most doors will be 4 panel with 2 No. upper panels to be double glazed laminated safety glass sealed obscure units, and 2 No. lower panels to be mouldings to match existing.

284 Brass numbers and brass draught-proof letter boxes are to be as Clause 060 above.

285 All doors to have brass mortice night latch and separate 5 lever deadlocks with finger turn snib internally.

286 Where fanlights are above the doors, the fanlights and frames are to be included as part of the renewal.

Installation

287 Undertake surveys and installation of the doors at the same time as the windows installations.

288 Ensure the correct installation of each door-set.

289 The door-set shall be placed on a concrete threshold and bedded on a low Modulus Silcon, minimum depth of bed 2mm, maximum depth of bed 4mm. All door-sets shall be installed using heavy duty galvanised perforated metal straps at 150mm from corners and maximum 600mm centres between these fixings.

290 Door-sets may also be fixed using through frame fixings provided that the existing reveals are sound.

291 Fixings shall be properly countersunk, plugged and head of plug coated to match frame. Split frames (i.e. PVC-u frames) as a result of bad fitting workmanship shall not be accepted and may result in the door-set being entirely replaced at no extra cost to the Employer.

292 Expanding polyurethane foam must not be used as a sole method of fixing.

Timber Architraves and Sills

293 To every new timber door and door frame, carefully remove all existing internal architraves and replace to match existing in pre-primed ogee or similar timber, with mitred joints to architraves. All timbers to be finished in gloss paint.

294 All gaps to walls or gaps to joints are to be sealed prior to decorations.

Painting of Timber Sundries

295 To all new timber sill boards, pre-prime, architraves and sill boards before fixing, and then once installed, rub down, fill as necessary and paint 2 No. coats white undercoat and 1 No. gloss white paint, rubbing down between all coats.

296 Include to repaint existing external concrete sills and thresholds externally to the doors and touch up any painted stonework or render around the door frame to match existing, as disturbed during the renewal Works.

Employer's current manufacturers/suppliers/products

297 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

GRP EXTERNAL DOOR-SETS AND SCREENS

[LOWER TIER – Client to delete if not applicable]

GRP ENTRANCE DOOR-SETS AND SCREENS

General

301 This section is to be read in conjunction with the general specification for ‘Replacement Windows and External Doors – Surveying and Installation’ and ‘Replacement External Doors – General’.

302 This Specification is intended to describe the performance criteria to be obtained for the manufacture, supply and installation of inward opening GRP doors and frames and associated PVC-u windows. Contractors must ensure that their proposed system completely satisfies all the relevant standards detailed.

303 This Specification is applicable to ALL Properties and the Contractor’s price must cover the location of all Properties and doors being renewed. Generally Properties will be occupied during the course of the Works.

304 This Specification describes works in detail however not all items of work will be applicable to each Property, nor is work referred to exhaustive. All doors, frames, fanlights and sidelights must pass testing to PAS 24 and must be “Secured By Design” certified. All certification documents are to be forwarded to the Client’s Representative and kept updated – this must include the test certificate, report and list of tested ironmongery with product manufacturer’s names, types etc. Evidence of compliance with PAS 24 (Specification for Enhanced security requirements for door-sets and windows in the UK) will be a condition of acceptance of completion.

305 All doors must achieve Building Control standard of Maximum U-Value = 1.8W/m2K.

306 Only products defined herein shall be used; alternative products will not be acceptable unless agreed with the Employer’s Contract Manager.

307 Stiles and rails to be engineered timber edge bonded with 1.5mm or high strength engineered double plastic composite. Skins to be GRP transfer moulded and U.V. stable, thickness of skin is determined by the door manufacture and as a result of PAS 24 testing. Bonding agent is to be moisture cure polyurethane adhesive with core of 39mm CFC free fire resistant rigid foam insulation with the correct fire performance rating to comply with the Building Regulations.

308 Door glazing to be double glazed laminated glass fitted in separate glazing cassette mechanically fixed to sub-frame and internally beaded.

309 Arrange access with the Customer to carry out a pre-manufacture site survey as recommended by the British Plastics Federation Code of Practice for the Survey of PVC-u Window sets, current edition. This survey will include the provision of a pro-forma questionnaire offering the available options from which the Customers can choose.

310 The visit will include:

consulting with the Customer about choices,

taking measurements sufficient to prepare scale drawings

scheduling Customer fittings and their condition

any other site condition that may affect installation

311 Customers are to be given a choice of 5 front door types as table below.

REF	DOOR TYPE
SE.1SG	Single, small, glazed top panel
3P.1SG/2SP	Three panel door, top panel double glazed with safety glass, two bottom panels with solid panels
4P.2SG/2SP	Four panel door, top two panels double glazed with safety glass, two bottom panels with solid panels
5P.2SG/3SP	Five panel door, top two panels double glazed with safety glass, three bottom panels with solid panels
6P.2SG/4SP	Six panel door, top two panels double glazed with safety glass, two middle and two bottom panels with solid panels
6P.6SP	Six panel door, top two panels, two middle and two bottom panels all with solid panels

312 Other choice options are to be:

Element	Location	Options
Colour	Front/Rear Door	White (RAL 9003)
		Blue (RAL 5004)
		Red (RAL 3002)
		Green (RAL 6009)
Glazing	Front	Obscure - Cotswold
	Rear	Clear only
Ironmongery	Front/Rear	Gold/brass
Surface Finish	Front/Rear	Wood grain effect

313 All screen/door styles must be in accordance with modern casement design where possible, allowing for exceptions where fire egress casements are necessary. Unusual aesthetic arrangements are to be referred to the the Employer's Contract Manager for decision.

314 All component parts are to be applicable Standard "Kite marked", or BBA approved or equivalent, verification of which to be supplied on request by the Employer's Contract Manager.

315 PAS 24 certification from the Manufacturer and Provider must be provided to the Employer's Representative before manufacture.

316 The sidelight/screen types are to be as existing in respect of configuration and opening lights. However, sidelight/screens in conservation areas, areas of outstanding natural beauty or historic buildings must be discussed with the the Employer's Contract Manager for likely planning approval issues.

317 Design drawings are to be prepared by the Contractor prior to manufacture. A copy is to be supplied to the the Employer's Contract Manager before manufacture commences.

318 Carry out a pilot installation prior to full commencement of the Work, to ascertain the correct provision and detailing of the installation.

Programme and Security

319 In the case of numerous installations a programme for the Works is to be prepared by the Contractor and agreed by the Employer's Contract Manager, before Work commences.

320 Provide 14 days' notice, and agree the timing of the Works with each Occupier. When undertaking Works they need to be carried out as quickly as possible, in order to reinstate all facilities as soon as is possible. Full security, wind and weather tightness must be provided at the end of each working day in each occupied Property to suit the Occupier's/Employer's needs.

321 The installation of a door and frame, fanlights and sidelights must be carried out in one continuous operation within the working day. The security, wind and weather tightness of the Property must not be compromised at any time.

322 All making good of the structure and fabric must be carried out within one working day following the installation of the door etc., Any making good will not be left outstanding over weekends without the permission of the Occupiers and the Employer's Contract Manager.

323 The Employer's Contract Manager is also to be notified of the proposed commencement and completion dates, and proposed date for completion inspection once all the Works are completely finished including any snagging by the Provider.

324 Agree a maximum number of Properties to be worked on at any one time before the Works programme begins (to suit number of Properties/Contract Period available).

325 A Property must be 100% complete prior to commencing on further Properties above the agreed maximum and each completed Property must be signed off by the Customer and the Employer's Contract Manager.

Protection

326 Allow for protection of floor coverings, furniture and Occupiers belongings throughout the duration of the Works. Include for moving furniture, Occupiers belongings and everything necessary in order to carry out the Works and minimise disturbance to the Occupiers as far as possible. On completion of the Works place all previously moved furniture and belongings in locations agreed with the Occupiers. Dust sheets must be used at all times during the Works to prevent any damage.

327 Accept responsibility for any damage to carpets or Occupiers belongings, undertake a schedule of condition and agree this with the ccupier prior to undertaking any Works. Take photographs of any damaged Occupier's belongings within the vicinity of the Work prior to commencement, and where appropriate to obtain a signed disclaimer.

Stripping Out

328 Carefully remove existing doors, frames, sills, fanlights, sidelights and all associated fixings and prepare existing openings to receive the new installation. Dispose of all unwanted material and recycle were possible.

329 Take care to carefully remove remaining Occupier fixtures and store to one side for reinstalling and refix on completion.

330 Carefully remove coatings, panelling, tiles or sheeting of any kind from adjacent walls and ceilings generally back to the plastered surfaces. Make good, repair or replaster to receive new fittings, tiles and decoration.

331 After the removal of the existing door, frame, sill, fanlight and sidelight the Contractor is to carefully cut back any internal or external flooring, finishing's, cladding, wallpaper and decorations to allow for the installation of the new frames etc. The Contractor is responsible for making good all structures, finishing's and decorations up to 100mm from the face of the frame or sill.

Replacement Doors - General

332 The Provider must ensure that all door-sets and their installation fully satisfy the relevant standards detailed.

333 Manufacture, fabrication and installation should be suitable in all respects for: Low Rise Domestic Structures

334 Important Note: Dimensions, if shown, are for guidance only and the Contractor is responsible for taking all necessary site dimensions to ensure that door-sets are manufactured to fit accurately and properly.

335 No frame extensions or make up pieces are to be used to compensate for incorrectly measured openings.

336 Fire doors are to have been tested (at a UKAS accredited test facility) to applicable Standard. Fire doors are to have achieved fire resistance integrity in excess of 30 minutes and a door-set classification of FD30S. On completion of installation, the Client's Representative is to be furnished with 2 copies of all documents within clause 032 of the Fire Door–Sets section. Fire door to be individually referenced, marked and tagged by the fire door manufacture, whereby they are to keep records of all fire doors supplied and present monthly updates to the Employer's Contract Manager with the monthly reports.

Construction of Door and Frame

337 Door leafs shall be constructed with minimum 4mm high gloss through coloured external Skins, manufactured from gel coat to applicable Standard, coloured to applicable Standard, and one layer of 300gm chopped strand matt and 2 layers of 450gm chopped strand matt to applicable Standard, fully saturated with high heat distortion isophthalic / DCPD polyester resin conforming to applicable Standard type C. Skins shall fully encapsulate a jointed timber frame manufactured from prepared material kiln dried to applicable Standard, and resin laminated CFC free fire resistant rigid polyurethane foam core. The above may be over ruled/enhanced by testing to PAS24 (and fire testing, as above, in the case of fire doors).

338 Door frames shall be of moulded GRP manufacture generally to the same specification as the door leaf and have a non-staining EPDM compression seal gasket and secondary angled blade neoprene stop seal;

339 Door sills, where required for non-wheelchair required access, shall be of moulded GRP manufacture generally to the same specification as the door leaf. They shall be 50mm in height, 150mm in width and designed to accept an approved threshold.

Threshold to Front Doors

340 All external door sets (Main and Secondary Entrances including Doors leading onto a patio) must have level access thresholds (max 15mm high threshold) and a minimum clear opening width of 800mm between the blade and the stop, irrespective of the type of accommodation in order to meet the requirements of Lifetime Homes.

341 Weather bar should be capable of renewal in-situ – i.e. without the need to remove the door frame. The weather bar unit shall have a performance rating to comply with the applicable Standard.

Glazing

342 All glazing apertures are to be internally beaded with the double glazed units securely fixed using mechanical means.

343 All doors, fan lights and/or side lights shall be glazed with dual sealed double glazing units with at least one pane of laminated glass to comply with Secured by Design. Safety glass shall comply with the applicable Standards.

Ironmongery

344 Ironmongery must be provided in full compliance with "Secured by Design", Handles and locks must be easy grip type suitable for use by disabled persons.

345 Two door viewers must be provided to all front doors at heights of 1500 and 1050 mm from finished floor level.

346 All external doors must be hung on 1½ pairs of heavy duty butt hinges. Fire door hinges must be CE Marked and tested to applicable Standard. Hinges shall have high corrosion resistance, greater than applicable Standard grade 4.

347 Multi-point locks tested to PAS 24 and to comply with (and stamped) Secured by Design. Front doors to be provided with a security chain.

348 All hardware, where attached to the door-set, shall be fixed with stainless steel screws fully penetrating the timber sub frame. For all installations use screws not rivets and employ maximum retention. Do not over tighten fixings.

349 Allow for fitting of D type handle to internal face of door where identified. Position to be agreed with manufacturer.

Installation of Door-sets

350 The door-sets are to be fixed strictly in accordance with the manufacturer's technical data sheet. Care shall be taken to ensure the doors are handled and stored correctly. Frames are to be packed and wedged into the correct position to ensure a square and flat fit before fixing to the reveals.

351 The door-set is to be fixed with a minimum of eight M10 x 140mm proprietary frame fixings, direct through frame and finished with colour coded plastic not easy removed cover caps.

352 Door frame should be sealed to reveal with low modulus silicone sealant, colour matched to the door frame and neatly executed. A suitable bull nosed cover trim should be used to improve the aesthetic appearance of the joint.

353 All protective coverings on door-sets shall be removed on installation. Removal and cleaning of the frames and doors is the responsibility of the Contractor.

Sidelights and Fanlights

Profile Manufacture

354 All sidelights, fanlights, door frames etc., profiles are to be obtained from the same approved system manufacturer.

355 All manufacturers must confirm as being registered as either having applicable Standard or BBA (or equivalent) independently. Evidence to be supplied. All manufacturers will be required to have membership of either, the GGF or BPF, evidence to be supplied.

356 The sidelights, fanlights, door frames etc., will be manufactured in accordance with current manuals for GRP sidelights and door frames. The profile will be manufactured to applicable Standard. Cadmium based stabilisers, and re - work material used in manufacture will not be accepted. The profile will be vent profile manufactured with a euro- groove. All profiles are to be chamfered.

Construction

357 All sidelights, fanlights, door frames etc., shall be of all welded construction. All corner joints, transoms and mullions are to be mitred, and fusion welded. All excess materials are to be neatly trimmed and feature grooved. Mechanically jointed transoms may be considered where there are specific design constraints, but only after approval from the Employer's Contract Manager. All feature grooves should be straight and of consistent depth throughout their length.

358 Each sidelight, fanlight, door frame etc., shall be permanently marked in an unobtrusive position (not visible when the opening light is closed) with applicable Standard, the weather tightness exposure category and the name or trade mark of the manufacturer.

359 Reinforcement is to be continuous to a minimum of 85% of the length of the frame, and within 5mm of the weld. Screw fixed to the profile at 250 mm max c/c, with a minimum of three fixings. All reinforcement to be to the profile manufacturer's current recommended parameters in either aluminium or galvanised steel.

360 All sidelights, fanlights, door frames etc., will be constructed with the profile manufacturer's current guide lines for pressure equalisation. Face drainage is to be provided; however drainage slots should be a minimum 30mm long and 5mm wide. Internal drainage slots should be offset by a minimum of 50mm from external slots.

361 The sidelights, fanlights, door frames etc., are to be internally beaded as recommended in the current profile manufacturer's manual, and be capable of accepting 24mm hermetically sealed "low emissivity" glass units.

Installation

362 The correct installation of GRP sidelights and door frames is critical to achieve maximum performance.

363 Installation shall at all times meet the requirements of BPF/GGF code of practice for the survey and installation of white high impact modified windows (Ref: COP3, parts A&B). The requirement for through frame fixing, cleat fixing and the need for frame extensions will be discussed at appropriate times. The Provider should draw these details to the Employer's Contract Manager's attention.

364 All sidelights etc., are to be glazed from the inside of the building. Glazing systems shall be designed so that the glass cannot be removed from the outside by the use of a thin blade or other simple tool or tools.

365 All fasteners used for the installation of GRP door frames, sidelights etc and doors, must meet the following specification:-

Fastener is to be a nylon through frame type with twist proof vanes to ensure

To ensure stress free attachment to the masonry structure and to prevent twisting, racking or distortion of the frame, the anchor body will expand radially along its full length during installation. Fasteners relying on a cone and expanding sleeve are not acceptable due to the increased risk of frame distortion;

The fastener when installed will be fully concealed within the frame to ensure that the fastener remains tamper proof and secure;

Maximum distances between fasteners will not be more than 600mm and the minimum distance of fasteners from frame corners, transom or mullion joints will be 150mm; and

366 The Contractor is to ensure the final securing of fixings are screw tightened (not hammered) to avoid possible splitting of the frame. Any splitting of frames will result in the entire door set having to be removed, re-framed and replaced at the no extra expense to the Employer.

Glazing

367 Glazing should be to Building Regulations Approved Document N and to applicable Standard. In addition manufacturer's recommendations for positioning of glazing blocks and packers must be adhered to.

368 Glass to all screens and windows will be hermetically sealed double glazed low emissivity units to applicable Standards, units to be fitted in accordance with manufacturer's technical data sheet. Glass to be marked with appropriate labelling which will only be removed after handover is completed.

369 Double glazed units are to be manufactured to the following specification 4mm Float Glass - 20mm Argon Gas fill - 4mm low emmissivity glass overall thickness 28mm. Glass thickness and type shall be selected using the recommendations given in the applicable Standard to withstand the calculated design wind pressure relative to the size of pane.

370 All glazing to screens and adjacent windows must have at least one pane of laminated safety glass to applicable Standard and marked accordingly. Safety glass shall be fitted where required in accordance with Building Regulations Approved Document N.

371 If any panels have any fixtures/fitting etc. attached, they are to contain a ply reinforcement.

372 Obscure glass to be Cotswold pattern or an obscure pattern of level 5 as a minimum.

Hardware Specification for Fanlights and Sidelights

373 Openings in the fanlights/sidelights should in the first instance be avoided, as it presents a higher risk of unauthorised door entry. However, it may be deemed necessary to provide the room/inner space with an adequate amount of ventilation (see Building Regulations). In these instances, all ironmongery must be as window specification detailed elsewhere. In addition, restrictors must be concealed and tamper-proof from outside the property.

374 The fanlight/sidelight hardware package must meet the requirements of PAS 24 “Enhanced security performance requirements for door-sets and windows in the UK. External door-sets and windows intended to offer a level of security suitable for dwellings and other buildings exposed to comparable risk”

Insulated Panels

375 On full floor to head height frames, lower panels will be coloured insulated panels to match door panelling. Therefore, the panel’s overall thickness and Materials to be used will be determined by the doors PAS 24 certification. All panels will achieve a min thermal resistance equal to or better than the glazed area above.

376 All panels to be manufactured to meet all relevant Building Regulations and safety standards with regard to thermal performance, acoustic transmission, and fire protection

Covers, Trims and Mouldings

377 Unless otherwise Instructed all internal heads, jambs, and sills will be finished with a (colour as windows) single bull-nosed PVC-u trim typically 5–7mm maximum thickness of not greater width than 100mm. Scribed, mitred, securely screwed and capped and the edge glued to the frame with a PVC-u cyanoacrylate adhesive to give a neat finish and sealed on all edges using an emulsion acrylic sealant.

378 All PVC-U extrusions, mouldings, trims and profiles to windows will be manufactured and installed so that no colour variation exists to the detriment of the aesthetic value of the windows, doors etc. In accordance with colour fastness test methods included in the applicable Standard.

379 Trims are not to be used to simply provide or enhance the weather tightness of the window or any perimeter joints. Finishing trims shall be used to neaten the interface between frames and opening, they are only to be used in conjunction with the “plaster-patching” / making good situations. As it is likely that cold bridging may occur, filling at reveals, heads and sills must be plastered prior to fitting of all trims.

380 The inclusion of a finishing trim to existing reveals and sill may in certain circumstances create an issue around the re-fitting of Occupier’s blinds etc. The window installer shall pay due regard to the existing window dressing(s) and where finishing trims are required that a “slim-line” version (5mm or less) is used.

Sealants and Perimeter Pointing

381 All external sealants are to be of low modulus silicone and conform to the applicable Standard and used to seal gaps between window/door assembly and brickwork/plasterwork. Colour matched to windows and neatly executed.

382 Internal sealant to be a one-part flexible emulsion acrylic sealant. This sealant may be used to fill cracks or gaps around walls and ceilings, and around all finished PVC-u architraves and trims.

Ventilation

383 All openings to be fitted with room ventilation as per window specification detailed elsewhere.

384 If required the Contrator is to supply and fit a ventilator, which will conform to Gas regulations and applicable Standard, for air supply to gas appliances. This applies to any room containing, or used to vent these types of appliances. Type position and quantity of ventilators to be agreed and verified with the Client's Representative prior to work commencing.

385 An appropriate "DO NOT OBSTRUCT" label approved by the Employer's Contract Manager indicating boiler rating, must be fitted to all gas ventilators by the manufacturer.

Completion

386 On completion of all Works thoroughly clean all adjacent surfaces affected by the Works.

387 All builders rubbish both internally and externally must be removed during and on completion of the Works.

Employer's current manufacturers/suppliers/products

390 Ensure all Materials are compatible with and standardised to the Client's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

FIRE DOOR-SETS

[LOWER TIER – Client to delete if not applicable]

FIRE DOOR-SETS

GENERAL REQUIREMENTS ON FIRE DOOR-SETS

Scheme Type	Door Replacement	Colours/Choices
Internal Flat Entrance door-sets	Timber Veneer flush faced FD30s/FD60s door-set in accordance with Fire Safety Law and applicable Standards Door thickness 44mm and 54mm	Colours to be chosen by Client's Representative and Customers. *Locking system – the Employer's Contract Manager will Instruct whether to retain the existing *locking system or to replace with a new locking system
Internal Communal door-sets	Timber Veneer FD30s/FD60s door-set in accordance with Fire Safety Law and applicable Standards	Colours to be chosen the Employer's Contract Manager and Occupier's. *Locking system – the Employer's Contract Manager will Instruct whether to retain the existing *locking system or to replace with a new locking system
Internal Cupboard door-sets	Timber Veneer FD30s/FD60s door-set in accordance with Fire Safety Law and applicable Standards	Colours to be chosen by the Employer's Contract Manager and Occupiers. All new doors MUST match all other existing or proposed new doors throughout the scheme. the Employer's Contract Manager will Instruct whether to retain the existing *locking system or to replace with a new locking system
External Flat Entrance door-sets	Composite FD30s/FD60s door-set in accordance with Fire Safety Law and applicable Standards	Colours to be chosen by the Employer's Contract Manager and Occupier's. *Locking system – the Employer's Contract Manager will Instruct whether to retain the existing *locking system or to replace with a new locking system

Combination of Internal & External Flat door-sets	Composite FD30s/FD60s door-set in accordance with Fire Safety Law and applicable Standards	Colours to be chosen by the Employer's Contract Manager Occupiers. *Locking system – the Employer's Contract Manager will Instruct whether to retain the existing *locking system or to replace with a new locking system

Internal Flat Entrance Door-sets

401 Timber veneer FD30s/FD60s door-set, set within timber or aluminium frames in accordance with Fire Safety Law and applicable Standards to provide fire resistance ratings of 30 minutes (or better) and 60 minutes (or better) when tested in accordance with the applicable Standards.

402 All Materials to have achieved Certifire certification to 30/60 minutes fire resistance, or to have been tested in accordance with the appropriate section of the applicable Standards and all door components must comply with Approved Document B of the Building Regulations. All to be installed in strict accordance with manufacturer's technical data sheet with certificate obtained by the Provider at practical completion.

403 Please note: If the existing doors are glazed, the Provider must conduct a survey with the Customers to see whether they wish to retain the glazing or have replacement solid doors. Where possible, the Client would like to prevent glass from being installed due to security risks, fire safety and thermal efficiencies.

404 All doors must include the following elements (if not included with the door-set):

Combine 15 x 4mm intumescent /brush smoke seals to both side edges and top edge of door leaf Successfully tested for fire and smoke performance in accordance with the applicable Standards

Overhead door closing mechanism affixed to the external side of the door in accordance with applicable Standards.

75mm/3” Eurospec Fire rated door numerals in satin anodised aluminium finish.

Average size 285mm x 55mm fire and smoke resistant letter plate with Telescopic intumescent liner and Nylon brush seals fitted to prevent vision through the letterplate and provide draught proofing, complete with a security cowl is available to prevent vision through the letterplate when open, and to inhibit manipulation of locks and bolts. In accordance with the applicable Standard and Approved Document B of the Building Regulations.

Complete viewing angle 60 degrees fire rated door viewer with a prism system that allows viewing from up to 2m away. Fire protection is provided by intumescent strip and suitable for 35mm - 62mm thickness doors. One per door, Two to be provided for wheelchair users.

1½ pairs Eurospec Grade 13 ball bearing fire rated hinges manufactured from 304 grade stainless steel, CE marked, designed and tested for 44mm doors.

Locking assembly and door handle ironmongery – Thumb turn on the internal face.

Fire Safety Signage to comply with the applicable Standard for Fire safety signs, notices and graphic symbols and the Health and Safety (Safety Signs and Signals) Regulations 1996 and where applicable conform to applicable Standards.

Communal Internal Door-sets

405 Timber veneer FD30s/FD60s door-set with clear fire resisting glazing panels set within timber or aluminium frames in accordance with Fire Safety Law and applicable Standards to provide fire resistance ratings of 30 minutes (or better) and 60 minutes (or better) when tested in accordance with applicable Standards

406 All Materials to have achieved Certifire certification to 30/60 minutes fire resistance, or to have been tested in accordance with the the applicable Standards. All door components must comply with Approved Document B of the Building Regulations. All to be installed in strict accordance with manufacturers technical data sheet with certificate obtained by Provider at practical completion.

407 All doors must include the following elements (if not included with the door-set):

Combine 15 x 4mm intumescent /brush smoke seals to both side edges and top edge of each door leaf Successfully tested for fire and smoke performance in accordance with the applicable Standards

Overhead door closing mechanism affixed to the external side of the door in accordance with applicable Standard.

1½ pair Eurospec Grade 13 ball bearing fire rated hinges manufactured from 304 grade stainless steel, CE marked, designed and tested for 44mm doors to each door leaf.

Fire Safety Signage to comply with applicable Standard for Fire safety signs, notices and graphic symbols and the Health and Safety (Safety Signs and Signals) Regulations 1996 and where applicable conform to applicable Standards.

Eurospec plain or Push/Pull engraved Fire door rated finger plates to each door leaf.

Eurospec D pull Handle - A versatile range of pull handles in various bar diameters and lengths to each door leaf.

Eurospec kicking plate to both faces of each door leaf.

Electromagnetic fire door retainers (hold open devices) can be used to hold a self-closing fire door in the open position with an electrically powered magnet. These devices are usually linked into a building's fire alarm system or are controlled from locally positioned smoke detectors.

Or

Acoustic fire door retainers fitted at the bottom of fire doors and can lock a fire door in the open position by pushing a plunger down. The acoustic fire door retainers then 'listen' for the sound of smoke alarms. Door release mechanism should conform to applicable Standard for electronically powered hold-open devices.

408 Internal Cupboard Door-sets (Electric cupboards, meter cupboards, boiler cupboards, storage rooms, cleaning cupboards & Lift rooms etc.).

409 Timber veneer FD30s/FD60s door-set set within timber or aluminium frames in accordance with Fire Safety Law and applicable Standards to provide fire resistance ratings of 30 minutes (or better) and 60 minutes (or better) when tested in accordance with applicable Standards.

410 All Materials to have achieved Certifire certification to 30/60 minutes fire resistance, or to have been tested in accordance with the applicable Standards. All door components must comply with Approved Document B of the Building Regulations. All to be installed in strict accordance with manufacturers technical data sheet with certificate obtained by Provider at practical completion.

411 All doors must include the following elements (if not included with the door-set):

Combined 15 x 4mm intumescent /brush smoke seals to both side edges and top edge of door leaf Successfully tested for fire and smoke performance in accordance with applicable Standards

Cam action overhead door closing mechanism affixed to the external side of the door in accordance with applicable Standard.

1½ pair Eurospec Grade 13 ball bearing fire rated hinges manufactured from 304 grade stainless steel, CE marked, designed and tested for 44mm doors.

Locking assembly and door handle ironmongery – Thumb turn on the internal face.

Fire Safety Signage to comply with applicable Standard for Fire safety signs, notices and graphic symbols and the Health and Safety (Safety Signs and Signals) Regulations 1996 and where applicable conform to applicable Standard.

External Flat Entrance door-sets

412 Complete FD30S Composite fire door-set set within timber or aluminium frames and flush finished with a fire resistant glass reinforced plastic textured finish. Fire Resistant insulated core which has a leaf thickness of 44mm in accordance with Fire Safety Law and applicable Standards, to provide fire resistance ratings of 30 minutes (or better) when tested in accordance with applicable Standards

413 All Materials to have achieved Certifire certification to 30/60 minutes fire resistance, or to have been tested in accordance with the appropriate section of applicable Standards and all door components must comply with Approved Document B of the Building Regulations. All to be installed in strict accordance with manufacturer's written instructions with certificate obtained by Provider at practical completion.

414 Please note: If the existing doors are glazed, the Contractor must conduct a survey with the Occupiers to see whether they wish to retain the glazing or have replacement solid doors. Where possible, the Employer would like to prevent glass from being installed due to security risks, fire safety and thermal efficiencies.

415 All doors must include the following elements (if not included with the door-set):

Combine 15 x 4mm intumescent /brush smoke seals to both side edges and top edge of door leaf Successfully tested for fire and smoke performance in accordance with applicable Standards

Cam action overhead door closing mechanism affixed to side of the door in accordance with applicable Standards

75mm/3” Eurospec Fire rated door numerals in satin anodised aluminium finish.

Average size 285mm x 55mm fire and smoke resistant letter plate with Telescopic intumescent liner and Nylon brush seals fitted to prevent vision through the letterplate and provide draught proofing, complete with a security cowl is available to prevent vision through the letterplate when open, and to inhibit manipulation of locks and bolts. In accordance with the applicable Standard and Approved Document B of the Building Regulations.

Complete viewing angle 60 degrees fire rated door viewer with a prism system that allows viewing from up to 2m away. Fire protection is provided by intumescent strip and suitable for 35mm - 62mm thickness doors. One per door, Two to be provided for wheelchair users.

2 pair stainless steel hinges, CE marked, designed and tested for 44mm doors.

Multi-point automatic multi-point locking assembly and lever/lever configuration door handles to suit Euro profile lock cylinder with 3 keys – Thumb turn on the internal face.

Fire Safety Signage to comply with applicable Standard for Fire safety signs, notices and graphic symbols and the Health and Safety (Safety Signs and Signals) Regulations 1996 and where applicable conform to applicable Standard.

Anodised aluminium "low mobility" threshold.

Anodised aluminium weather bar.

Internal and External Flat Entrance Door-sets

416 Complete FD30S Composite fire door-set, set within timber or aluminium frames and flush finished with a fire resistant glass reinforced plastic textured finish and Fire Resistant insulated core which has a leaf thickness of 44mm in accordance with Fire Safety Regulations 2017 and the applicable Standard to provide fire resistance ratings of 30 minutes (or better) and 60 minutes (or better) when tested in accordance with the applicable Standards.

417 All Materials to have achieved Certifire certification to 30/60 minutes fire resistance, or to have been tested in accordance with the appropriate section of the applicable Standard. All door components must comply with Approved Document B of the Building Regulations. All to be installed in strict accordance with manufacturers technical data sheet with certificate obtained by Provider at practical completion.

418 Please note: If the existing doors are glazed, the Contractor must conduct a survey with the Occupiers to see whether they wish to retain the glazing or have replacement solid doors. Where possible, the Employer would like to prevent glass from being installed due to security risks, fire safety and thermal efficiencies.

419 All doors must include the following elements:

Combine 15 x 4mm intumescent /brush smoke seals to both side edges and top edge of door leaf Successfully tested for fire and smoke performance in accordance with applicable Standards

Cam action overhead door closing mechanism affixed to external side of the door in accordance with applicable Standard.

75mm/3” Eurospec Fire rated door numerals in satin anodised aluminium finish.

Average size 285mm x 55mm fire and smoke resistant letter plate with Telescopic intumescent liner and Nylon brush seals fitted to prevent

vision through the letterplate and provide draught proofing, complete with a security cowl is available to prevent vision through the letterplate when open, and to inhibit manipulation of locks and bolts. In accordance with the applicable Standard and Approved Document B of the Building Regulations.

Complete viewing angle 60 degrees fire rated door viewer with a prism system that allows viewing from up to 2m away. Fire protection is provided by intumescent strip and suitable for 35mm - 62mm thickness doors. One per door, Two viewers are to be provided for wheelchair users.

2 pair stainless steel hinges, CE marked, designed and tested for 44mm doors.

Multi-point automatic multi-point locking assembly and lever/lever configuration door handles to suit Euro profile lock cylinder with 3 keys – Thumb turn on the internal face.

Fire Safety Signage to comply with applicable Standard for Fire safety signs, notices and graphic symbols and the Health and Safety (Safety Signs and Signals) Regulations 1996 and where applicable conform to EN ISO 7010.

Anodised aluminium "low mobility" threshold.

Anodised aluminium weather bar.

420 Fire Door manufacturers and suppliers must provide, as a minimum, evidence of testing relating to the following:

Accreditation to and compliance with:

UKAS Accredited Fire Testing Laboratory Detailed Report, typically known as a Global Fire Resistance Assessment

Fire Testing in accordance with relevant applicable Standards for Fire Doors etc.,

Compliance (as far as reasonably practicable) with Statutory Requirements:

Building Regulations

Fire Safety and associated Technical Booklet Guidance

the applicable Standard for Fire Safety in the Design, Management and Use of Residential Buildings – Code of Practice

421 Composite fire door-set manufacturers/suppliers, must at all times demonstrate compliance with the standard specification requirements in terms of certification (and validity of same), product compliance etc.

422 The manufacturer/supplier of fire door-sets will be required to submit the following evidence directly to the Employer's Contract Manager. This will be held solely by the Employer as evidence of accredited fire performance, technical specification and particular features –

A Global Fire Resistance Performance Assessment Report for the respective composite fire door-set arrangement from a UKAS accredited fire testing laboratory with definitive confirmation that the composite fire door-set when tested to destruction achieves well in excess of the required 30 minutes

This to account for a series of glazing options including the addition of glazed top-lights or side-lights within prescribed dimensions. All other components such as hinges, multi-point locking devices, etc., must be fire-rated and hence part of this assessment. The manufacturer/supplier may elect to have a number of the same component, but from different suppliers tested and the outcome reflected in this report.

A composite fire door-set Installation and Procedure Manual specific to the product. This document is for the sole use of the Provider/Installer who warrants through a Certificate of Conformity that the Fire Door-set exhibits no compromise whatsoever prior to and post its installation.

Training is undertaken directly by the manufacturer/supplier of the composite fire door-set on their product and installation manual to the Provider in the installation of these door-sets.

A Manufacturer/Supplier Certificate of Conformity to be issued with delivery of each manufactured fire door-set listing the unique job reference and all of the secondary components (fire-rated letter-plate, eye viewer etc.,)

A Manufacturer/Supplier Fire Door-set Monthly Report that records the composite fire door-sets as manufactured. This to be issued to the Client's Representative in a tabular/PDF format on a monthly basis.

Marking of Fire Door-Sets

423 All fire door-sets supplied to the Employer should be clearly and permanently marked with their declared fire resistance at the manufacture stage. This will be in the form of a circular metallic tag. It must bear the manufacturer's name and contact details.

424 The door-set must, in addition, carry a unique job reference number on the upper RH edge of the door leaf, which, in turn, must relate to the specific Fire Door Certificate issued with the door-set.

425 Fire-resisting glass were installed as part of the fire door-sets must be identified with an appropriate designation mark. The mark on the glass must be permanent, legible and completely visible after glazing installation. Similarly, this should include as a minimum, the glass manufacturer's name and the product name.

426 The Specifying of Fire Door-Sets

Fire Door-sets are to be available in both FD30s and FD60s configurations. The specification for a fire door-set must include a full description of the elements together with the required fire resistance. Typically this should reflect critical issues such as –

the overall size of the door-set

the proposed mode of operation

size and number of any glazed apertures

details of any hardware

frame details and material being used

the presence of any top or side-light glazed panels

requirement in terms of performance seals

Door Leaves and Frames

427 All fire door-sets must be purchased as complete door-sets. This ensures that all of the correct components are fitted and that full assembly instructions are available through the manufacturer.

428 Door Leaves are to be constructed from composite materials and be “single swing”. The “as installed” door-sets must reflect those features contained in the manufacturers Global Fire Resistance Assessment Report.

429 Door frames can be provided (subject to above assessment reports) in hardwood, aluminium or steel. The frame of the door-set should provide support for the door leaf in a “cold state”, but also provide adequate support in a fully developed fire. The minimum dimensions for the frame cross- section will be stated in the manufacturer’s fire door-set assessment report.

430 The timber and metal (aluminium or steel) door frames in terms of their density, dimensions and material should not be less than those tested and recorded within the manufacturers Global Fire Resistance Assessment Report

Intumescent Fire and Smoke Seals

the same formulation, dimensions and configuration as that stated in the manufacturers Global Fire Resistance Assessment Report.

432 These seals must achieve their optimum performance when fitted in the frame of the single leaf, single swing Fire Door-sets. These are normally positioned by the manufacturer at the mid point of the door leaf thickness.

433 Fire door-sets are required under Building Regulations to restrict the flow of ambient temperature smoke – all Fire Door-sets, therefore, supplied to the Employer must be identified by the suffix “s” – for example, FD30s and fitted with smoke seals.

434 Painting of smoke seals or combined intumescent and smoke seals is not permissible as this may inhibit the door-set from latching correctly.

Glazing Apertures

435 Fire door-sets as supplied to the Employer may have glazed apertures. The door-sets must be designed to receive glazed apertures and fitted into the fire door-set aperture under the strict control of the manufacturer. Under no circumstances must apertures be cut on site.

436 The position, number and area of glazed apertures must be the same as that tested as part of the manufacturers Global Fire Resistance Assessment Report.

437 Only completely tested glazing systems must be used and the manufacturer must identify the glass product type, thickness, glazing seals and beads and any fixings. These must be fully supported by the relevant test evidence.

Fire Door-Set Hardware

438 Intumescent materials that have been used to achieve a particular performance in the fire test conditions, with the relevant hardware and the door leaf must be reflected in the completed Fire Door-set to maintain the stated fire performance.

439 It is essential that any element of hardware incorporated as part of the composite fire door-sets provides the required intumescent protection. It is recommended in most cases that the hardware is bedded in an intumescent mastic or intumescent pads to restrict heat transfer to the door edge by means of the metal hardware products.

440 All hardware/door-set furniture must be fitted in a manner that ensures the fire-resisting properties of the door-set are not compromised.

441 Intumescent and fire-rated letter plates and fire-rated eye viewers are a particular requirement of fire door-sets. These must be fitted with an intumescent liner and only fitted where they have achieved the appropriate fire resistance period when tested in-situ with the composite fire door-set.

Finish/Decoration to Fire Door-Sets

442 Fire door-sets are generally not required to provide a specific spread of flame classification.

443 All fire door leaves supplied as part of the composite fire door-set are pre-coloured GRP skins that do not require any form of decoration. Similarly those fire door-sets utilising the aluminium framing system require no form of decoration as these are “powder coated”.

444 Where there is a hardwood frame as part of a composite fire door-set, particular care must be taken where there may be future re-decoration. The use of heat or chemical strippers must be avoided at all costs as these are liable to damage intumescent fire and smoke seals incorporated within the frame.

Sample Fire Door-Sets for Approval

445 Sample fire door-sets must be delivered to site by the Provider/manufacturer/supplier for inspection and acceptance by the Client's Representative.

446 The Provider/manufacturer/supplier in providing the sample for acceptance must demonstrate full compliance with the Specification requirements. Evidence of full compliance with the standard specification requirements and a copy of the relevant test data/Global Fire Resistance Assessment Report must be held in advance by Employer.

Protection, Transportation, Storage and Pre Installation Check of Fire Door-Sets

447 The Provider/manufacturer/supplier of the fire door-sets shall be responsible for ensuring they are suitably protected to avoid damage during transportation and subsequent storage.

448 Fire door-sets shall not be flat-packed, but stood vertically during transportation.

449 Fire door-sets in storage to be "kept apart" with preferably soft packing.

449 The Contractor/manufacturer/supplier of fire door-sets may choose to disengage the over-head door closer for transportation purposes. This is a critical component and part of the fire door-set and must be re-engaged by the Provider prior to any installation.

450 The Contractor must ensure that all fire door-sets stored on site are housed within a weatherproof on-site storage facility and protected at all times from moisture and temperature extremes. This should preferably be a well ventilated facility.

451 Prior to commencement of installation, the Contractor must undertake the following checks:

Consult the manufacturer/supplier survey sheets and ensure these are correct and clear

All definitive survey measurements are recorded

The fire door-sets as supplied are of the correct fenestration and design

All hardware components are intact and engaged (where required)

452 All Fire Door-sets are generally measured in accordance with the applicable Standards and as recommended on the GGF (Glass & Glazing Federation) Code of Practice (March 2006). Fire Door-sets will in the main be fitted from the inside, although the nature of some reveals will permit these to be fitted from the outside. The measurement and fitting of fire door-sets must in every case respect the existing cover/rebate to the outer frame of the fire door-sets by virtue of the “reverse brick detail” or “check reveal”.

Compatibility of Fire Door-set Framing with Surrounding Structure

453 The type of the surrounding structure and / or the wall or partition into which the fire door-set is being installed will have been determined by the fire resistance testing and within the Global Fire Resistance Assessment Report. Reference must be made to the manufacturer / supplier for each common area and verified by test evidence.

Installation of Fire Door-sets

454 Installation Generally

All fire door-sets to be installed must pay due regard to the following –

Fire door-set manufacturer/supplier Installation technical data sheets

Installation of fire door-sets

Compatibility of door-set arrangement (and in particular, the door frame) with the surrounding structure

Sealing between the door-set and the surrounding structure

Clearance gaps

Under-door (threshold gaps)

455 Where the fire door-sets are installed by a Contractor, the following protocol must operate:

The Contractor must identify “skilled Installers” to the Employer’s Contract Manager who will be employed in their installation;

The “skilled installers” must have undertaken certified training and be classed as an approved person meeting the requirements of the BM TRADA scheme for Q-Mark Fire Door Installation to STD052 or other equal and approved standard;

The Contractor must similarly be registered as meeting the requirements of the BM TRADA scheme for Q-Mark Fire Door Installation to STD052 or other equal and approved standard, a copy of the certificate of registration is to be provided to the Employer’s Contract Manager before any Fire Doors or Door-sets are installed;

The Contractor must organise with the fire door-set manufacturer/supplier, specific training on all aspects of the door-set and importantly the installation technical data sheet;

The manufacturer/supplier of the fire door-sets must maintain a record of all training given and must be made available for inspection by the Employer’s Contract Manager, as and when required.

The manufacturer/supplier of the fire door-sets will issue “all persons attending” with a bespoke certificate as proof that training in their respective product has taken place.

456 Install the fire door-sets in strict accordance with the installation technical data sheets and ensure that there is adequate sealing with the surrounding structure and that damage is limited (or avoided) with any flame retardant coatings.

457 Under no circumstances must the fire door-set arrangement (as supplied) be compromised in the fitting/installation process. This includes making on-site adjustments to key fire-rated components such as “building hardware” with intumescent fire protection.

458 In all cases the fire door-set manufacturer/supplier is at liberty to undertake random checks to ensure that their fire door-set arrangement has not been compromised in any way. Where a manufacturer/supplier is of the opinion that any of their fire door-sets have been compromised, this must be referred immediately to the Client's Representative for action.

459 Installation Criteria:

Fire door-sets must be installed plumb and square within the structural aperture, without twist, racking or distortion of any member and in accordance with the manufacturer/supplier recommended and permissible tolerances so as to operate correctly after installation;

It is critical that the manufacturer/suppliers correct and preferred method of installation is fully complied with to ensure that the door-set, when fixed into the wall, will achieve the required fire rating designated for the respective door opening;

In order to maintain the fire resistance of the compartment walling when fitted with a fire door-set arrangement, the junction between the two elements must be adequately sealed.

The sealing of these junctions must be in strict accordance with the manufacturer / supplier Installation technical data sheets.

The composite fire door leaf must be hung to give an equal gap across the heads and down both jambs. To ensure good fire performance and under fire test conditions; this may be in the order of 2 – 4mm;

The combined intumescent fire and smoke seals (as required and fitted) must allow the door-set to operate without causing significant "frictional issues", and the gap must remain within the "as tested" tolerances;

The under door/threshold gaps should be pre-determined by the fire door-set manufacturer/supplier and be in accordance with their Installation technical data sheet for the particular fire door-set;

When fitted, the fixed or threshold arrangements or the drop- down seal variant should give an "even contact" with the floor, but not create/exhibit significant "frictional issues" that could interfere with the closing action/latching of the fire door-set

Methods of Fixing for Fire Door-sets

460 Fixing Fire Door-sets Generally

Fixings for fire door-sets must be strictly in accordance with the manufacturer/supplier Installation technical data sheets;

Fixing methods and distances together with their respective methodology must also be strictly complied in terms of the manufacturer/supplier Installation technical data sheets;

461 Use of Expanding Polyurethane Foam

The use of expanding polyurethane foam is not acceptable as a sole method of fixing any fire door-set into a structural opening;

Where the installation of the fire door-set with the adjacent wall substrate may require an element of expanding polyurethane foam, this “foam filling” must be referred initially to the manufacturer/supplier for verification/approval. Where the manufacturer/supplier Installation technical data sheet permit this or make reference to its use, this must be applied strictly in accordance with that stated;

Where expanding polyurethane foam is used, subject to manufacturer’s recommendations, it must not be used to fill gaps exceeding 10mm wide;

Foam filling must be to the full depth of the frame using only an approved fire resistant expanding polyurethane foam complying with applicable Standards and be of 4 hour fire performance rating for Building Regulations compliance

Finishing Off and Making Good

462 The final covering and treatment of adjacent surfaces, substrates, and their intersections are key in the overall fire door-set installation process.

463 The primary objectives of making good any damaged areas adjacent to the fire door-sets is to:

Maintain the fire resistance of a fire-resisting or compartment wall

Ensure the junction between the two elements are adequately and appropriately sealed

Maintain the required Surface Spread of Flame Classification (Class 0) linked to the Flame Retardant Coatings

Plaster-Patching

A small degree of plaster-patching will be required from the installation process. This will in all probability relate to reveals immediately adjacent to fire door-set.

Finishing Trims

In a small number of cases, the gap between the door frame and the wall frame may be masked by an architrave both internally and externally. In the main, it is expected that the door frame will be fixed directly to the substrate.

Where the former occurs, this should be referred initially to the fire door-set manufacturer/supplier for verification that this type of surrounding structure was determined by the fire resistance test. Additional protection can be facilitated as below.

Frame to Wall Junction & Adjacent Flame Retardant Paint Coatings

Where the surface of the adjacent walling is identified as being plastered over to back of the frame, then there is no real problem with the exception of disturbance to any applied wall applied paint applications – in many cases, these paint applications will be multiple coatings and potentially in a flame retardant paint.

Where there is disturbance of such surface linings, the Contractor must refer to his paint suppliers for advice and sampling (if required). It is recognised that wall linings disturbed and in a fully developed fire can compromise the common area.

Where architraves / adjacent panels are present, these should be removed to check that no voids exist between the frame and the adjoining structure.

If the above scenario is found, the fire door-set manufacturer/supplier should be consulted as stated. As a form of additional protection, the void(s) should be filled with plaster, intumescent material or tightly packed rock-wool. The method of packing will depend on the size of the void – guidance on filling voids satisfactorily is stated in the applicable Standard.

Where fire Door-sets are installed and any damage of the adjacent wall surfaces sustained, then a visual inspection should take place and identification made of the “applied paint” – it is expected, for example, within common areas that any of the following paint applications may exist:

Flame Retardant Paint

Emulsion

Solvent-based Gloss

Solvent-based Egg-shell

Textured Coatings

If there is any element of doubt as to the above application, then referral should made to his paint manufacturer for technical advice. This is particularly critical if the topmost paint layering is of a flame retardant paint.

There are fire hazards associated with multi-layer paint coatings

The common area paint linings and forming part of compartment walling must ultimately achieve a Class 0 Surface Spread of Flame classification. That is readily achievable normally through an “upgrade process” and specification involving flame retardant paints from the Provider’s paint manufacturer.

Fire Door-set Inspection Checklist

464 A FIRE DOOR-SET INSPECTION CHECKLIST requires to be completed where any fire door-set is installed as part of this Contract.

465 Each Fire Door-set must be individually, independently inspected by a UKAS accredited fire door installation inspector in relation to all issues listed. This information will be critical in maintaining a “level of fire resistance” within the common areas.

466 The Inspection Checklist is to give the Employer an assurance that the door-set has been independently observed and inspected as installed and that any deficiencies based on the checklist issues have been noted and recorded. The inspector is required to record and advise the Provider of any such deficiencies.

467 The inspection, recording and completion of this Checklist is the responsibility and cost of the Provider. Photographs may be used where necessary as evidence of any significant deficiencies.

468 Ensure that any deficiencies identified are remedied without delay.

469 Upon completion of any remedial works must sign and issue the Contractor’s Certificate of Conformity for each Fire Door-set.

Certification Generally

470 Fire Door-sets as supplied to the Employer must be “certified” as fit for purpose and capable of achieving the fire resistance and integrity as stated.

471 Demonstrate compliance with this Specification.

472 Manufacturer/Supplier Certification and Compliance

Any Manufacturer/Supplier of Fire Door-sets are required to undertake the following:

Tag every Fire Door-set with a round metallic tag affixed to the door leaf with security screws; this must state “FD30s or FD60s” and the respective Manufacturer’s name and contact number.

The upper RHS of the Fire Door leaf must bear the unique manufacture job reference assigned to the respective Flat/Maisonette address or communal location – this must relate directly to the MANUFACTURER/SUPPLIER CERTICATE OF CONFORMITY and also be logged to the MONTHLY FIRE DOOR-SET REPORT

The MANUFACTURER/SUPPLIER CERTIFICATE OF CONFORMITY must be made available with every Fire Door-set and record the following details:

Project/Scheme name & corresponding Project No.

Door-set Manufacturer/Supplier details

Manufacturer/Supplier job reference

Contractor supply details

Completed Certificate of Conformity Statement

Product Supplied Address

Product Details

The relevant Certificate of Conformity template is included below:

A MANUFACTURER/SUPPLIER MONTHLY FIRE DOOR-SET REPORT format and content to be approved by the Employer's Contract Manager must be submitted to the Employer's Contract Manager on a monthly basis fully completed as confirmation of all fire door- set locations as supplied in the preceding month. This report must cross-reference with all of the Certificates of Conformity issued.

Installer Certification and Compliance

473 The Contractor is required to undertake the following:

Undertake all remedial works/deficiencies as identified on the Fire Door-set inspector checklist, format and content to be agreed with the Employer's Contract Manager.

Warrant that the Fire Door-set as installed has been supplied from a fire door-set manufacturer who holds a current and valid Global Fire Resistance Assessment Report; in addition, the Contractor is to warrant that the fire door-set Installation (and any identified deficiencies have been undertaken in strict compliance with the manufacturer/supplier installation technical data sheets and with the Employer's Specification and that no compromise of any fire safety component exists.

474 The relevant INSTALLER CERTIFICATE OF CONFORMITY template is to be provided by the Employer to the Contractor.

Employer's current manufacturers/suppliers/products

475 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

PRE-FINISHED TIMBER EXTERNAL DOOR SETS AND SCREENS

[LOWER TIER – Client to delete if not applicable]

PRE-FINISHED TIMBER EXTERNAL DOOR SETS AND SCREENS

Timber Doors

501 This Section is to be read in conjunction with the general specification for ‘Replacement Windows and External Doors – Surveying and Installation’ and ‘Replacement External Doors – General’.

502 All new pre-finished timber doors shall be purpose made pre-treated timber double glazed doors, manufactured to the applicable Standard.

503 Where required lower panels shall be laminated safety glass or 25mm hardwood raised and fielded panels as appropriate. Plywood panels shall not be accepted.

504 Hardwood or aluminium glazing beads incorporating an integral EDPM corded lipped gasket shall be fitted to the external face. The bead type and colour shall be agreed with the Employer’s Contract Manager.

505 All aluminium glazing beads shall be secured with bead retention clips as standard. Pre-finished hardwood glazing beads shall be fixed either by secret nailing using stainless steel or copper pins or by stainless steel large headed pins. When pinning with stainless steel large headed pins care shall be taken to ensure that splitting, head indentation of the glazing bead or breaking of the paint surface by the head does not occur. Bead retention clips may also be used for the securing of hardwood glazing beads.

506 All pre-finished door-sets shall be delivered to site totally completed including full coating system, this shall be either opaque or translucent, solvent based or water borne, fully glazed and with all furniture fitted leaving only the need to fix into the prepared opening on site. Note: Projecting furniture i.e. handles, may be supplied unfitted to avoid damage during transit.

507 All workmanship to be to applicable Standard.

508 Timber for use in all doors shall be selected hardwood and in the density range of 650kg/m cu. Doors may be flush fitting or rebated over frame.

509 Flush fitting doors shall have a minimum thickness of 44mm.

510 Rebated doors shall have a minimum thickness of 57 mm.

511 Timber for doorframes shall be selected hardwood and in the density range of 650kg/m cu.

512 All external edges shall have a radius of not less than 1.5mm and not greater than 3.00mm in accordance with Paint Manufacturers technical data sheet.

Note: It is acceptable for this detail to ‘run through’ all joint lines.

513 Surface waves caused by machining or excessive sanding will not be accepted.

514 All frames, mullions, transoms etc., to be to quality standard of the applicable Standard.

515 Timber doors to be set in rebated hardwood frames, and 2XG style pre-primed timber doors with upper panel double glazed with laminated safety glass sealed units.

516 Weatherboards to doors are to be included.

Employer’s current manufacturers/suppliers/products

517 Ensure all Materials are compatible with and standardised to the Employers’s current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer’s current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

ALUMINIUM EXTERNAL DOORS AND SCREENS

[LOWER TIER – Client to delete if not applicable]

ALUMINIUM EXTERNAL DOORS AND SCREENS

Generally

601 This Section is to be read in conjunction with the general specification for ‘Replacement Windows and External Doors – Surveying and Installation’ and ‘Replacement External Doors – General’.

602 The Works comprise all the necessary Design Work for and the supply and installation of aluminium external doors and screens, with double glazed units to communal staircases and landings.

Design Standards

603 The door system is to comply with the following applicable Standards:

Glass for glazing – Classification

Aluminium and aluminium alloys. Extruded rod/bar, tube and profiles. Mechanical properties

Aluminium alloy windows and doorsets Specification

Patent glazing and sloping glazing for buildings. Code of practice for design and installation of sloping and vertical patent glazing

Fire safety in the design, management and use of residential buildings. Code of practice

Specification for impact performance requirements for flat safety glass and safety plastics for use in buildings

Glazing for buildings. Code of practice for safety related to human impact

Performance of windows and doors. Classification for weathertightness and guidance on selection and specification

Performance of windows and doors. Classification for operation and strength characteristics and guidance on selection and specification

Specification for powder organic coatings for application and stoving to aluminium alloy extrusions, sheet and preformed sections for external architectural purposes, and for the finish on aluminium alloy extrusions, sheet and preformed sections coated with powder organic coatings

Corrosion tests in artificial atmospheres. Salt spray tests

Windows doors and rooflights. Design for safety in use and during cleaning of windows, including door-height windows and roof windows. Code of practice

Windows and doors. Code of practice for the survey and installation of windows and external doorsets.

Specification for improved security single hinged residential doorsets.

604 The installation is to comply with all the relevant requirements of Building Regulations Approved Documents.

605 All door openings are to be suitable for wheelchair access in accordance with the Building Regulations Approved Document M (Access to and use of buildings). This means that, with the door open, the clear opening width between the jamb of the frame and the hanging style of the door is to be not less than 800mm.

Materials

606 All framing and swing doors system must be constructed from aluminium 100% recycled and suitable for fire route exits.

607 Screws and internal components must be either stainless steel, A2 cadmium plated steel or other corrosion resistant material.

608 Glazing beads must be aluminium “snap on” type requiring no screws. Dry glazing must be with self-locking plasticised PVC-u gaskets.

Construction

609 Framing assembled from pre-finished lengths of aluminium profile, which are square cut. All horizontal members are secured to verticals by screwing into four integral screw splines. All joints to be sealed against the entry of water. Mid rails into framing are to be secured with frame to rail cleats.

610 Door leaf assembled from finished lengths of aluminium profile, which is square cut. Door rails secured to stiles with pre-machined cleats. All joints to be sealed against entry of water. All external-glazing beads must be secured by mechanical means and tamper proof. Stiles to have double weather-stripping as standard.

Ironmongery

611 Fire exit doors (opening out) (to comply with applicable Standard (Building Hardware. Panic exit devices operated by a horizontal bar, for use on escape routes. Requirements and test methods.))

1 No. Flush Fitting Panic Latch.

1 No. Pull handle in matching polyester RAL coating to outside.

1 No. Door closer.

1 No. Modular escape nightlatch with 70mm backset with suited lock.

1 No. High Security Electric Strike faceplate

Minimum 3 No. finger guard silver anodised butt hinges.

612 Main entrance door:

1 No. Pull handles in matching polyester RAL coating.

1 No. Flush Fitting Panic Latch.

1 No. Low energy swing door operator.

1 No. Modular escape nightlatch with 70mm backset with suited lock.

1 No. High Security Electric Strike faceplate

Minimum 3 no. finger guard silver anodised butt hinges.

Screen Inserts

613 System screen inserts must consist of an outer frame and ventilator frame mitred and mechanically jointed using prepared extruded aluminium corner cleats and stainless steel corner chevrons. All joints must be sealed against the entry of water. Infills are secured by snap in beads internally or externally. Integral mullions/transoms are secured by driving screws into extruded screw ports. Structural coupling mullions and transoms are available to construct larger composite window units. Always refer to the System manufacturer's technical data sheets for limitations on frame and vent size.

Colour Finish

614 All exposed sections of aluminium extrusion are to be powder coated. Unless otherwise specified all powders must comply with the requirements of the applicable Standards and conducted under applicable Standard control conditions. Powder coating application and stoving on aluminium must be carried out in accordance with the applicable Standards.

615 The powder coating must have a Class 1 surface spread of flame rating to applicable Standard.

616 The selected coating must comply with the British Board of Agrément Certificate or equivalent. Colour to be high gloss white.

617 All doors are to be permanently marked in an unobtrusive position (not viable when the opening door is closed) with the name and trademark of the system supplier and fabricator.

618 Units are to be installed by a specialist Subcontractor approved under the terms of the Contract. After installation and glazing, units are to be checked and adjusted as required.

Glass

619 Hermetically sealed 24mm double glazed units with clear glass.

Main entrance door to scheme

620 Electric swing opener to be installed by a specialist Subcontractor approved under the terms of the Contract.

621 The Contractor is to liaise with his Subcontractor for the door entry/warden call system to work on door entry system with regard to the following operations:

Disconnection system before existing door is removed; and

Connection system after installation of new door is installed to allow Customers and central control to open the door remotely.

Proximity Swipe

622 External doors to be fitted with a proximity swipe system with capability of reading up to 70 key fobs also to be supplied.

Master Keying

623 All new locks are to pass the same key suited to the schemes master suite.

624 Copies of keys are to be issued in the first instance to the Employer’s Contract Manager.

Installation

Aluminium

625 Installation of fenestration systems must be performed by a Subcontractor approved by the Employer's Contract Manager in accordance with shop drawings and pointed with a fire grade silicone/mastic sealant, all as approved by the Employer's Contract Manager. After installation and glazing the Contractor must check and adjust, if required, all items furnished under this section.

Glass

626 All glazing to be carried out in accordance with the requirements of the Building Regulations. Glass to comply with applicable Standards.

627 Safety glass to comply with applicable Standard with regard to impact performance and the marking of glass to indicate type and classification, and with regard to minimum thickness' for certain pane sizes.

Protection and Cleaning

628 The ontractor must be responsible for any damage to the Materials under this section of the Specification incurred by him during installation and must leave the Work in a clean condition. The Contractor must be responsible for the protection of these Materials from damage by other trades and must be responsible for the final

Fasteners and Fixings

629 All aluminium units are to be installed in accordance with the manufacturer's installation technical data sheets.

630 Openings should be checked against available drawings or a site survey for correctness and openings should be square and plumb.

631 Fixings grounds at head, sill and jamb must be capable of carrying all imposed and dead loads in a stable condition, i.e. there should be no spalling, fissures or general debris.

632 Expanding polyurethane foam must not be used as a sole method of fixing.

Approved Fabricators

633 If the Contractor is not an approved powder coated door and screen manufacturer/contractor, he must sub-contract the work to a fabricator who is capable of being approved by the Employer's Contract Manager.

634 When submitting his tender, the Contractor must give full details of the proposed system, ironmongery, glazing method etc.

Employer's current manufacturers/suppliers/products

635 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

REPLACEMENT UNDECORATED TIMBER EXTERNAL DOOR SETS AND SCREENS

[LOWER TIER – Client to delete if not applicable]

REPLACEMENT UNDECORATED TIMBER EXTERNAL DOOR SETS AND SCREENS

Timber Doors

701 This Section is to be read in conjunction with the general specification for ‘Replacement Windows and External Doors – Surveying and Installation’ and ‘Replacement External Doors – General’.

702 All new undecorated timber doors shall be factory primed, purpose made pre-treated timber double glazed doors, manufactured to applicable Standards.

703 Where required lower panels shall be laminated safety glass or 25mm hardwood raised and fielded panels as appropriate. Plywood panels shall not be accepted.

704 Hardwood or aluminium glazing beads incorporating an integral EDPM corded lipped gasket shall be fitted to the external face. The bead type and colour shall be agreed with the Employer’s Contract Manager.

705 All aluminium glazing beads shall be secured with bead retention clips as standard. Factory primed hardwood glazing beads shall be fixed either by secret nailing using stainless steel or copper pins or by stainless steel large headed pins. When pinning with stainless steel large headed pins care shall be taken to ensure that splitting, head indentation of the glazing bead or breaking of the paint surface by the head does not occur. Where this does occur, the indentation shall be filled with approved filler, rubbed down smooth and touched in with approved primer. Bead retention clips may also be used for the securing of hardwood glazing beads.

706 All pre-finished door-sets shall be delivered to site totally completed including factory applied primer or base coat stain, this shall be either opaque or translucent, solvent based or water borne, fully glazed and with all furniture fitted leaving only the need to fix into the prepared opening on site and insitu decoration Note: Projecting furniture i.e. handles, may be supplied unfitted to avoid damage during transit.

707 All workmanship to be to the requirements of the applicable Standard.

708 Timber for use in all doors shall be selected hardwood and in the density range of 650kg/m cu. Doors may be flush fitting or rebated over frame.

709 Flush fitting doors shall have a minimum thickness of 44mm.

710 Rebated doors shall have a minimum thickness of 57 mm.

711 Timber for doorframes shall be selected hardwood and in the density range of 650kg/m cu.

712 All external edges shall have a radius of not less than 1.5mm and not greater than 3.00mm in accordance with Paint Manufacturers technical data sheet.

Note: It is acceptable for this detail to ‘run through’ all joint lines.

713 Surface waves caused by machining or excessive sanding will not be accepted.

714 All frames, mullions, transoms etc., to be to quality standard required by the applicable Standards.

715 Timber doors to be set in rebated hardwood frames, and 2XG style pre-primed timber doors with upper panel double glazed with laminated safety glass sealed units.

716 Weatherboards to doors are to be included.

Decoration of timber door sets and screens

717 All new timber external door sets and screens are to be built in prior to full decorations being applied.

718 Make good any exposed/damaged surfaces with approved filler. Rub down and leave smooth before applying 1 No. coat of approved primer on base coat stain for bare wood and filled areas.

719 Paint 2 No. coats of white undercoat and 1 No. coat of white gloss pain or 2 No./3 No. coats of stain top coat (as recommended by manufacturer), to all surfaces, rubbing down between all coats.

Employer’s current manufacturers/suppliers/products

720 Ensure all Materials are compatible with and standardised to the Employer’s current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer’s current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

TECHNICAL SPECIFICATION

14-REPLACEMENT WINDOWS

REPLACEMENT WINDOWS - SURVEYING AND INSTALLATION

[TOP TIER]

REPLACEMENT WINDOWS - SURVEYING AND INSTALLATION

General

001 It should be noted that in order to reduce possible errors/confusion due to conflicting repeat clauses etc. the Replacement Window specification sections have been sub divided into tiers as per the table below;

Top tier	Middle Tier	Lower Tier
Replacement windows – surveying and installation etc.	Replacement Windows – General	Replacement PVC-u Windows
		Replacement Pre-finished Timber Windows
		Replacement Undecorated Timber WIndows

002 In this manner each completed product will be required to meet the specification of 3 No tier documents.

003 Example; if work to be undertaken is a Replacement PVC-u window, then the 3 No tier documents to be used will be;

- Replacement windows – surveying and installation etc.
  - Replacement Windows – General
- Replacement PVC-u Windows

Initial Survey

004 A list of Properties will be given to the Contractor with access details and the Contractor is then responsible for arranging access, visiting the Properties, taking measurements and forwarding existing window dimensions and the Provider's proposed style of replacement windows to the Employer's Contract Manager for approval.

005 Windows - Whether the new windows are to be PVC-u or timber replacements is dependent on the condition of any existing double glazed window (if present) and therefore matching new proposals with the existing Property and surrounding Client owned Properties.

006 The drawings are to include ‘sketch elevations’ of each window showing the position of each proposed window type and to include details of opening casements and glass type for each window.

007 The proposals are to be approved by the Employer’s Contract Manager before the Provider commences manufacture.

Site Measurements

008 The Contractor is responsible for ascertaining the correct dimensions and sizes of every existing window in each Property.

009 The dimensions noted on any schedule issued by the Employer’s Contract Manager are for guidance only and are approximate measurements. The Contractor is responsible for taking all site sizes and measurements for each and every window opening, and for manufacturing windows accordingly and to the applicable Standard for Windows and doors - Code of practice for the survey and installation of windows and external door-sets and as recommended in the GGF (Glass & Glazing Federation) “Good Practice Guide for the Installation of Replacement Windows and Doors”.

010 This procedure requires a minimum of **8 No measurements** both internally and externally to determine the difference between internal and external reveal sizes. Therefore internal access to the Property must be gained before manufacturing the windows – this will also allow for full Occupier consultation and agreement of intended Works. It is Contractor’s sole responsibility to obtain the Occupiers approval to receive the Works before manufacturing is commenced.

011 Windows are in the main fitted from the inside, although the nature of some reveals will permit replacement windows to be fitted from the outside.

012 The measurement and fitting of windows must in every case respect the existing cover / rebate to the outer frame of the windows by virtue of any “reverse brick detail” or “check reveal” that may pertain to existing Client Property.

013 Where a check reveal is present for weathering purposes, the window manufacturing sizes should be based on achieving a minimum frame overlap of 12 mm on the external leaf. A hole may be drilled thorough the existing frame jamb rebate to establish the check reveal size. A frame may also be built into the check reveal at the head by use of a rebated lintel, and again a minimum frame overlap of 12 mm should be provided where practicable. If an overlap of 12 mm cannot be achieved, this should be discussed with the Employer's Contract Manager and an agreement reached regarding the size of the overlap for particular properties. As the Employer owns a large stock of Properties, which vary in construction detailing, long term standard agreements to the amount of overlap will not be made with exception to the dimension stated here.

014 Attention is drawn to the fact that similar windows in similar Property types may vary in size.

015 The Contractor is responsible for ascertaining the correct dimensions and sizes of every existing window in each Property. Measurements for each window (and its location) must be clearly identified on any delivery schedule and each window shall have a clear labelling system to reflect this.

016 The use of make up pieces (clip-on's) will not normally be permitted except with the express **written** authority of the Employer's Contract Manager. Written authority does not transfer to the entire Contract, if gained; it must be acquired for individual Property and/or phases.

017 Any existing window opening which will present the Contractor with a problem in compliance with the Specification, or in manufacture of a window to suit, must be brought to the attention of the Employer's Contract Manager before the window is fabricated. The Employer's Contract Manager will issue a written Instruction informing the Provider of what action is to be taken.

018 Obtain signed consent from the Occupier before manufacture of window is undertaken. The Contactor should be aware payment will only be made on completion of the window being installed into the Property.

Guarantees

019 In addition to the Employer's rights under the Contract, the Contractir is to provide the minimum guarantee tabled below against manufacturing defects etc., on all new PVC-u and timber windows upon completion of the Works. The guarantee is to include for all profiles, joinery, and for the double glazed units.

020 Manufacturers guarantees in all instances are to be for the years stated below with no exceptions attached (i.e. end user servicing expectations etc.), this will assure the Employer that the manufacturer is confident of their own products durability.

PVC-u profiles	25 Years
Timber frames	30 Years guarantee against fungal attack
~~Timber Window Manufacturing Defects~~	~~10 year guarantee~~
~~Timber Window (Factory Painted External Joinery)~~	~~10 Year guarantee (as minimum)~~
~~Timber Window (Factory Stained External Joinery)~~	~~6 Year guarantee (as minimum)~~
Hardware Components	10 Years (minimum)
Double Glazed Units	15Years (minimum)

021 Windows are to be manufactured under guidelines ISO 14001 (Environmental Management) and ISO 9001 (Quality Management Systems) with manufacturing companies holding the relevant accreditation. Manufacturers should promote and maintain an Environmental Policy and be committed to it. They should be able to demonstrate that all operations proactively comply with all applicable environmental laws and regulations.

022 The manufacturer shall provide a good practice guide relating to aftercare and maintenance of their manufactured window/sidelight etc. and its component items. Ensure that each Occupier receives a copy of this.

General Design of Windows

Windows - Street Properties

023 Generally the Design of windows to be replaced with storm-proof casements projecting top and side swing hinge (see Appendix A in Replacement Windows - General).

024 However, each Property case may be different and therefore approval will be required for each Property. In all cases, the proposed new style of windows will need to comply with Building Regulations and in particular fire egress in terms of all habitable rooms.

~~**Timber Windows**~~

~~025 The Provider is responsible for ascertaining the correct dimensions and sizes of every existing window in each Property.~~

Emergency Egress Windows

026 Every habitable room shall have at least one opening which shall comply with the Building Regulations Emergency Egress Windows, having an unobstructed openable area that is at least 0.33m2 and at least 450mm high x 450mm wide with the bottom of the openable area not less than 800mm and not more than 1100mm above the floor. Egress hinges should be included, where necessary.

General Window Installation

027 All Windows and sidelights are to achieve an 'A' energy rating certificated by the British Fenestration Rating Council (BFRC).

028 All replacement sidelights must achieve Building Control standard of Maximum U-Value = 1.8 W/m^{2}K for units with >50% internal face glazed.

029 U-values of windows glass and frames must meet the Building Regulations and must be BFRC Certified and have an "A" Rated Energy Index. Centre Pane "U Value" of 1.2W/m²K (or better). Thermal Transmittance Whole Window "U Value" of 1.4 W/m²K (or better)

030 All windows are to have "child restriction" to limit the uncontrolled opening of the window.

031 All windows must pass testing undertaken to PAS 24 and be Secure by Design certified. All certification documents are to be forwarded to the Employer's Contract Manager and kept updated – this must include test certificate, report and list of tested ironmongery with product manufactures names, type etc. Evidence of compliance with PAS 24 (Specification for Enhanced security performance requirements for door-sets and windows in the UK) will be a condition of tender.

032 All new windows are to match existing size openings in existing positions (i.e. brick reveals to be maintained externally where necessary on all occasions).

033 Before installing the new window, the existing structural opening should be checked to ensure its stability and existing lintels checked to ensure their condition soundness. Any large repairs should be reported to the Client's Representative.

034 It is permissible to "chip back" a small area of plaster (typically 25mm) extending full height up the existing reveals and immediately adjacent to the windows; this will both facilitate removal of existing window and installation of replacement window.

035 All openings should be cleaned of debris etc., and any minor making good is expected to be carried out as part of the window replacement works.

036 All metal fixings should be at least as corrosion-resistant as applicable Standard.

037 Windows shall be secured in accordance with the recognised "fixing distances" for strap / lug fixings and through-frame fixings as recommended in the applicable Standard

038 Sills must be properly supported and fixed to ensure there is no likelihood of water penetration.

039 All internal reveals should be made good and plaster or decorations made good to match existing.

040 External sealing should be by means of a cement/sand pointing around the new window frame to conceal larger gaps and then a low modulus white silicone sealant to applicable Standard. Only silicone sealants recommended by the manufacturer/supplier should be used and not general purpose mastics. All abutments of the windows should have silicone sealant applied.

041 Prior to installation the windows are to be supplied with adequate protection against damage caused by slippage, distortion etc. They must be stored under cover in a dry and secure position, stacked vertically, not horizontally.

042 The window dimensions must be checked with those of the opening before removal of the existing window.

043 A craft knife should be used to score around the perimeter of the existing frame in order to minimise damage to plaster/decoration.

044 Windows to be removed and all existing mastic and debris cleaned away. The Contractor is to ensure that the work is carried out in a neat and tidy manner, with all rubbish removed to a lockable skip at the end of each working day.

045 The damp proof course is to be checked by the Contractor to ensure one is present and in good condition. Any defects present are to be brought to the attention of the Employer's Contract Manager immediately.

046 The new windows must be installed in accordance with the manufacturer's requirements, taking into account the construction of the Property. Fixing methods should take into account thermal movement. The method of fixing will generally be either through frame fixing or lug fixing.

047 Windows must be installed plumb and square without twisting, racking or distortion of any member in accordance with the manufacturer's installation tolerances.

048 The outer frame of the window must be centred in the aperture and be positioned so that it does not bridge the damp proof course. The amount by which the new window is set back from the outer face of the wall is determined by the requirement to set the internal face as close to the existing internal finishes as possible and by the bridging of the damp proof course.

049 The window frames must be secured so that the corner fixings are a minimum of 150mm and a maximum of 250mm from the corner of the frame and the intermediate fixings at centres no greater than 600mm.

050 No fixing must be closer than 150mm to a transom or mullion centre line. Should the manufacturer require more onerous fixing requirements then these must be adhered to. Care should be taken not to overtighten bolts and that packers/shims are not allowed to fall away. Care should also be taken to ensure that water tightness is maintained where lintels have to be drilled for fixing.

051 All screw fixing heads which pass through the profile are to be spot sealed with appropriately coloured or clear silicone sealer or a PVC-u cap.

052 Where electrical, television, telephone wires etc., enter a Property either through a hole in the existing window, or adjacent to it, then such services must be routed around the PVC-u window frame. A split plastic tube of suitable diameter and length for entry into the Property should be slipped over the cable so that connections do not have to be disturbed on the appliances, with the ends of the tube sealed with white silicone sealant on completion of the window installation.

053 Where any internal plaster work is disturbed when the existing windows are removed, the Provider must make good the plasterwork. PVC-u cover mouldings may be used to a maximum width of 30mm.

054 Bathrooms/WC windows must have obscured glazed window panes internally and one clear pane externally forming the double glazed units.

055 Include for removing existing internal window sills and renewing with suitably sized PVC-u window sills and any extensions to window frames required to raise height of window openings to 800mm from finished floor level internally if required.

056 Internally the PVC-u frame must be well caulked and the gap between the reveal finish and the frame flush pointed with a one part white emulsion acrylic painter's caulk.

057 Provide a matching cover bead at the junction of the internal window board or tile sill and the PVC-u window frame to all windows.

058 Each window must be permanently marked or labelled in an unobtrusive position (not visible when the opening light is closed) showing details of the manufacturer, the job number of the window and the date of manufacture.

059 The standard for glass units is Part 2 of the applicable Standard and Part 3 for gas filled types.

060 Special care and attention must be taken to protect and avoid any damage to windows. Any damaged window must be replaced with a new window, and it must be at the Employer's Contract Manager's sole discretion as to whether a repair to a window is acceptable.

Safety Laminated Glass

061 All glazing in windows in critical locations as defined by the Building Regulations (i.e. glazing below 800mm internal sill heights in windows is to have both skins of glass units glazed with laminated low E glass – assumed to be 2 No. skins of 6.8mm laminated safety glass.

062 Internal and external panes in sidelights, double glazing units to be laminated glass as default. An exception may be made where a staircase ends or turns immediately inside the doorway – in this instance the internal pane may be toughened (i.e. to reduce impact pressure) – written notification must be given to the Employer's Contract Manager. External pane must always be laminated to provide security and satisfy PAS 24.

063 All safety glass is to be permanently marked on both panes with applicable Standard kite marks, which are to be visible after installation.

064 Both sheets of glass making up the sealed double glazed unit must be safety glass where required by the above descriptions.

065 Details of windows in critical locations are to be stated in the Provider's proposals for each new window when proposed drawings are forwarded to the Employer's Contract Manager for approval.

Glazing - General

066 Windows must be manufactured so that glazing or re-glazing on site is possible without the need to remove the outer frame from the structure of the building.

067 All glass and insulated glazed units should be carefully examined for damage, especially at the edges, prior to installation. Defective items must not be used.

068 The two panes of glass in the double glazed unit are to be held apart with warm edge technology, spacer bars to improve thermal efficiency and reduce the possibility of condensation forming around the perimeter of the sealed double glazed unit.

069 The glazing of the windows must be carried out immediately after the installation of the frames and casements

070 On completion of window installations, all glass to be cleaned internally and externally and left clean and free from blemishes.

071 Any glass with scratches cracks or defects to be replaced by the Contractor at no charge.

072 All windows to be **INTERNALLY GLAZED** in argon filled sealed units in low Emissivity glass, using pre-formed gaskets inserted during the profile extrusion and secured by knock-in PVC-U glazing beads with mitred corners

073 All windows/sidelights will be totally dry-glazed with minimum 12mm wide x 3mm thick double-sided PVC foam closed cell high density security glazing tape on the inside frame rebates. Co-extruded EPDM corded glazing gaskets on the frame are acceptable as an alternative provided that bead security clips are used in conjunction with it.

074 All glazing to be clear glass except bathrooms and WC's which are to be obscure Cotswold style glass or pattern group 5.

075 Glass shall be at least the minimum thickness to meet wind load requirements of the applicable Standards.

076 Glazing beads are to be able to withstand the design wind loading in accordance with and the tests specified in the applicable Standards.

077 Note: All timber sliding sash windows to have sash cords and lead weights to box frames to counteract the glazing weights

078 Fans are not permitted in sealed units.

079 Details of all glass types are to be stated in the Contractor's proposals for each new window when proposed drawings are forwarded.

Certificate of Test Window/Sidelight

080 All manufacturers of window/sidelight etc. shall be required to have a "sample" submitted for testing at an accredited testing station. These samples must be inspected against the requirements set out above. All manufacturers are required to have "third party" registration provided by BBA, BSI or equivalent recognised accredited quality licensing authority for the manufacture windows/sidelights etc.

081 A copy of the respective Certificate of Compliance for Secure by Design and PAS 24 must be made available at the time of submitting for inspection, which confirmations that the manufacturer can produce the product to the required standards, along with all testing data. The Contractor should be aware these certificates may form part of the document handover pack and if not supplied on completion and handover of the Work, will incur a financial penalty.

Delivery to site of windows/sidelights etc.,

082 In each option, primary consideration must be given to current health and safety at work legislation in respect of site practices.

083 Option 1 – Pre-glazed

Will be valid where the window manufacturer is commissioned on a supply only basis; the installation, therefore, being undertaken by the Contractor.

084 Option 2 – Un-glazed

Will be valid where the window manufacturer is commissioned on a supply and fit arrangement. This will involve the supply of insulating glass units and pre-formed glazing gaskets to be applied on site in accordance with the manufacturer's technical data sheet.

085 Critical considerations to be observed:

- All glazing must conform to the recommendations contained in the relevant parts of the applicable Standards. The setting and location block positions, frame to glass and bead to glass gaskets etc. with any glass or insulating glass units must be installed in accordance with the relevant manufacturer's technical data sheet and as per the recommendations in the applicable Standard;
- All insulating glass units shall be examined for damage prior to installation; defective units shall not be used;
- Insulating units with "low emissivity coatings" shall be oriented in accordance with the manufacturer's technical data sheet; and
- Where safety glazing forms part of an glazing unit, it remains a legal requirement to ensure that the marking remains visible after installation.

Protection, Transportation, Storage & Pre installation check

086 The Contractor must ensure the manufacturer/supplier is responsible for ensuring that all windows/sidelights are suitably protected to avoid damage during transportation and storage.

087 Windows/sidelights/glazing units (if applicable) shall not be flat-packed, but stood vertically during transportation

088 Windows/sidelights/glazing units in storage to be “kept apart” preferably with soft packing to reduce risk of transport/handling damage.

089 The Contractor must ensure that all windows/sidelights stored on site are housed within a secure weatherproof storage facility on-site until the time of fitting. Pre-finished joinery shall not be stored in direct sunlight.

090 Prior to commencement of installation, the Contractor should undertake the following checks -

- Consult survey sheets and ensure these are correct and clear;
- All survey measurements are recorded
- The windows/doors/sidelights supplied; are of the correct fenestration and design and in accordance with the window schedule approved by the Client’s Representative;
- The glass type and pattern are correct;
- Window and glass sizes are compatible;
- All trims, gaskets etc., are correct and fitted correctly; and
- Consult survey sheets to ensure windows supplied are correctly marked and identified to those Properties being replaced.

Site Approval on delivered

091 Previous to the benchmark Properties being set, a sample Pre-Finished Timber window / sidelight shall be delivered to site by the preferred manufacturer/supplier for inspection and acceptance by the Employer’s Contract Manager.

092 The manufacturer/supplier in providing the sample for acceptance must demonstrate full compliance with the specification requirements. Evidence of thermal efficiency standards being offered must be available to the Client’s Representative for verification.

093 The sample window (upon acceptance) will form the “benchmark window” for the remainder of the project.

094 The Employer’s Contract Manager shall reserve the right (at any stage) to have any window which is delivered to site, subsequently removed for further inspection/audit and/or independent testing to ensure that the specification requirements are being complied with.

Remove and Install on same Day

095 Existing doors to be removed are most likely to be timber in nature, although a small percentage of properties may have original PVC-u windows. The Contractor should make every effort to have all existing windows recycled and provide waste disposal reports to the Employer’s Contract Manager.

096 Replacement windows must be installed on the same day that the original windows are removed in order to maintain security and weather tightness of the structure. The existing windows should be removed with care in order to avoid damage to the Property structure and its finishes and without permitting any subsidence of the structure during or after the operation.

097 When providing numerous replacement windows to a single Property the Works should be undertaken on one set day to reduce the amount of disturbance to the Occupier.

098 Any defects that become apparent in the integrity of the structure upon removal of any window should be reported to the Employer’s Contract Manager immediately.

099 If there is a sub-sill or threshold, e.g. Concrete, slate, brick or tile, below the existing window frame it must be left in position unless otherwise specified.

Protection of Existing Fixtures etc.

100 Allow for protection of floor coverings, furniture and Occupier’s belongings throughout the duration of the Works.

101 Move any furniture, fixtures and fittings that may be damaged during the installation of the windows/doors, prior to commencement of the replacement of any window/door and repositioning such items upon completion of the installation to each Property.

102 The Contractor will be responsible for both internal and external protection. After the removal of the existing window/sidelight the Provider is to carefully cut back any internal or external flooring, finishings, cladding, wallpaper and decorations to allow for the installation of the new frames etc. The Contractor is responsible for making good all structures, finishings and decorations up to 100mm from the face of the frame or sill.

103 Ensure that clean and sufficient dust sheets or protective coverings are used, when carrying out any Works. The Provider must ensure he has taken all adequate provisions to ensure that the soiling or damage to floor coverings and needless damage to decorations are avoided. The Contractor must allow for any cleaning of floor coverings required as a consequence of the Works and this should be reflected in the tender Rates submitted.

104 It is recommended the Contractor undertakes a Schedule of Condition and agrees this with the Occupier prior to undertaking any Works. It is therefore considered prudent to take photographs of any damaged Occupier's belongings within the vicinity of the Work prior to commencement and, where appropriate, to obtain a signed disclaimer.

Fixings

105 Screws used for fixing non-reinforced PVC-u sections will be of carbon steel with a suitable corrosion protective coating and feature a double helical thread, spoon point with a countersunk head.

106 Fixings must incorporate a combination square/cross recess drive to provide a non-magnetic stick fit.

107 Fixings for friction stay applications will be supplied with a special low profile pan head to prevent fastener head interfering with the friction stay.

108 All screws, nuts, bolts and other fastenings must be of corrosion resistant material, or be treated to give corrosion resistant properties. When subject to the acetic acid salt spray test specified in the applicable Standard for a period of 144 hours, the corrosion resistance of treated mild steel must be equal to or better than that of stainless steel samples subjected to the same test conditions.

109 All ironmongery, fixtures and fittings must be of materials resistant to, or protected against atmospheric corrosion. Metals in contact with each other must be compatible so as to prevent galvanic corrosion of dissimilar metals by electrolytic action.

110 The use of expanding polyurethane foam is not acceptable as a sole method of fixing any window into a structural opening, nor is it acceptable to be used as bedding for the window.

111 Fixing to be as recommended by in the applicable Standard, below is a brief summary, actual fixing recommendation should be taken from the applicable Standard and its example diagrams:

Secured on all sides (where practicable);
Corner fixings – 150 – 250mm from external corner;
No fixings less than 150mm from centre line of a mullion or transom;
Minimum of 2 fixings per reveal;
If head is fixed with expanding polyurethane foam, then head fixings can be – • Frame width up to 1200mm – no fixings • >1200mm to <2400mm – one central fixing • >2400mm to 3600mm – two equally spaced fixings

112 The use of expanding polyurethane foam is permissible in terms of "foam filling" and as a useful addition to mechanical fixings. When the window is completed and finished there should be no visual evidence of polyurethane foam either internally or externally.

113 Installation "packers" should be used to set the window frame onto to allow sealant/mastic to be used as a full fill bedding material. The colour should match the window finish.

114 Foam filling is to be used in all windows installations to provide a closure to possible cold bridge of gaps between the wall and the frame. It is only to be used within the depth of the window frame profile i.e. it should not be used to fill gaps to reveals etc. which are to be plastered. Form filling is only in regard to the following situations –

1) To the head of a window, where the presence of pre-cast concrete or steel lintels make it impracticable or pose significant difficulties in achieving the recommended fixing distances	Up to 10mm maximum
2) To the sides of frame to make up expansion/contraction gap left either side as a result of manufactured size of window	

115 Foam filling must be to the full depth of the frame using only an approved fire resistant expanding polyurethane foam complying with the applicable Standards and be of the correct fire performance rating for Building Regulations compliance.

116 All components should be supplied by a manufacturer complying with ISO 9001 accredited quality systems. A certificate passing warranty to the Employer is to be issued by the hardware manufacturer on completion of the project.

117 Written confirmation of compliance with all of the above should be given to the Employer's Contract Manager in advance of commencement on site and will be a condition of the tender.

Fire barriers

118 In all methods of construction it is important to ensure that the cavities between internal and external skins are protected at openings for windows from the spread of fire. If these openings are not protected, in the event of a fire, smoke and fire can spread through the cavity, causing danger to occupants in other parts of the Property not immediately affected by the fire. This issue is of particular concern in timber and metal framed buildings. Attention is drawn to the Building Regulations in respect of the requirement for suitable fire barriers to be present in such buildings. Guidance is given in the applicable Standards, and the current Building Regulations Approved Document B.

119 The method of construction should be identified, and where the building is of timber or metal frame construction, the type of cavity barrier should be established. Where the barrier is a cavity sock or similar, and is likely to become dislodged or damaged by the removal of the existing frames, this should be noted on the survey sheet, and instruction given to the installation team to ensure that the cavity barrier is either repaired or replaced to maintain the original level of fire protection for the Property.

120 NOTE; Timber and metal frame constructions usually have a moisture barrier included in the area around openings, to resist moisture ingress into the cavity that could affect the timber sheathing or metal studwork." (Extract from the applicable Standard)

Making Good

121 The final covering and treatment of surfaces and their intersections are fundamental to the overall replacement of windows:

122 The primary objective of making good damaged areas adjacent to the windows is to maintain the;

- Weather-tightness; and
- Thermal performance characteristics

As required in and around reveals.

123 This protocol described below applies to all window replacements and shall be undertaken as the primarily aim to negating the need for any redecoration during/after window installation.

124 There will be a number of situations (i.e. age of the Property; thickness of plaster reveals; and to some extent "build issues" associated with system-built dwellings) that it may not be possible to observe all or part of this protocol. Therefore more damage may be required to the reveals and/or the window/wall to undertake the required window replacement. This could result in the need for some redecoration. Where this is likely to occur, firstly the Contractor is required to notify the Employer's Contract Manager at Design stage. If however this is not identified until on-site stage the Contactor must note the Properties affected and alert the Employer's Contract Manager before work commences.

125 Where full plaster reveals are to be undertaken – i.e. Internal and external making good; this may take place on subsequent days, but the whole operation from start to finish of each window must not exceed 3 No. consecutive working days.

126 Plaster-Patching - This process will require a small degree of plaster-patching. This will include the following areas -

- All of the reveals immediately adjacent to window frame etc.;
- Part of the reveals where strap/lug fixings have been employed.

127 Finishing Trims are to be Cellular extruded PVC-UE trims/beads and must conform to applicable Standards and as the below table;

	Internal Reveal (3 sides)	**External Bead (3 sides)**	**Internal Sill Board**
Single bull-nosed PVC-UE trim typically 5–7mm maximum thickness	✓		
Trim width must not exceed 100mm			
Quadrant / Bead typically 12x12mm or 18x18mm maximum **OR** Single bull-nosed PVC-UE trim typically 5 – 7mm maximum thickness		✓	
Trim width must be in range 20 – 25mm maximum			
PVC-UE Cloaked Trim typically 10–12mm in thickness in every case over-cladding the existing timber sill			✓
Removal of existing sill boards is not permissible as substantial damage is normally inflicted on window wall within rooms			

128 Trims are not to be used to simply provide or enhance the weather tightness of the window or any perimeter joints. Finishing trims shall be used to neaten the interface between frames and opening, they are only to be used in conjunction with the “plaster-patching”/making good situations as stated above. All joints must be left ‘neat and tidy’ with an acceptable tolerance of +/- 2/3mm on all joints/trim abutments and sealed with sealant of matching colour.

129 Internal finishing trims shall be compatible with the material of the window frame and must be colour-matched.

130 External finishing beads/trims shall satisfy the above criteria and be of an exterior quality material used in accordance with the manufacturer's technical data sheet. External beading is not required where the external reveal has been re-plastered to match existing.

131 For the avoidance of doubt, windows should be measured and fitted as described above and beads/trims should only be fitted to the opposite side of the determined cover/overlap. Only in exceptional cases where reveals are determined as flush will internal and external beads/trims be acceptable.

Fixing of Trims/Beads

132 All internal trims shall be secured in every case to a firm backing (junction of frame and reveal/existing sill) with a low modulus silicon sealant (as below) and sealed all round.

133 All external beams/trims shall be secured in every case to a firm backing (junction of the frame and plaster reveal) with the low modulus silicon sealant (as below) and sealed all round.

Sealants

134 Sealants must comply with the applicable Standard and be low modulus grade

135 Perimeter joints externally and internally around the "as installed" window shall be sealed with a low modulus silicone sealant and "smoothed" to provide a good seal.

136 The sealant shall be appropriate to –

- The frame surface and colour;
- Any substrate material;
- The specific joint size and configuration; and
- Potential joint movement and weather exposure.

Implications – Occupier's Blinds etc.,

137 The inclusion of a finishing trim to existing reveals and sill may in certain circumstances create an issue around the re-fitting of Occupier's blinds etc. The Contractor shall pay due regard to the existing window dressing(s) and where finishing trims are required that a "slim-line" version (5mm or less) is used.

Repairing damaged prefinished coatings on site

138 Localised repairs to coatings shall be affected by brush application on site using the same coating Material and build-up as the factory application with no discernible difference upon completion. All repairs shall be carried out in accordance with the joinery manufacturer's technical data sheet, by a competent person and to the satisfaction of the manufacturer and Employer's Contract Manager to ensure continuance of the warranty.

Cleaning of Windows

139 The protective tapes shall be removed from the as installed windows immediately or as soon as practicable after installation and the window (frame and glazing) cleaned with a suitable cleaning agent.

Final Completion Checks

140 Upon final completion of each and every window installation, the Contractor is to confirm and check the following:-

- All glazing beads are adequately fitted and in good order;
- All hardware functions and locks operate correctly and are not stiff to use;
- All frames and glass are free from cracks, breaks and scratches etc. All frames and glass are cleaned and all internals of frames are swept clean.;
- All openings are square and operate correctly;
- There is no movement to the window;
- All restrictors, vents and hinges etc. are clean and operate correctly;
- All making good internally and externally is completed; and
- All trims are clean and sealed;

141 Once all the above items are completed, the Contractor is to demonstrate the operation of the window to the Customer and provide the Occupier with their own operating instructions for the windows. In addition, the Contractor is to provide a Occupier Satisfaction Card ~~(to be supplied by the Client's Representative)~~ which the Occupier is requested to complete and return ~~by free postage to the Client~~. In due course the Contractor will be required to provide any means necessary to allow the Occupier to sign Satisfaction Card electronically for uploading to the Employer's Asset Management software.

Photographic Evidence – Removal/Installation of Windows/Sidelights

142 The Contractor is required to take digital photographs of each completed window/sidelight installation.

The photograph should clearly show the completed internal reveals and identified by address and room (i.e. this may be done by placing an address and room labelled clipboard against the window at the time of taking the photograph – ensure clipboard does not block image of window).

143 The photographs should be retained electronically by the Contractor and if requested provided on an individual basis to the Employer i.e. in the event of any Occupier making a claim against the Employer.

144 The Contractor should note that the Employer's Contract Manager will from time to time ask for evidence of these photographs and how and where they are stored. The Contractor is required to retain these images for at least 6 years after the Date of Completion (in accordance with the Employer's Retention of Documents Policy and legal timeframe for a Occupier to make a claim).

Employer's current manufacturers/suppliers/products

145 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

REPLACEMENT WINDOWS – GENERAL

[MIDDLE TIER]

REPLACEMENT WINDOWS – GENERAL

General

201 This section is to be read in conjunction with the ‘Replacement Windows and External doors – Surveying and Installation’ section, which provides details of surveying, sampling, installation, finishing etc. – generally as per the applicable Standard - Windows and doors - Code of practice for the survey and installation of windows and external door-sets.

202 All Windows and sidelights to achieve an ‘A’ energy rating certificated by the British Fenestration Rating Council (BFRC).

Design of Windows

203 On door-sets with sidelight panels, the mullion should have sufficient stiffness to ensure rigidity when the door is closed against it.

204 Existing windows may be housed within an existing concrete surround. These concrete surrounds have virtually no insulation value, lack air-tightness and contribute significantly to “cold bridging”. Some will also have spalling of the concrete which may have exposed the reinforcement bars and causing the bars to rust.

205 As a long term strategy where concrete surrounds are encountered the Employer requires **them be removed**. In all cases this will involve provision of a new sill and repair works. Facing brick constructed Properties may require render bands around the external window reveals.

206 Cutting off of extruding element of concrete surround and render patching **will not be allowed** as it does not remove the cold bridging issue. This will be constituted a “structural alteration” under Building Regulations and hence will require a Building Control application.

Windows Openings

207 All windows to be fitted with opening restrictors and as far as practical Egress Easy Clean Hinges.

208 All hinge components such as bottom track, link bars and rivets to be manufactured from Grade 1 Austenitic stainless steel to applicable Standard and fitted in accordance with manufacturer's technical data sheet limitations and recommendations. All associated hardware should be approved to PAS 24 and meet applicable Standard Class 4 corrosion resistance.

209 The protective tapes shall be removed from the windows immediately or as soon as practicable after installation and the window cleaned with a suitable cleaning agent.

210 Easy clean facility to allow the window to slide along the hinge track so as to be cleaned from inside the building to the applicable Standard - Windows and doors - Code of practice for the survey and installation of windows and external door-sets. After cleaning, the hinge should allow the window to self-relocate and return to its original position and mode of operation simply by closing the casement.

211 All hinges should be BBA Approved or equivalent and to include a thermoplastic end point and die cast end cap with self-lubricating surface finish featuring a roof to minimise the build-up of debris.

212 Windows, after a considered and noted risk assessment, can be fitted with a clearly visible and intuitive to release restrictor.

213 The release mechanism must self-relocate in one action on closure of the vent. All components, rivets and pins should withstand a force of 600N to comply with the applicable Standard, Performance of windows and doors. Classification for operation and strength characteristics and guidance on selection and specification and the applicable Standard - Design for Safety in Use and During Cleaning of Windows.

214 Restrictor to be tested to comply with the applicable Standard to withstand a force of 600N when opened at the restricted position and fitted to provide a maximum opening of 100mm in the restricted position. Restrictor to be manufactured from stainless steel to the applicable Standard Grade 1.4301 tested to meet the requirements of the applicable Standards and to meet the applicable Standard Class 4 corrosion resistance.

215 Written confirmation of compliance with all of the above should be given to the Employer's Contract Manager in advance of commencement on site.

Weather Performance and Seals

216 All new windows must be approved to the applicable Standard - Performance of windows and doors. Classification for weather tightness and guidance on selection and specification) to the below levels and will achieve a Class A for mechanical testing to the applicable Standard - Performance of windows and doors. Classification for operation and strength characteristics and guidance on selection and specification:-

(a) Air permeability – 600 Pascals minimum

(b) Water tightness – 300 Pascals minimum

(c) Wind resistance according to the design wind loading but not less than 2400 pascals.

217 All framing including mullions, transoms and couplers shall be capable of withstanding the design wind loadings calculated in accordance with the applicable Standard:

218 Weather stripping and glazing gasket Material must not have a detrimental effect on the plastic profile.

219 Weather strips for PVC-u windows to be co-extruded weldable seals and white gaskets approved to the applicable Standards to increase the weather tightness of the windows.

220 The weather-stripping must be capable of being renewed without disturbing the glazing system and without removing the outer frame from the structure.

221 The weather-stripping must be continuous around the frame.

222 Weather strip seals and draught excluders between all timber sashes to be included for all windows.

223 Glazing gaskets must be thermoplastic elastomer (TPE) and must be pre-inserted into the profiles.

Window Ventilation

2241 All window units are to be provided with trickle ventilators to provide 8000mm2 areas to each habitable room and 4000mm2 areas to kitchen, bathroom, WC and utility rooms.

225 The ventilator is to be fitted with an insect mesh in accordance with the requirements of the applicable Standards. Trickle ventilators must be manufactured from either aluminium section with powder coated finish to match window colour, or high impact modified PVC-u.

226 All ventilators are required to have their 'equivalent areas' from testing clearly marked on the device. The fitting of cording or rod devices to ventilators, ensuring ease of use by the Occupier, to be in accordance with the latest guidance in the Building Regulations Approved Documents. For new build applications ventilation requirements must be calculated from the tables in the Building Regulations Approved Documents.

227 The Contractor is to ensure that all window Designs to habitable rooms have a window opening area of no less than 5% of the floor area. The Provider must bring to the attention of the Employer's Contract Manager any window Designs included in this Specification that he believes does not meet this criterion, before the manufacture of any windows.

228 The type of trickle ventilator to be fitted is to be "glazed in". Due to the Employer's requirement that all PVC-u window frames must be fully reinforced (i.e. metal inserted into all profile members) "through frame" design is not permitted on PVC-u windows.

229 Front timber windows in Conservation Areas will not normally require trickle ventilators to be installed as this would be against planning policies.

Child Restrictors

230 Child restrictors are to be fitted to all windows with openings on all floors. The restrictors must not allow opening the window more than 100mm without using the restrictor switch.

231 Type of restrictors to the PVC-u windows are to be integral/in-built to hinge or push type fitted within frames on all casements outward openings and the PVC-u switch built into the top sashes on PVC-u sliding sash windows.

232 Types of restrictors for timber windows are to be agreed between Contractor and Employer's Contract Manager prior to installation of windows – examples of types required would be Sash Stop and Limiter to sliding sash windows, and integral/in-built to hinge or button restrictor within the window frame to outward opening casements.

Window Furniture

233 Window furniture to openable sashes to be positioned in the centre line of the frame unless indicated otherwise.

234 Push button handles to be fitted to all window openings. As all windows are to be egress, key operated locks are NOT to be fitted

235 Details of window furniture are to be provided by Contractor and approved by Employer's Contract Manager.

236 All handles to casement windows to be lever handles operating a multi-point espagnolette shoot bolt locking system with auto lock button cylinder lock. PVC-u window handles to be white powder coated aluminium and timber windows to be brass effect.

237 All side hung casement windows to be fitted with egress hinges with the lower hinge being integral push button restrictor mechanism for two handed full opening operation.

238 Top hung casements to be easy clean hinges of sufficient size to allow easy cleaning from the inside and integral push button restrictor mechanism.

239 There must be a correct correlation of hinge/friction stay capability with maximum vent weight and vent sizes i.e. sash sizes must be no larger than the hinge manufactures product table recommendations.

240 All timber sliding sash windows to be fitted with the following furniture:

- Brass Brighton Type fasteners to each window
- 2 No. D brass sash pulls to each upper sash and 2 No. sash lifts to each lower sash
- Brass sash stop and limiter window locks both sides of each window, to allow window ventilation opening of 100mm with security
- Brass dual locking screws to meeting rails of sashes

241 Hardware with provision for adjustment must be accessible for adjustment after the window has been installed. Hardware used to open/close the window must be replaceable without removing the outer frame from the structure.

242 All components should be supplied by a manufacturer complying with ISO 9001 accredited quality system.

243 Ironmongery product manufactures limitations must be strictly observed within the terms of their conditions of supply. It is the responsibility of the fabricator/purchaser to ensure that the performance of the window complies with the relevant standards and specification requirements for the particular window and that the correct product is chosen for the weight and design of each window system. The Ironmongery manufactures product information to be provided to the Client's Representative as required.

244 Window hardware wherever applicable must be supplied from a manufacturer holding a product licence under the auspices of the Home Office "Secured By Design" initiative with the aim of fulfilling the obligations placed on the housing provider to ensure a reasonable level of security to the occupants as outlined in Section 17 of the Crime and Disorder Act 1998.

245 Written confirmation of compliance with all of the above should be given to the Employer's Contract Manager in advance of commencement on site.

Locking Mechanism

246 All windows to be fitted with a Locking Mechanism that must be BBA accredited or equivalent and have been tested to the equivalent of PAS 24 security test or a Secured by Design Licensed Product

247 Locking mechanism to have an enhanced grade zinc alloy gearbox and mushroom-headed cams and shoot bolts. Where twin cam type is used, shoot bolts are not required. Minimum corrosion resistance: the applicable Standard Class 3. Fully adjustable “Twin Cam” high performance “no crop” security locking system. Operate with up to four pairs of mushroom cams travelling towards each other locking into a double-sided security keep. Fully adjustable cams ± 1mm. keeps with a night latch locking facility.

248 All window hardware should meet the applicable Standard Class 4 corrosion resistance.

249 All components should be capable of sustaining a minimum of 25,000 opening cycles and 1,000 full reversable under 50kg operational load without demonstrating any significant deterioration or deformation that would inhibit its function and have a Mechanical Guarantee/Warranty required (as a minimum) - 10 years.

Implications – Customer’s Blinds etc

250 The inclusion of a finishing trim to existing reveals and sill may in certain circumstances create an issue around the re-fitting of Customer’s blinds etc. The window manufacture shall pay due regard to the existing window dressing(s) taking note of where finishing trims are required that a “slim-line” version (5mm or less) is used for sizing of window and ensuring correct allowances to ensure sash opening.

Cleanability of Window

251 All windows must be cleanable from the inside and the design of openings and fixed units is to meet the access standards recommended in the applicable Standard and Code of Practice 154.

252 New PVC-u sliding sash windows must be capable of tilt inwards to allow for cleaning and to have secure brackets fitted within the frames to hold each sash in position when tilted inwards for cleaning.

Employer’s current manufacturers/suppliers/products

253 Ensure all Materials are compatible with and standardised to the Employer’s current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer’s current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

Appendix A

Choosing window type to applicable Stock

Table 1 Choosing window type to applicable Stock

STOCK APPLICABLE TO:			**STORM-PROOF CASEMENTS** Projecting Top & Side Swing Hinge	**FLUSH CASEMENTS** Projecting Top & Side Swing Hinge	**FULLY REVERSIBLE WINDOWS*** Hotel Hinge – Top Swing	**FULLY REVERSIBLE WINDOWS** Fully Reversible Hinge
	No of storeys	**Property Type**				
LOW RISE STOCK (1 – 3 Storey)	**1**	Bungalows	✓	✓		
	2	Houses	✓	✓		
	2	Flats	✓	✓		
	3	Houses	✓	✓		
MEDIUM RISE STOCK (3 – 5 Storeys)	**3**	Flat Blocks		✓	✓*	
	3	Flat over Maisonette		✓	✓*	
	3	Maisonette over Flat		✓	✓*	
	4	Flat Blocks			✓*	
	4	Flat over Maisonette Blocks			✓*	
	4	Maisonette over Maisonette			✓*	
	5	Flat Blocks			✓*	

HIGH RISE STOCK (6 – 20 Storeys)	**6-20**	Multi-Storey Flat Blocks				✓
* Floors 1 & 2 will be FLUSH CASEMENTS to reflect the same “fenestration” as the Fully Reversible Window - Floors 3 - 5 will be FULLY REVERSIBLE (Hotel Hinge)						

REPLACEMENT PVC-u WINDOWS

[LOWER TIER – Client to delete if not applicable]

REPLACEMENT PVC-U WINDOWS

MATERIALS AND MANUFACTURE

PVC-u Windows

301 This section is to be read in conjunction with the general specification for 'Replacement Windows and External Doors – Surveying and Installation' and 'Replacement Windows – General'.

302 All new PVC-u windows shall be purpose made BBA approved or equivalent, fully welded and fully reinforced PVC-u to the applicable Standards, PAS 24 and Secured by Design certified.

303 The windows fabricator/contractor is to be a licensed kite marked manufacturer to the applicable Standard, and all products to be covered by ISO 9001 and an 'A' energy rating certificated by the British Fenestration Rating Council (BFRC).

PVC-u Window Installations Specific

304 To all windows where timber sliding sash windows are to be removed and replaced with PVC-u windows, the Provider is to include for new windows to have pressure treated timbers around the windows wrapped in damp proof course to infill the old window sash boxes. The timber packers to then be covered with PVC-u clip on liners, and small gaps (up to 10mm) filled with fire resistant expanding polyurethane in-situ foam with closed cell structure between 65% and 75% complying with the applicable Standards, the applicable Standards and be of the correct fire performance rating for Building Regulations compliance.

305 Under no circumstances are the old box frame cavities to be filled with expanding polyurethane foam only. Plaster is then to be made good and new plaster covered with wider PVC-u architraves to reduce damage to wall decorations.

306 The use of 'make-up' pieces (clip on's) as means of standardising manufacturing sizes should not be used under any circumstances without the prior approval of the Client's Representative. In only special circumstances will approval be given, and then the make-up size should not exceed 15mm either side or head.

PVC-u Windows Section Profiles and Reinforcement

307 Extruded window profiles shall only be those itemised on the window manufacturer/contractor's kite marked licence and the type testing carried out by a third party testing house to the applicable Standard.

308 The Material from which the extruded four chambers profile sections are made shall consist of white high impact modified un-plasticised poly vinyl chloride with a class 1 surface spread of flame resistance to the requirement of the applicable Standard.

309 Manufactured and extruded hollow PVC-u profiles to the applicable Standard. PVC-U Material shall have a multi-chambered design (5 chambers minimum) for enhanced thermal efficiency.

310 All joints to be welded joints with a grooved finish.

311 Reinforcement to be installed to all casement and frame members.

312 Reinforcement is to be fixed with self-tapping stainless steel screws to the applicable Standard or, sheradised coated steel screws at 300mm centres so that the reinforcement does not move or rattle when the window is in use.

313 Reinforcement must be made of hot dipped coated steel reinforcement to comply with the applicable Standard or Aluminium reinforcement to comply with the applicable Standards or hot dipped prime galvanised steel complying with the applicable Standards.

314 The profile must be extruded from un-plasticised polyvinyl chloride (PVC-u) therefore recyclable at the end of its life. Only those additives and pigments may be used that are needed for the manufacture of the compound and its subsequent conversion into sound, durable extrusions of good surface finish and mechanical strength, as assessed by the requirements of this specification.

315 The PVC-u Material frame, that the profiles are to be made from, must conform to the specification given in Table 1. The tests must be carried out on pressed plaques prepared from milled sheet*, under standard conditions as specified in the applicable Standard. (* with the exception of the impact tests which are carried out on samples cut from the face sides of extruded profile.)

316 Profile wall thickness to be classified in accordance with the requirements of the applicable Standard -Unplasticised polyvinylchloride (PVC-u) profiles for the fabrication of windows and doors. Classification, requirements and test methods.

317 The colour of the profile must be uniform and the colour of the profiles in a system must be uniform. The finish of the windows is to be white to 40% Gloss (RAL 9003 equivalent). The profile must be free from foreign bodies, cracks or sink marks when viewed by normal corrected vision at 90 degrees to the surface and at a distance of 1 metre in normal diffused north light.

318 The profiles must be straight such that the longitudinal axis of the profile as measured on the face surfaces may deviate from the straight line by no more than 1mm/metre.

319 Tolerances on external dimensions (from the applicable Standard)

External dimension	Tolerance
Depth (D) ≤ 80	+/- 0.3
> 80	+/- 0.5
Overall width (W)	+/- 0.5

320 No rework/regrind material is to be used in any section, which will be subjected to any weathering. Rework/regrind material will only be allowed in internal glazing bead extrusions.

Construction

321 All corners and intersection joints between frames, mullions and transoms must be welded.

322 The excess material created by the welding process must be removed by a grooving or flush surface method. In either case, the method used must not weaken the profile or the joint, and must retain sufficient wall thickness.

323 Only where Instructed by the Client's Representative must windows be provided with external projecting PVC-u sills. The sill must be from the same manufacturer as the PVC-u windows.

324 These sills must be properly supported, and hollow sill sections must have end caps to ensure that no water penetration occurs at the end of the sills. The sill and window frame must be jointed in accordance with the manufacturer's technical data sheet to ensure water and weather tight joint.

325 Insulated infill panels to window frames must be provided where Instructed by the Client's Representative and fixed with internal glazing beads.

326 The panels must consist of an inner core of high density thermal insulation (min 0.033W/m2K) and outer layers of coloured plastic coated steel skins (skins to be a min of 0.5mm think). The colour of the panels, must be approved by the Client's Representative, prior to the Provider ordering the panels.

327 The finished window must be free from all sharp edges, burrs and the like that might be a hazard to the user.

Performance Requirements

328 All windows are to comply with the applicable Standards.

329 Provide test reports prepared by a UKAS accredited testing house to confirm that the windows meet the criteria. The Client's Representative reserves the right to have any window provided for the Contract tested to check its compliance with these performance requirements.

330 The new applicable Standard test methods are more demanding than the old. One major factor is the introduction of a final 'safety test' on windows. A 2000 Pa exposure rated window would have to withstand a 'safety' test where gusts of 3000 Pa are applied (both positive and negative pressure)

Architraves and sills

331 To every new PVC-u window and door, carefully remove all existing internal architraves and sill boards and replace to match existing in white PVC-u **with mitred joints** to architraves.

332 All trims are to be sealed with white silicon to the window frame and sealed to decorations.

333 Sill boards to have rounded nosing finish and sealed to undersides with white silicon and provided with end caps.

334 Include for PVC-u quadrant piece around casement windows to internal recesses.

335 To all windows where timber sliding sash windows are to be removed and replaced with PVC-u windows, the Provider is to include for PVC-u liners to inner reveals to form square reveals for new PVC-u windows and cover with wider 150mm PVC-u architraves to minimise disturbance.

Drainage

336 The windows must include a self-drainage system by means of slots/ holes which must under no circumstances drain through chambers incorporating reinforcement. All drainage slots/ holes must be neatly cut out with no lips to allow free drainage of water from the frames to the outside of the building.

337 Matching PVC-u caps must be provided to cover all visible external drainage slots. Care must be taken to ensure that glazing blocks or spacers do not obstruct drainage from the glazing rebate.

Employer's current manufacturers/suppliers/products

338 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

TABLE1 MINIMUM PROPERTIES OF PVC-u MATERIAL TO BE USED FOR FABRICATION OF WINDOW		
MATERIAL PROPERTY	**TEST METHOD**	**REQUIREMENT**
Vicat Softening Point	the applicable Standard Method 120B	$78^0C \pm 2^0C$
Apparent modulus of Elasticity (flexural)	the applicable Standard Method 335A. Rate 5mm/min	2500 MPa
Impact Strength	the applicable Standard: Method 359	$20KJ/m^2$ minimum
% change impact strength after accelerated ageing		70% minimum
Notch impact strength	the applicable Standard: Method 359A	$12KJ/m^2$ minimum
Low temperature impact	A 300mm profile sample supported at 200mm centres. Condition at one hour – 10^0C. Strike flat surface with rounded 1kg weight from 1 metre.	
Colour retention after artificial accelerated weathering	the applicable Standard Part 5: Method 540D and Method 540G. Sample to be exposed to total irradiation of $8GJ/m^2$ in wet/dry cycle.	
Colour retention after natural weathering for a period of 60 months	DIN 3386	Maximum colour change allowed is that rated 3, Standard Part A03
Heat reversion	200mm of profile tested. Mark profile 1cm from each end and age at 100^0C for one hour. Cool and re-measure distance between marks. Compare before and after ageing and express as % change.	No visible signs of deterioration Maximum reversion allowed – 2%
Profile delamination post heat ageing	200mm of profile tested. Subject sample to 30 minutes at 150^0C. Visually inspect	No bubbles, cracks or delamination should be fo
Heat Stability	the applicable Standard: Method 130A	Not less than 85 minutes
Flame Resistance Weld factor	the applicable Standard Samples of profile are butt welded together at 180 degrees. Cut sample from joined faces according to requirements of the now withdrawn Standard: Method 320C so that weld line is in centre. Five samples are tensile tested to the requirements of the now withdrawn Standard: Method 320 at a rate of 5mm/min. Five samples of un-welded section are tested in comparison. Sample condition at 20^0C for 1 hour Weld factor – Maximum stress valve welded. Maximum stress control sample. Profile cut at 45 degrees and welded to give 90 degree corner. Condition at 20^0C for 1 hour. Load applied to deform on leg of corner piece.	Class 1

TABLE1 MINIMUM PROPERTIES OF PVC-u MATERIAL TO BE USED FOR FABRICATION OF WINDOW		
MATERIAL PROPERTY	**TEST METHOD**	**REQUIREMENT**
Corner Weld Strength	the applicable Standard – Shore hardness Table D	Deformation of horizontal member should be mir of the corner weld line.
Hardness		77-79

Notes on tables above Please refer to the applicable Standard for details of test methods and standards currently adopted.

REPLACEMENT PRE-FINISHED TIMBER WINDOWS

[LOWER TIER – Client to delete if not applicable]

REPLACEMENT PRE-FINISHED TIMBER WINDOWS

Timber Windows

401 This section is to be read in conjunction with the general specification for ‘Replacement Windows and External Doors – Survey and Installation’ and ‘Replacement Windows – General’.

402 All new pre-finished timber windows shall be purpose made pre-treated timber double glazed windows manufactured to the applicable Standard and PAS 24.

403 All Timber Window manufacturers shall produce timber windows and the ranges required to the highest standards, all of which have been approved by the British Woodworking Federation’s (BWF) Timber Window Accreditation Scheme (TWAS) and hold a “third party” registration by BBA or equivalent.

404 All timber for constructing windows should be in accordance with the applicable Standard (Timber in Joinery) and sustainably obtained as per European Union Timber Regulation (EUTR).

405 All softwood joinery to be subject to preservation treatment by spirit based double vacuum pressure impregnation in compliance with the applicable Standard (Preservation of wood). The moisture content of the timber sections shall be in the range of 14 – 16% before assembly and the application of any preservative treatment or coatings

Timber Window Installations Specific

406 Where no ‘check’ reveal is present install the new window frame wrapped in an approved damp proof course. Where ‘checked’ reveal is present the window is to be placed directly behind the DPC located behind the external skin.

407 The “as installed” windows shall in every case operate correctly.

408 Avoid (as far as reasonably practicable) unnecessary damage to the internal plastered reveals irrespective of how they may be finished (i.e. paint/wallpaper/ tiling etc.,). fixing methods will be directly affected by the condition of any cavity closer.

409 The new frame shall maintain the recommended movement gap (typically 5mm) each side; once the frame is fixed, this gap (up to maximum 10mm) can be “foam filled” to the full depth of the frame using an approved fire resistant expanding polyurethane foam complying with the applicable Standards and be of the correct fire performance rating for Building Regulations compliance. Fixings should be at least as corrosion-resistant as the applicable Standard Grade 3. Windows shall be secured in accordance with the recognised “fixing distances” for strap / lug fixings and through-frame fixings as recommended in the applicable Standard;

Timber Window Styles

Dwelling Type	Window Type
Low rise stock (1-3) storeys- Bungalows, houses, flats	Storm proof casement (projecting top and side hung hinge) Flush casement. (projecting top and side swing hinge)
Medium rise stock (3-5) storeys- Flats block, flats over maisonettes (opposite), maisonettes. Over maisonettes	Flush casement. (Projecting top & side swing hinge) Fully reversible windows- (hotel hinge top swing) Floors 1 & 2 will be FLUSH CASEMENTS to reflect the same “fenestration” as the fully reversible window Floors 3-5 will be FULLY REVERSABLE (Hotel Hinge)
High rise stock (6-20) storeys- Multi storey flats	Fully reversible hinge.

410 All new timber windows are to be purpose made pre-treated.

411 All new windows to be double-glazed and must have features to match existing, e.g. vertical beadings, curved sashes, cover mouldings and horn details etc.

412 All new windows to be pre-finished prior to delivery and installation on site.

413 All external sills to new windows to be pre-approved by the Client’s Representative.

Timber Windows Architraves and Sills

414 To every new timber window, carefully remove all existing internal architraves and sill boards and replace to match existing surrounds, with mitred joints to architraves.

415 All gaps to walls or gaps to joints are to be sealed prior to decorations.

416 Sill boards to have rounded bull nose timber finish.

Painting of Timber Windows

417 All new timber windows/sidelights etc., shall be delivered to site with the full coating system. All external edges of timber windows shall have a radius of not less than 1.5mm and not greater than 3.0mm in accordance with any Paint Manufacturer's Technical data sheet. This detail is acceptable through all joint lines.

418 Where required, pre-prime and paint all new architraves before fixing, and then once installed, rub down, fill as necessary and paint 2 No. coats white undercoat and 1 No. gloss white paint, rubbing down between all coats.

419 The Tendered rates include to repaint existing external concrete sills externally to the windows and touch up any painted stonework or render around the windows to match existing, as disturbed during the window renewal works.

Drainage

420 The windows must include a self-drainage system by means of slots/ holes which must under no circumstances drain through chambers incorporating reinforcement. All drainage slots/ holes must be neatly cut out with no lips to allow free drainage of water from the frames to the outside of the building.

Employer's current manufacturers/suppliers/products

421 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

REPLACEMENT UNDECORATED TIMBER WINDOWS

[LOWER TIER – Client to delete if not applicable]

REPLACEMENT UNDECORATED TIMBER WINDOWS

Timber Windows

501 This section is to be read in conjunction with the general specification for ‘Replacement Windows and External Doors – Survey and Installation’ and ‘Replacement Windows – General’.

502 All new undecorated timber windows shall be factory primed, purpose made pre-treated timber double glazed windows manufactured to the applicable Standard and PAS 24.

503 All Timber Window manufacturers shall produce timber windows and the ranges required to the highest standards, all of which have been approved by the British Woodworking Federation’s (BWF) Timber Window Accreditation Scheme (TWAS) and hold a “third party” registration by BBA or equivalent.

504 All timber for constructing windows should be in accordance with the applicable Standard Timber in Joinery and sustainably obtained as per European Union Timber Regulation (EUTR).

505 All softwood joinery to be subject to preservation treatment by spirit based double vacuum pressure impregnation in compliance with the applicable Standard (Preservation of Wood). The moisture content of the timber sections shall be in the range of 14 – 16% before assembly and the application of any preservative treatment or coatings.

Timber Window Installations Specific

506 Where no ‘check’ reveal is present install the new window frame wrapped in an approved damp proof course. Where ‘checked’ reveal is present the window is to be placed directly behind the DPC located behind the external skin.

507 The “as installed” windows shall in every case operate correctly.

508 Avoid (as far as reasonably practicable) unnecessary damage to the internal plastered reveals irrespective of how they may be finished (i.e. paint/wallpaper/tiling etc.,). fixing methods will be directly affected by the condition of any cavity closer.

509 The new frame shall maintain the recommended movement gap (typically 5mm) each side; once the frame is fixed, this gap (up to maximum 10mm) can be "foam filled" to the full depth of the frame using an approved fire resistant expanding polyurethane foam complying with the applicable Standards and be of the correct fire performance rating for Building Regulations compliance. Fixings should be at least as corrosion-resistant as the applicable Standard Grade 3. Windows shall be secured in accordance with the recognised "fixing distances" for strap / lug fixings and through-frame fixings as recommended in the applicable Standard;

Timber Window Styles

Dwelling Type	Window Type
Low rise stock (1-3) storeys- Bungalows, houses, flats	Storm proof casement (projecting top and side hung hinge) Flush casement. (projecting top and side swing hinge)
Medium rise stock (3-5) storeys- Flats block, flats over maisonettes (opposite), maisonettes. Over maisonettes	Flush casement. (Projecting top & side swing hinge) Fully reversible windows- (hotel hinge top swing) Floors 1 & 2 will be FLUSH CASEMENTS to reflect the same "fenestration" as the fully reversible window Floors 3-5 will be FULLY REVERSABLE (Hotel Hinge)
High rise stock (6-20) storeys- Multi storey flats	Fully reversible hinge.

510 All new timber windows are to be purpose made pre-treated.

511 All new windows to be double-glazed and must have features to match existing, e.g. vertical beadings, curved sashes, cover mouldings and horn details etc.

512 All new windows to be factory pre-primed prior to delivery and installation on site.

513 All external sills to new windows to be pre-approved by the Employer's Contract Manager.

Timber Windows Architraves and Sills

514 To every new timber window, carefully remove all existing internal architraves and Sill boards and replace to match existing surrounds, with mitred joints to architraves.

515 All gaps to walls or gaps to joints are to be sealed prior to decorations.

516 Sill boards to have rounded bull nose timber finish.

Painting of Timber Windows

517 All new timber windows/sidelights etc., shall be delivered to site factory primed. All external edges of timber windows shall have a radius of not less than 1.5mm and not greater than 3.0mm in accordance with any Paint Manufacturer's Technical data sheet. This detail is acceptable through all joint lines.

518 All new timber windows/sidelights etc. are to be built in prior to full decoration being applied. Make good any exposed/damaged surfaces with approved wood filler. Rub down and leave smooth before applying 1 No. coat of approved primer to bare wood and filled areas. Paint 2 No. coats of white undercoat and 1 No. coat of white gloss paint to all surfaces, rubbing down between all coats.

519 Where required, pre-prime and paint all new architraves before fixing, and then once installed, rub down, fill as necessary and paint 2 No. coats white undercoat and 1 No. gloss white paint, rubbing down between all coats.

520 The Tendered rates include to repaint existing external concrete sills externally to the windows and touch up any painted stonework or render around the windows to match existing, as disturbed during the window renewal works.

Drainage

521 The windows must include a self-drainage system by means of slots/ holes which must under no circumstances drain through chambers incorporating reinforcement. All drainage slots/ holes must be neatly cut out with no lips to allow free drainage of water from the frames to the outside of the building.

Employer's current manufacturers/suppliers/products

522 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

TECHNICAL SPECIFICATIOIN

15-METALWORK

METALWORK

MATERIALS

Generally

001 Grades of metals, section dimensions and properties are to be to the appropriate applicable Standards. When not specified, select grades and sections are to be appropriate for the purpose.

002 Prefinished metal products may be used if methods of fabrication do not damage or alter appearance of the finish, and the finish is adequately protected.

003 Fasteners and fixings are to be to the appropriate applicable Standards and, unless specified otherwise, of same metal as component being fastened, with matching coating or finish.

Mild Steel

004 Ensure steel used is free from imperfections. Before fixing, remove all rust, mill scale, welding slag and flux residue from iron and steel surfaces by wire brushing, scraping, hammering and/or flame cleaning.

005 Hot rolled structural steel long and flat products (excluding structural hollow sections and tubes) are to be to applicable Standard.

006 Fine grain steels, including special steels are to be to applicable Standard.

007 Steels with improved atmospheric corrosion resistance are to be to applicable Standard.

008 High yield strength steel plate and wide flats are to be to applicable Standard.

Galvanised coatings

009 Apply galvanised coatings to applicable Standard.

010 Powder Coatings unless specified otherwise, comply with all relevant requirements and recommendations of applicable Standard for aluminium alloy backgrounds; applicable Standard for galvanized steel backgrounds; applicable Coatings Federation: Code of safe practice - Application of powder coatings by electrostatic spraying.

Garage door repairs

011 Ensure fittings and furniture for metal 'up and over' garage doors generally match the existing fittings.

WORKMANSHIP

General repairs

012 Cut out defective metal balusters and replace with new, including all welded joints. Prime where damaged and leave ready to receive decorative finish.

013 Cut out defective ironmongery and replace with new, including any welding that may be necessary. Prime where damaged and leave them ready to receive the finish.

014 Make good damaged welds including removing the remains of the weld, wire brushing, hacking the surface and re-welding. Prime where damaged and leave it ready to receive the finish, in accordance with the details in the “Painting and

015 Remove a defective arch bar by:

- cutting it out from brickwork;
- providing temporary supports;
- replacing with a new primed mild steel bar; and
- making good the brickwork with a finish to match the existing finish.

Fabrication

016 Ensure compliance with any stated design and performance requirements. Ensure sections and dimensions are in accordance with relevant applicable Standards. Do not permit contact between dissimilar metals. Mitre corner junctions of identical sections. Use tack welds only for temporary attachment. Make joints with parent material fully bonded throughout with no inclusions, holes, porosity or cracks. Prevent weld splatter falling on surfaces that will be self-finished and visible in completed work. Remove traces of flux residue, slag and weld splatter.

017 Avoid contact between dissimilar metals in components.

018 The finished components are to be rigid and free from distortion, cracks, burrs and sharp arrises, moving parts to be free moving without binding, and corner junctions of identical sections are to be mitred.

019 Cold formed work is to have accurate profiling with straight arises.

020 Surfaces of metals to receive adhesives are be degreased, abraded mechanically or chemically etched and rimed to suit the adhesive being applied,

021 Steel is to be welded to applicable Standard.

022 Stainless steel is to be welded to applicable Standard using double butt welds, backing bars, jigging and other methods to remove distortion.

023 Aluminium alloys are to be welded to applicable Standard.

024 Brazing is to be to applicable Standard with butt joints finished smooth and level with adjacent surfaces.

025 All sharp arrises are to be removed from any welding or brazing to prevent hazards.

Welding

026 Welding procedures:

- Method and standard: Metal arc welding to applicable Standards;
- Welding Procedure Specification (WPS): Not required.

027 Preparation:

- Joint preparation: Clean thoroughly.
- Surfaces of materials that will be self-finished and visible in the completed work: protect from weld splatter.

028 Jointing:

- Joints: Fully bond parent and filler metal throughout with no inclusions, holes, porosity or cracks;
- Dissimilar metals: Not applicable;
- Strength requirements: Welds to achieve design loads;
- Heat straightening: Provider to submit proposals;
- Complex assemblies: Agree priority for welding members to minimize distortion caused by subsequent welds;
- Tack welds: Use only for temporary attachment;
- Jigs: Provide to support and restrain members during welding;
- Filler plates: Provider to submit proposals;
- Lap joints: Minimum 5 x metal thickness or 25 mm, whichever is greater;
- Weld terminations: Clean and sound.

Finishing:

029 Welded and Brazed Joints visible in Complete Work:

- Standard: To applicable Standard. - Preparation grade:P1.
- Butt joints: Smooth, and flush with adjacent surfaces.
- Fillet joints: Neat. • Grinding: Grind smooth where indicated on drawings.

030 Preparation for Application of Coatings

- General: Complete fabrication, and drill fixing holes before applying coatings.
- Paint, grease, flux, rust, burrs and sharp arrises: Remove

Balustrades

031 Isolated balustrades shall be mild steel hot dipped after manufacture to applicable Standard, all welding /fabrication of components shall be complete prior to galvanising, bolted site connections only will be accepted, no site welding is permitted, damaged sections of galvanising and exposed bare metal shall be liberally painted with proprietary cold galvanising paint, handrails are to be continuous and smooth to avoid key clamp style fixings;

032 Isolated external balustrades for ramp access to adaptations, steps and stepped ramps shall be 48.3mm circular hollow section mild steel, hot dip galvanised after manufacture to applicable Standard, all welding /fabrication of components shall be complete prior to galvanising, bolted site connections only will be accepted, no site welding is permitted, damaged sections of galvanising and exposed bare metal shall be liberally painted with proprietary cold galvanising paint, handrails are to be continuous and smooth to avoid key clamp style fixings;

Mesh Infill to Handrails

033 Proprietary mild steel to applicable Standard galvanised diamond pattern mesh netting fixed to existing galvanised steel tubular handrails, guarding to provide a minimum horizontal force/metre run of 0.74 kN/m, galvanised after fabrication, all welding /fabrication of components shall be complete prior to galvanising, bolted site connections only will be accepted, no site welding is permitted, damaged sections of galvanising and exposed bare metal shall be liberally painted with proprietary cold galvanising paint;

034 Proprietary mild steel to applicable Standard galvanised diamond pattern mesh netting fixed to new galvanised steel tubular handrails, guarding to provide a minimum horizontal force/metre run of 0.74 kN/m, galvanised after fabrication, all welding /fabrication of components shall be complete prior to galvanising, bolted site connections only will be accepted, no site welding is permitted, damaged sections of galvanising and exposed bare metal shall be liberally painted with proprietary cold galvanising paint;

Vertical Railings to Galvanised Tubular Handrails

035 Mild steel to applicable Standard hot dipped galvanised after manufacture vertical railings to new or existing galvanised tubular handrails galvanised after fabrication, all welding /fabrication of components shall be complete prior to galvanising, bolted site connections only will be accepted, no site welding is permitted, damaged sections of galvanising and exposed bare metal shall be liberally painted with proprietary cold galvanising paint;

Isolated Wall Mounted External Handrails

036 48.3mm diameter circular hollow section mild steel to applicable Standard hot dipped galvanised after manufacture isolated wall mounted external handrails galvanised after fabrication, all welding /fabrication of components shall be complete prior to galvanising, bolted site connections only will be accepted, no site welding is permitted, damaged sections of galvanising and exposed bare metal shall be liberally painted with proprietary cold galvanising paint;

PVC-u Handrail Cover

037 Moulded PVC-u section to suit 50mm x 8mm core rail and installed in accordance with the manufacturer's technical data sheet;

Fixings Generally

038 Methods of fixing and fastenings to be as specified using fixing and jointing methods and types, sizes, quantities and spacing of fastenings which are suitable having regard to:

- Do not modify, cut, notch or make holes in structural members except as shown on any applicable drawings or as approved.

- All welding/fabrication of components shall be complete prior to galvanising.

- Do not site wild connections. Bolted site connections only will be accepted.

- Damaged sections of galvanising and exposed bare metal shall be liberally painted with proprietary cold galvanising paint.

Nature of and compatibility with product/material being fixed and fixed to.

Recommendations of manufacturers of fastenings and manufacturers of components, products or materials being fixed and fixed to.

Materials and loads to be supported.

Conditions expected in use.

Completion

039 Upon completion of the installation works, the Contractor is to provide the Employer's Contract Manager with the manufacturer's maintenance instructions and technical data sheets, guarantees, warranties, test certificates, record schedules and log books.

040 Remove all temporary protective coverings and carry out any cleaning and post installation maintenance in accordance with the manufacturer's technical data sheets.

Employer's current manufacturers/suppliers/products

041 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

TECHNICAL SPECIFICATION

16-PLASTERWORK AND OTHER FLOOR, WALL AND CEILING FINISHES

PLASTERWORK AND OTHER FLOOR, WALL AND CEILING FINISHES

MATERIALS

Cement

001 Use either normal setting ordinary or rapid hardening or sulphate resisting Portland cement or blast furnace cement. All cement must comply with applicable Standard and be manufactured by a firm with their capability assessed and registered with BSI or other quality certification body acceptable to the Employer's Contract Manager.

Lime

002 Use Class B hydrated lime, to applicable Standard.

Sand

003 Sand for mortar is to be to applicable Standard 0/2 FP or MP Category 3 unless specified otherwise. Sand for facework mortar is be from one source, different loads to be mixed if necessary to ensure consistency of colour and texture'.

Sand and aggregate Material Property Limits	applicable Standard Category for other aggregates and Sand	applicable Standard Category for Air cooled blast furnace slag
Acid soluble sulphate content	AS0.2	AS 1.0
Total sulphur	$\leq$ 1% by mass	$\leq$ 2% by mass
Water soluble content	$\leq$ 1% by mass	$\leq$ 1% by mass
Loss on ignition	PFA ONLY$\leq$ 7% by mass	$\leq$ 3% by mass

004 Where mixes contain lime, the lime:sand mortar shall be obtained premixed from a competent mortar manufacturer to the satisfaction of the Employer's Contract Manager. Ordinary Portland cement is added on site by volume in accordance with the mix specification.

005 Coloured mortar, where required, to be made using a proprietary coloured ready-mixed lime:sand to applicable Standards; colour as shown on drawings.

Building paper

006 Building paper is to be water resistant breather type. Starting from the bottom, fix with clout nails or staples in horizontal lengths, with 100mm laps.

Membranes

WORKMANSHIP GENERALLY:

007 Apply Materials carefully to provide a completely waterproof, continuous membrane. Laps to be not less than 300mm. Ensure that surfaces to be covered are clean, dry, smooth and free from voids, sharp protrusions and frost. Protect finished sheeting adequately to prevent puncturing during following work. Cover sheeting with permanent overlying construction as soon as possible. Immediately prior to covering, check for damage and repair as necessary. Where services pass through sheeting, make junctions completely watertight by forming collars to pipes. Identify position of adjoining damp proof courses and expose to view where concealed. Thoroughly clean away all mortar, debris and dirt from vicinity of DPCs, including any projecting portions of DPCs. DPCs which project from the wall: Lap by 200mm with sheeting and fully bond/seal to projecting DPC.

POLYTHENE DPM:

008 Type: PIFA - Standard 6/83A:1995. Min.300 micrometres / 1200 gauge. Lay sheets neatly and tuck well into angles to prevent bridging. If sheets cannot be kept dry, double welted joints may be used provided they are temporarily weighted to hold the folds in position prior to laying concrete or insulation. Form folded welts at corners in upstands.

009 RADON GAS IMPERMEABLE MEMBRANE BARRIER SHEETING SYSTEM (300µm):

- Primary protection for use in Zone 1 at ground level with ground supported and suspended

concrete floors;

- Performance:
- Radon Permeability 12x10-12m²/s: Laboratory Test;.
- Low temperature flexibility to applicable Standard – No cracking at -25º Centigrade;.
- Products:
- Low Density Polyethylene (LDPE) sheet, minimum 300 micrometres (1200 gauge);
- Tensile strength to applicable Standards Method 326E: 1995.
- Minimum 13N/mm²;
- Elongation to applicable Standard;
- Minimum 450%.;
- Tear Resistance to applicable Standard: Method 360C;
- Minimum 100N;
- Accessories:
- 5mm polypropylene geotextile protection layer for gas membrane barrier;
- 30mm double sided butyl tape self-adhesive bonding strip sealant for compression joints;

to be non-hardening permanently flexible and durable;.

- 110, 120 or 130mm nominal diameter take external dimension of pipe preformed Top Hat

pipe collars section (for service pipes);

- 110 -140mm diameter adjustable stainless steel clip;
- Preparation:
- Barriers shall be stored rolled up in a dry area until they are to be used; keep away from

sharp objects and chemical solvents;

- Store rolls on their sides under cover until needed;
- To offer protection against granular fill or rough surfaces of pre-cast concrete units; lay

down geotextile protection layer;

- Installation in accordance with manufacturer’s technical data sheet.

010 RADON GAS IMPERMEABLE MEMBRANE BARRIER SHEETING SYSTEM (300µm):

Primary protection for use in Zone 2 at ground level with ground supported and suspended
concrete floors;

Performance:
- Radon Permeability 12x10-12m²/s: Laboratory Test;
- Low temperature flexibility to applicable Standard – No cracking at -25º Centigrade;
- Form an airtight, durably sealed, barrier across the whole of the building; including the floor, internal walls and both external and party walls - along with the associated cavities.
- Carefully install and seal sections of the barrier; ensure airtight sealing at all joints, laps,
  service entries and cavity trays.

Products:
- Low Density Polyethylene (LDPE) sheet, minimum 300 micrometres (1200 gauge);
- Tensile strength to applicable Standard Method 326E: 1995.
- Minimum 13N/mm²;
- Elongation to applicable Standard;
- Minimum 450%.;
- Tear Resistance to applicable Standard: Method 360C;
- Minimum 100N;

Accessories:
- 5mm polypropylene geotextile protection layer for gas membrane barrier;
- 30mm double sided butyl tape self-adhesive bonding strip sealant for compression joints;
  to be non-hardening permanently flexible and durable;.
- 110, 120 or 130mm nominal diameter take external dimension of pipe preformed Top Hat
  pipe collars section (for service pipes);
- 110 -140mm diameter adjustable stainless steel clip;

Preparation:
- Barriers shall be stored rolled up in a dry area until they are to be used; keep away from
  sharp objects and chemical solvents;
- Store rolls on their sides under cover until needed;

To offer protection against granular fill or rough surfaces of pre-cast concrete units; lay
down geotextile protection layer;

Installation in accordance with manufacturer’s technical data sheet.

011 INSTALLATION OF RADON GAS IMPERMEABLE MEMBRANE:

- Form an airtight, durably sealed, barrier across the whole of the building; including the floor,

- internal walls and both external and party walls - along with the associated cavities;

- Carefully install and seal sections of the barrier; ensure airtight sealing at all joints, laps,

service entries and cavity trays.

Application and arrangement:

- Remove loose debris from the surface of the concrete slab. The surface of the slab should

  be smooth and free from projections or indentations.

- Cover entire site with main membrane barrier to be loose-laid directly onto a protection layer(as recommended by manufacturer) on concrete slab; allow for 150mm over lapping joints

  between sheets; lay main membrane barrier neatly, tuck well into angles to prevent bridging

  and creasing.

- Repair or replace any damaged areas.

- Take care to ensure all joints have a clean, dry and dust-free overlap.

- Carry edges of membrane under DPC of external walls. Avoid slip panes as per

PD 6697:2010.

- Provide 600mm wide membrane strip under internal walls; allow for 150mm overlapping

joints with the main membrane barrier.

- In the case of an extension to an existing dwelling, cut a chase in the existing wall and tuck
  in the membrane. If there is a radon membrane in the existing floor, make the cut slightly

  above or below.

- For service pipe penetrations through the main membrane barrier, cut a hole in the barrier

  so that it fits neatly around the penetration and install preformed “Top Hat” pipe collars

  membrane sections ensuring 150mm overlap with main membrane barrier.

- Ensure a secure gas-tight seal connection at membrane barrier overlaps using one strip of

  double-sided tape; 2 No. strips to be used to seal “Top Hat” pipe collar sections - firstly tape

  butt joint main membrane barrier to service pipe and secondly, membrane barrier to “Top

  Hat” Section.

- Install and tighten adjustable stainless steel clip around top of “Top Hat” pipe collars to

  ensure a gas tight seal is maintained around service penetrations.

- Ensure that the barrier is not punctured as building work continues; any damage must be

  repaired before laying the floor slab; cover the barrier with the permanent over lapping

  construction as soon as possible.

Slip Resistance

012 The Pendulum Test Value (PTV) should be 36+ (CoF) or above when tested, wet or dry as appropriate for the anticipated service conditions including any likely surface contamination by the method described in and required by the applicable Standard.

013 For plaster, use Gypsum building plasters or 'Pre-mixed Lightweight Plaster', plaster to applicable Standard (see below) to a minimum thickness of 8mm, Finish Plaster to applicable Standard; minimum thickness of 2mm to bonding plaster, minimum thickness of 3mm when applied to plasterboard.

Types of gypsum binders and gypsum plasters	
Designation	Notation
Gypsum Binders e.g.: • gypsum binders for direct use or further processing (dry powder products); • gypsum binders for direct use on site • gypsum binders for further processing (e.g. for gypsum blocks, gypsum plasterboards, gypsum elements for suspended ceilings, gypsum boards with fibrous reinforcement)	A A1 A2 A3
Gypsum plaster: • gypsum building plaster; • gypsum based building plaster; • gypsum-lime building plaster; • lightweight gypsum building plaster; • lightweight gypsum based building plaster; • lightweight gypsum –lime building plaster; • gypsum plaster for plasterwork with enhanced surface hardness.	B B1 B2 B3 B4 B5 B6 B7
Gypsum plaster for special purposes: • gypsum plaster for fibrous plasterwork; • gypsum mortar; • acoustic plaster; • thermal insulation plaster; • fire protection plaster; • thin coat plaster, finishing product; • finishing product.	C C1 C2 C3 C4 C5 C6 C7

Bonding agent

014 Where bonding agents are permitted, use an opaque white non-toxic externally plasticised PVA of high viscosity manufactured to applicable Standard solution to sound surfaces, with a 1:3 solution to be applied to soffits.

Metal lathing, beads and stops

015 Ensure steel lathing is of the plain expanded type having a minimum weight of 1.6Kg/m2.

016 Ensure beads and stops are of an appropriate profile and:

- for internal use are galvanised; and
- for external use are manufactured from stainless steel or PVC-u to applicable Standard.

Plasterboard

017 Plasterboard is to be to applicable Standard; core density of 6kg/m2 for 12.5mm board. Product selection to be restricted to materials with a minimum 75% recycled content.

018 Dry lining is to be to applicable Standard, core density of 10kg/m2 for a 12.5mm board; taper edged.

Wall tiling

019 Plain cushion edge white or coloured glazed ceramic tiles to applicable Standards size 6mm minimum thickness. Waterproof adhesives for ceramic tiles to be to applicable Standard. Waterproof grout to applicable Standard. Wall tiling for repairs is to match existing for repairs to existing tiled surfaces.

Sealant

020 Sealants are to be:

- gun grade white silicone mould resistant sealant to applicable Standard low modulus; or
- gun grade white silicone sealant to applicable Standard low modulus; or
- fire retardant sealant to applicable Standard

Textured decorative finish

021 Use a plastic compound textured decorative finish. Apply it to provide a finish to match the existing finish. Apply to no less than the minimum thickness stated in the manufacturer's technical data sheet.

Steel lathing beads and stops

022 Lathing to Timber or Masonry to be either:

- Zinc coated lathing to applicable Standards zinc coated Reference L3 fixed with staples at 150mm centres; or
- Stainless steel lathing to applicable Standards stainless steel Reference SWL fixed with stainless steel staples at 150mm centres.

023 Lathing to External Wall Insulation to be either:

- Stainless steel lathing to applicable Standards stainless steel Reference HWL fixed with stainless steel staples and ties at 150mm centres; or
- Glass or Carbon reinforced lathing, with fibres encapsulated against alkali attack, strength and stiffness greater than that for stainless steel, fixed with stainless steel staples and ties at 150mm centres

024 Stretch lathing and fix securely in accordance with manufacturer's technical data sheet to give a taut firm base for plaster/rendering, fix with the ling way of the mesh at right angles to supports and with all strands sloping in the same direction, Lap side edges not less than 100mm. Lap ends 50mm at supports and 100mm between supports. Laps must not occur within 100mm of angles or bends. Tie all edges and ends together with 1.2mm wire ties at not more than 150mm centres. Ensure all joints have a 100m lap and are wired at centres not exceeding 75mm.

025 Angle beads are to be either:

- PVC-u angle bead with 25mm x 25mm lugs to take 2mm plaster to applicable Standard; or
- PVC-u angle bead with 40mm x 40mm lugs, depth to suit external render;

026 Bellcast beads are to be PVC-u with 25mm x 45mm lugs.

027 Stop beads are to be PVC-u edge bead 25mm wide.

028 Fix beads and stops with galvanised steel or stainless steel nails or mortar or render dabs on accordance with the manufacturer's technical data sheet.

Plasterboard, Dry Lining and Thermal Boards

029 Fix plasterboard to soffits or studding with 32mm x 12 swg galvanised clout headed nails for 10mm boards and 38mm x 12 swg galvanised clout headed nails for 12.5mm boards at intervals suitable for the particular application. Provide all supporting members as necessary for fixing the plasterboard. Do not use cross

030 Horizontal joints will not be permitted on dry lining unless the wall height exceeds the maximum manufactured board dimension. All joints are to be taped and finished to a flush seamless finish. Jointing material is to be to applicable Standard. Seal all exposed and cut edges with PVAC sealer.

031 Ensure flush joints between plasterboards and at the junction between walls and soffits with straight edged and level finish plaster. Cover them with 90mm wide jute scrim cloth bedded in neat board finish. Apply a coat of neat d finish plaster at least 5mm thick immediately after the joint application has set but before it dries out.

032 Fix dry lining to metal framing with drill point ("jack point") drywall screws at 300mm centres to vertical studs, around openings and at board edges.

033 Ensure that backing walls are dry and direct bond dry lining with a gypsum based adhesive , seal perimeter and around openings with gypsum adhesive.

034 Ensure the plaster finish to thermal board consists of two coats of premixed lightweight plaster total thickness of plaster system of at least 13mm as follows:

I. the first coat being scratch coat of bonding plaster; followed by
II. a coat of appropriate finish plaster trowelled to a smooth finish.

Plaster on concrete soffits

035 Ensure the plaster finish to concrete soffits consists of two coats of premixed lightweight plaster, to a total thickness of plaster system of at least 10mm as follows:

- the first coat being a bonding scratch coat; followed by
- a finishing coat trowelled to a smooth finish.

Plaster on solid vertical backgrounds

036 Ensure the plaster finish to solid vertical backgrounds consists of two coats of lightweight premixed plaster to a total thickness of plaster system of at least 13mm as follows:

I. the first coat being:
   - on low suction backgrounds, a bonding plaster scratch coat containing exfoliated vermiculite; or

i. on normal suction backgrounds, a scratch coat of HB browning plaster containing expanded perlite aggregate; and
   the second coat being finish plaster containing exfoliated vermiculite aggregate trowelled to a smooth finish.

Dissimilar Solid Backgrounds for Plaster:

037 Where plaster is to be continued without break across joints between dissimilar solid backgrounds which are rigidly bonded or tied together, cover the joints with a 200 mm wide galvanized mesh strip (backgrounds in the same plane) or with galvanized corner mesh (internal angles) fixed at not more than 600 mm centres along both edges, unless specified otherwise.

Dissimilar Solid Backgrounds for Plaster (Lintels):

038 Where plaster is to be continued without break and without change of plane across the face of a lintel which is not wider than 300 mm and is rigidly bonded or tied to the plaster background:

- Cover the face of the lintel with building paper to applicable Standard extending 25 mm on to the adjacent background.
- Overlay with expanded galvanized steel lathing extending 50 mm beyond the edges of the
  paper and securely fix with masonry nails at not less than 100 mm centres along both edges.

039 Alternatively, a suitable paper and mesh lathing may be used.

Dissimilar Solid Backgrounds For Rendering:

040 Where rendering is to be continued without break across joints between dissimilar solid backgrounds which are in the same plane and rigidly bonded or tied together, cover joints with a 150 mm wide strip of building paper to applicable Standard overlaid with 300 mm wide stainless-steel lathing fixed at not more than 600 mm centres along both edges, unless specified otherwise.

Conduits:

041 Conduits bedded in undercoat to be covered with 90 mm wide jute scrim bedded in finishing coat mix, pressed flat and trowelled in. Do not lap ends of scrim.

Cement beds, backings and renderings generally

042 Unless the Client's Representative Instructs otherwise, ensure all beds, backings and renderings are composed of one part Portland Cement to three parts sand, by volume. Keep the water content as low as possible and ensure it does not exceed 18 litres per 50 Kg of cement (including the moisture content in the sand).

043 Brush sub-bases and backgrounds free of all dust. Well wet them and coat them with cement slurry before applying the screeds. Alternatively, use 1:10 EVA bonding adhesive instead of cement slurry.

044 Where the beds, backings or renderings are specified as waterproof, incorporate waterproofer to applicable Standard in the mix.

045 Expansion joints should be placed to form bays not exceeding 3.50m x 3.50m. Finish off the surfaces of beds and backings to receive the appropriate tiling, paving or other finishing.

046 External rendering is to be to applicable Standard. Ensure external renderings have a surface finish to match the existing renderings.

Granolithic finish

047 Ensure granolithic finish is composed of 1 part cement to 1-part fine aggregate to 2 parts coarse aggregate 10mm maximum size, all measured by weight. Add the minimum amount of water necessary to give sufficient workability for laying and compacting. All granolithic repairs are to match existing.

048 Thoroughly scabble, clean, wet and treat the base for granolithic application either by brushing on a neat cement grout or an EVA emulsion bonding agent. Lay the granolithic finishing in bays not exceeding 15m2 with the bay proportions being such that the ratio of sides will not exceed 1:1 1/2.

049 Ensure the minimum thickness is 19mm to a sound loadbearing concrete base. To prevent dusting, avoid excessive trowelling. Carry out curing for at least 4 days or, if the Client's Representative so Instructs, for longer.

050 Ensure the deviation from the level is no more than +/- 3mm in 3m.

051 Steel trowel the granolithic to produce a close knit surface and either tool it by stud rolling or sprinkle it with non slip grains to produce an anti-slip finish as Instructed by the Client's Representative.

Wall tiling

052 Fix tiles to the backing with straight joints on a combed bed of waterproof adhesive. Ensure all exposed edges of tiles are round edged. Either round edge or mitre the external angles, at the Provider's discretion. Form exposed stop end corners using double bullnose tiles.

053 Fill the joints between tiles solid with waterproof grout. Tool off the joints and clear off all residual adhesive and grout from the tiles and surrounding surfaces on completion of the Works.

Quarry and Ceramic floor tiling

054 Lay tiles either on a bed of cement and sand (1:3) or on a cementitious adhesive bed to applicable Standard 3-6mm thick, which makes full contact with the tile and background.

Suitability of Backgrounds/Bases:

055 Before starting work ensure that backgrounds/bases:

- Are sufficiently flat to permit specified flatness of finished surfaces, bearing in
- mind the permissible minimum and maximum thicknesses of the bedding material.
- Have been allowed to dry out by exposure to the air for not less than the following:
  - Concrete slabs: 6 weeks.
  - Cement:sand screeds: 4 weeks.
  - Rendering: 2 weeks.
  - Gypsum plaster: 4 weeks.

Plain Coloured Skirting To Existing Painted Plaster:

056 Tiles: Plain coloured unglazed ceramic skirting tiles, minimum rounded top edge, coved bottom to applicable Standards, Size: 8mm minimum. Joint width: 3mm.

- Background/Base: Existing painted plaster.
- Grouting material: Waterproof grout.

Setting Out:

057 Ensure that:

- Joints to be true to line, continuous and without steps.
- Joints on walls to be truly horizontal, vertical and in alignment round corners.
- Joints in floors to be parallel to the main axis of the space or specified features.
- Cut tiles/slabs to be kept to the minimum, as large as possible and in unobtrusive locations.
- Before laying tiles obtain confirmation of setting out to satisfaction of the Client's Representative.

Flatness of Wall Tiling:

058 Sudden irregularities not permitted. When measured with a slip gauge in accordance with the applicable Standards, the variation in gap under a 2 m straight edge placed anywhere on the surface to be not more than 3 mm.

Flatness of Floor Tiling:

059 Sudden irregularities not permitted. When measured with a slip gauge in accordance with the applicable Standards, the variation in gap under a straight edge (with feet) placed anywhere on the surface to be not more than 3mm over a 2m straight edge.

Vinyl and thermoplastic tiles

060 Unless the Client's Representative Instructs otherwise, lay tiles in accordance with applicable Standard with straight joints on a combed bed of adhesive to a standard and quality approved by the Client's Representative. Match the size, colour and pattern of the tiles as nearly as possible to any existing surrounding tiles.

Vinyl and other Resilient Sheet Floor Coverings

061 Unless the Client's Representative Instructs otherwise, vinyl and other resilient sheet floorings are to be of a standard, quality and laid in accordance with the applicable Standards.

062 All non slip floor coverings to be 2mm thick anti slip vinyl sheet floor coverings to in accordance with the applicable Standards and to have a Pendulum test value (PTV or slip resistance value) (36+ (CoF) or above) as tested to in accordance with the applicable Standards and a Surface roughness (Rz) (20+µm (microns) or above) to in accordance with the applicable Standards. Floor covering to be complete with aluminium threshold strips at doors

Textured decorative finish

063 Fill joints in plasterboard to receive decorative textured finish with plastic filler. Cover them, while wet, with wet strength paper scrim or while wet or dry, with glass fibre membrane scrim tape. Allow this to dry before applying the finishing coat. Apply the finishing coat evenly. Tool or brush this to match the existing

Labour and sundry items

064 Cut and fit and/or make good all wall and floor finishings around any kind of obstruction or projection of a permanent nature from the wall background or floor base including any:

- structural elements;
- pipework, ducting and their brackets and supports;
- fittings and appliances in connection with the electrical, water, gas heating, air conditioning, communication and waste disposal systems; and/or
- fittings and any permanent object in connection with any permanent parts of the Property.

065 Unless the Client's Representative Instructs otherwise, maintain plasterwork, renderings, backings, asphalt and any applied finishes in the same plane as any existing surrounding similar applications. Make a fair joint between the new application and any existing surrounding application.

Employer's current manufacturers/suppliers/products

066 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

TECHNICAL SPECIFICATION

17-PAINTING AND DECORATING

PAINTING AND DECORATING

GENERAL

` Benchmark Standard

001 Prior to the commencement of painting, the Employer's Contract Manager, the Contractor and the Paint and Decorative Materials Manufacturer will meet on site to identify a number of Properties which are agreed as being representative in condition and substrate types of the Properties that exist throughout the relevant estate or programme of Works. The Employer's Contract Manager shall have the final decision on the Properties identified as the benchmark Properties.

002 The selected Properties will be known as the "benchmark Properties" against which decorating materials performance will be measured during the course of the Contract and the agreed addresses will be recorded.

003 Prior to commencement of re-decoration to the remainder of the estate or programme of Works, the benchmark Properties will be prepared and redecorated strictly in accordance with the contract/technical decorating specifications and monitored by the Employer's Contract Manager.

004 Upon completion of the benchmark Properties, the Employer's Contract Manager, Contractor and Paint and Decorative Materials Manufacturer will meet again to "sign off" the Properties provided the required standards of workmanship and materials have been achieved. The signing off should be in conjunction with the Employer's Decorative Materials Performance Record – Benchmark Properties Form.

005 Ensure that the standards of preparation and decoration on the benchmark Properties are applied to the remaining Properties within the estate or programme of Works.

The Contractor

006 Ensure that the selected Paint and Decorative Materials Manufacturer is consulted prior to the commencement of any painting and decorating Works.

007 Ensure that all Staff engaged to carry out the painting and decorating are suitably trained to achieve the quality standards and levels of service indicated in this Specification and individual Property, estate or programme of Works requirements.

008 The Contractor shall be responsible for the quality standards and levels of service achieved both in surface preparation and decorative materials application by those members of Staff engaged for this purpose. The Contractor will also ensure that a suitably qualified Supervisor is appointed to control work sequencing, quality standards and to ensure that Occupiers property is left clean and tidy at the end of each working day.

009 Adhere wholly to the “Technical Painting and Decorating Specification” prepared and supplied by the Paint and Decorative Materials Manufacturer, and using the specified paint and other decorative materials so that the application to various surfaces, preparation, initial and final coats achieve the optimum performance as stated. The Provider must use the paint and other decorative materials stated in the “Technical Painting and Decorating Specification” specific to the project Property, estate or programme of Works.

010 Provide a minimum of one week’s notice to all Occupiers prior to preparation or painting and decorating Works being carried out on their Property.

011 Ensure that the standards of preparation and painting and decorating application to the Benchmark Properties is compliant with the Technical Painting and Decorating Specification” provided and subsequently “signed off” by the authorised representative of the Paint and Decorative Materials Manufacturer and the Employer’s Contract Manager.

012 Ensure the remaining Properties on the estate or programme of Works achieve equitable painting and decorating standards in terms of quality and performance as the previously agreed Benchmark Property.

013 Provide evidence of having a responsible waste management system, i.e. that paint and decorative materials tins and containers are re-cycled and not disposed of to landfill sites.

Paint and Decorative Materials Manufacturer

014 The paint and decorative Materials manufacturer is the party indirectly employed by the Provider or their approved Subcontractors to supply paint and other decorative Materials, training and technical support.

015 The paint and decorative Materials manufacturer shall liaise with the Employer's Contract Manager and the Contractor to identify and agree the Benchmark Properties for the estate or programme of Work.

016 The paint and decorative Materials manufacturer shall ensure that all of the products supplied for the Contract, are in full compliance with this Specification.

017 The paint and decorative Materials manufacturer shall provide for each Property, estate or programme of Work (if required) any necessary on-site training in the use of their products and retain a record of the training undertaken and who received that training.

018 The paint and decorative Materials manufacturer shall inspect and survey each Property, estate or programme of Work and prepare the applicable "Technical Painting and Decorating Specification" recommending the preparation, applications and paint and other decorative Material products applicable to the Works identified as being required to be undertaken, which if undertaken correctly would enforce any guarantees given by The paint and decorative materials manufacturer as to the expected life and performance of the paint and decorative Material products used.

019 The paint and decorative Materials manufacturer shall liaise fully with the Employer's Contract Manager, the Contractor and if applicable any approved painting Subcontractors to provide an effective site monitoring of standards and advisory service which ensures best practice in the use of their products. The paint and decorative Materials manufacturer shall complete the Employer's Quality Monitor Form on a bi-weekly basis.

020 In addition the paint and decorative Materials manufacturer shall be responsible for providing a written report in an electronic format to the Employer's Contract Manager following each inspection.

021 The paint and decorative Materials manufacturer is required on the completion of every Property to collate a comprehensive Property, estate or Programme of Work specific technical report in an electronic format and submit to the Employer's Contract Manager. The technical report must provide clear evidence of the following:

- a comprehensive Technical specification that identifies all of the products used (trade names permitted) with their associated warranties and where applied;
- Site Monitoring Reports – details of any site visits, any findings identified and what action(s) were taken/requested in terms of remedial works;
- Where communal hallways have been repainted – full details of flake sampling, independent analysis and what recommendations were followed on site, details of tag(s) affixed should also be recorded including photographic record of location(s);
- Record of training where specifically requested by the Provider of a paint or decorative Material product or products;
- Confirmation that all paint and other decorative Material products and their quantities as supplied are held by The paint and decorative Materials manufacturer on his internal IT system for future reference; and
- Fire certification certificates as applicable on the application of fire retardant paints and the achievement of Class "0" surface spread of flame.

Redecorate/touch up/make good

022 Note that "redecorate/touch up" or "make good decoration" includes preparation, priming, one undercoat and either one gloss coat to previously painted surfaces or reinstating any stain or clear finish for previously stained or clear finish surfaces.

MATERIALS

Generally

023 The products supplied must be applied in accordance with the relevant product Technical Data Sheet. In addition, all products should be used in accordance with applicable Standards - Code of Practice for Painting Buildings and Workmanship on Building Sites as set out in the table below. When applying coatings, in order to ensure optimum protection and durability, it is essential to achieve the required coverage rate, particularly when using medium/high build finishes,

AREA	LONGEVITY	BASE	RE-COAT Within	COVERAGE
Previously painted woodwork	Up to 8 Years	Solvent or Water Based	8-16 Hours	18m^2/litre
Previously stained woodwork	Up to 10 Years	Solvent or Water Based	16 Hours	20m^2/litre
Previously painted landscape timber (i.e. fencing etc.,)	Up to 8 Years	Solvent or Water Based	16 Hours	12m^2/litre
Previously painted masonry walls	Up to 15 Years	Solvent or Water Based	1 -2 Hours	14 -16m^2/litre
Previously painted masonry walls	Up to 15 Years	Solvent/Oil Based	12 Hours	8m^2/litre
Previously painted masonry walls	Up to 15 Years	Water Based	2 – 4 Hours	12 – 14m^2/litre
Previously painted metalwork	Up to 8 Years	Solvent or Water Based	4 – 8 Hours	15m^2/litre

AREA OF WORK	CERTIFICATION
All paint generally	BBA Accreditation or equivalent
Health and Safety	Current COSHH Regulations as amended
Painting Buildings	applicable Standard - Code of Practice
Workmanship on Building sites	applicable Standard – Code of Practice
Paints and varnishes	applicable Standard
Protective coating of iron and steel structures against corrosion	applicable Standard

024 The products supplied must ensure that failure free repaint and redecoration cycles of 15 years for masonry substrate and 8 years for all other substrate as a minimum will be achieved. The onus is on the paint and decorative Materials manufacturer of any product to “demonstrate compliance”, whilst it is the Contractor’s duty to ensure “premium products” are provided in all cases to reflect the established warranties.

025 Obtain undercoats and finishing coats for an individual surface from the same manufacturer.

026 Ensure paints are delivered to the Property in sealed containers as received from the manufacturer and no labels are removed or painted out. Use the paint without adulteration.

027 Under no circumstances thin paint supplied by the manufacturer unless approved by the Employer. When such approval has been granted, carry out thinning with thinners of the type stated in the manufacturer’s technical data sheet.

028 Execute painting in shades approved by the Employer's Contract Manager. Submit samples of tints before ordering Materials. Ensure each coat of paint matches the finished shade, and where tint types are required by the manufacturer's technical data sheet, they are used.

029 Provide samples of Materials to the Employer's Contract Manager for approval in sample tins filled 7/8 full after the contents of the container or kettle have been thoroughly stirred and mixed. Record all relevant details of the Materials sampled.

030 Immediately remove any unsatisfactory Materials from the Property and make good any Works executed with such defective Materials.

031 Note that the Rates include for the use of varied colours in the Works and for the execution of sample patches, as required by the Employer's Contract Manager.

032 Use water based paints where appropriate.

Knotting

033 Use a best quality shellac knotting compound, dissolved in methylated spirits. Cover all knots and resinous parts.

Stopping

034 Ensure stopping/filler for:

- plasterwork - is a plaster based filler applied to a PVA solution primed surface, or a proprietary filler suitable for plaster repairs;
- internal woodwork, hardboard, fireboard and plywood - is a proprietary wood filler either suitably pre-coloured to match the base material or of a neutral colour and capable of being stained to match the required colour when stain is applied;
- external woodwork – is a proprietary filler recommended for external use approved by the Client's Representative, (and tinted to match the colour of the stained/varnished finish where appropriate); and
- clear finished woodwork - is tinted to match the surrounding woodwork.

Primer for alkaline surfaces

035 For alkaline surfaces use an alkali resistant sealer/primer and finish with a top coat of the type stated in the manufacturer's technical data sheet.

Primer for iron and steelwork

036 Prime iron and steelwork with a primer of the type stated in the manufacturer's technical data sheet for the subsequent finish coats.

Primer for galvanised iron and steelwork

037 Prime galvanised iron and steelwork with a primer that is compatible with the subsequent finish coats. Pretreat new galvanised surfaces with a mordant solution before priming.

Primer for hardboard

038 Where hardboard is not factory primed or sealed, use a suitable primer of the type stated in the manufacturer's technical data sheet for the subsequent finish coats.

Primer for woodwork

039 For woodwork, use a finishing ready-mix primer obtained from the maker of the undercoat and finishing coats.

Primer for oily or resinous timbers

040 For British Columbia pine (Douglas fir) or other oily or resinous timber, use an aluminium based priming paint not darker than applicable Standard, Colour 00A01 approved by the Employer's Contract Manager which is compatible with the subsequent coats of the type stated in the manufacturer's technical data sheet.

Primer for stains

041 For stain finishes, ensure surfaces are clean, rubbed down to an even finish and lightly keyed to every coat except the top coat.

Stabilising sealer

042 Use a type and make of stabilising sealer recommended by the manufacturer of the undercoat and finishing coat.

Chemical stripper

043 Ensure chemical paint stripper is water soluble.

Anti fungal solution

044 Ensure an anti-fungal solution is appropriate to the surface being treated and is used in accordance with The Control of Pesticides Regulations 1986 (amended 1997) and The Pesticides Act 1998.

PREPARATION OF SURFACES

Preparations

045 Thoroughly prepare all surfaces to a high standard of preparatory work. Note that "prepare" used in the Schedule of Rates includes all Works described below including washing down, rubbing down, filling in pin and plug holes, priming and painting extra coats, but excluding paint removal.

046 Report any necessary paint removal to the Employer's Contract Manager and agree the extent of this with the Employer's Contract Manager before starting this Work. Note that no payment will be made for paint removal unless this is done.

047 Apply a liberal brush coat of timber preservative conforming to Building Establishment Technical Note No. 24 (or equivalent) to existing bare non-durable timber surfaces. Allow adequate time for this to dry before overcoating.

048 Rub down previously painted surfaces in good condition with abrasive paper. Fill cracks as described in Paragraph 034. Subject to Paragraph 046, remove existing paint in poor condition completely using a non-caustic paint remover.

049 Treat stains on the ceiling before decoration to prevent them bleeding through subsequent decorative coatings with a proprietary stain stop or blocker appropriate to the substrate and in keeping with the requirements of the finish to be applied.

050 Use tinted undercoats if the Employer's Contract Manager so Instructs.

Approval

051 Where specified, obtain the approval of the Employer's Contract Manager to the preparation of surfaces before applying any coating.

Stopping

052 Where stopping/filling is referred to in this Section, use the appropriate stopping as described in the Materials Section.

Burning off

053 Burn off and rub down to remove paint from wooden surfaces. Fill in cracks, knot, prime and stop woodwork so exposed all as described for new Work, rub down with fine abrasive paper and apply one additional undercoat before painting as specified. Burning off is not permitted indoors without the express written permission of the Employer's Contract Manager.

Plaster, render, concrete and brickwork

054 Remove plaster or mortar splashes from the decorated surfaces by scraping. Stop all holes, cracks, etc. Brush down the whole surface to remove dust and loose material. Remove all traces of mould oil by scrubbing with water and detergent and rinsing with clean water to remove all detergent.

055 Allow plaster surfaces to dry out completely before decorating, (i.e.< 10% moisture content).

056 Remove efflorescence first by wiping dry with a dry course cloth and then with a damp cloth. Leave the surfaces for 48 hours to see if efflorescence has ceased and clean the surfaces to remove dirt, dust, etc. Allow the surfaces to dry out thoroughly before painting is commenced. When efflorescence has occurred or is suspected, defer painting as Instructed by the Employer's Contract Manager. New plaster/render should be allowed to dry for a minimum of 28 calendar days before decorating.

057 Cut out loose and defective rendering and make good before redecoration. Stabilise existing surfaces to be redecorated with an stabilising agent of 1:10 PVA solution or 1:3PVA solution to soffits.

Plasterboard to receive direct redecoration

058 Finish the joints in plasterboard ceilings to receive textured decorative finishings as described in the 'Plasterwork and Other Floor, Wall and Ceiling Finishes' Section.

Iron and steel

059 Remove rust, mill scale, welding slag and flux residue from iron and steel surfaces by wire brushing, scraping, hammering, flame cleaning, etc.

Previously painted metalwork

060 Thoroughly clean down all paintwork which is in sound condition and rub down with abrasive paper. Remove small areas of defective paint and all rust and loose scale by chipping, scraping and wire brushing back to clean metal. Prime the metal so exposed immediately after preparation with one coat of primer and apply one additional undercoat before painting.

061 Remove large areas of defective paint by using a non-caustic stripper appropriate to the substrate and in accordance with the technical data sheet for the subsequent coats or by chipping, scraping and wire brushing back to clean metal. In all cases where rust is apparent, scrape the rusting section and a sufficient area around it clean of all paint and rust and coat it with a rust inhibiting primer approved by the Employer's Contract Manager in addition to the priming coat described.

Defective putties

062 Hack out defective, cracked or uneven putties to glazing, prepare and prime the rebates as required and make good the putties before any painting is carried out. Allow putties to form a hard skin before painting with an oil based paint or allow for no less than 14 calendar days drying time where water based paint/stain is to be applied.

Hardboard

063 Remove dirt and grease from hardboard surfaces. Before priming ensure all nail holes and other imperfections are stopped/filled in.

Plywood

064 Fill as required with a plastic based filler before priming/staining. Prime surfaces of internal plywood before painting with one coat of primer, filled as required with a plastic based filler. Rub and dust down and apply a second coat of primer/stain.

065 Before final priming/staining ensure that all imperfections are stopped, rubbed down and brushed off. Prime/stain surfaces of external plywood before painting with one coat of primer/stain. Where stain is to be applied use a stainable filler, or a filler pre-coloured to match the stain finish. Rub and dust down and apply a second coat of primer/stain.

Woodwork to be painted

066 Before fixing woodwork, rub down surfaces that will be visible after fixing. Scorch back excess resin from live knots and resin pockets. Coat all knots and resinous areas with fresh knotting. Prime all surfaces, ensure all nail holes and other imperfections are stopped/filled. Rub down the whole surface and brush off all dust before the undercoat is applied.

Previously painted woodwork

067 Wash down thoroughly with sugar soap or white spirit solution all paintwork which is in sound condition and allow to dry. Rub down to a smooth surface with an abrasive paper, achieving the final pre-paint finish with a fine grain abrasive paper to achieve a finish free from abrasive marks. Rinse well with clean water and allow to dry. Fill in cracks, etc., as described for new woodwork.

068 Remove small areas of cracked or defective paint by carefully scraping back to a firm edge. Knot, prime and stop woodwork so exposed as described for new work. Sand with fine abrasive paper and apply one additional undercoat before painting if required.

069 Apply a liberal coat of brush applied water repellent timber preservative conforming to the recommendations of the applicable Standard to bare existing non-durable timber surfaces or surfaces with defective areas of paint film. Allow adequate time to dry before overcoating.

070 On existing coated timber, remove any degraded surface timber by sanding down to clean sound timber. Remove resinous exudations by heat using hot air gun. Apply 2 coats of knotting to affected areas and any exposed knots and allow to dry.

071 On existing coated timber, remove dirt, algae and dead fibre by means of high pressure power hosing, apply one coat fungicide and leave for 72 hours.

Woodwork to receive a clear finish

072 Stop/fill holes and other imperfections in surfaces that are to receive a clear finish. Rub down the whole surface and brush off all dust.

073 Prepare existing varnished surfaces in sound condition by cleaning down with a suitable detergent and thoroughly rinsing them. Lightly key sound existing finishes to an even finish over the entire surface ensuring that all existing finish sheen is removed.

074 Strip and revarnish existing varnished surfaces in unsound condition.

Woodwork to receive stain finish

075 Prepare previously treated and untreated surfaces that are to receive a proprietary stain finish in accordance with the manufacturer’s technical data sheet.

WORKMANSHIP

Paint

076 In order to eradicate any unauthorised addition of thinners or driers, or other adulteration of paint:

- give adequate supervision during the painting work to ensure that paint is not adulterated;
- note that if cases of unauthorised or excessive thinning or other adulterations are discovered, the Client's Representative will usually exercise the power contained in this Contract to require the removal of the Staff members concerned;
- ensure a notice is exhibited drawing the attention of Staff to the Client's requirement to use paint as supplied by the manufacturer and the consequences of a breach of this requirement; and
- note that similar requirements will apply to Subcontractors.

Stirring of Materials

077 Thoroughly stir the contents of all cans and containers of Materials before and during use. Suitably strain them as and when necessary.

Application

078 Apply coatings by brush or roller. Use sprays only with the prior approval of the Client's Representative. Where spray application is approved it shall be applied as directed by the manufacturer, including thinning with thinners of a type and to a ratio that complies with the manufacturer's technical data sheet.

Priming of glazing beads

079 Prime/stain glazing beads, rebates and the backs of beads at the same time as priming/staining the window frames.

Condition of priming

080 If the priming/staining has in any way deteriorated or has been damaged by the time of the first coat, rub down and reprime/re-stain the affected portions, or the whole if necessary. Where required, touch up with the same primer/stain or equivalent all articles, such as the windows, that were primed by their manufacturers.

Coatings to be dry

081 Allow coatings to dry thoroughly for the time specified by the manufacturer before applying succeeding coats.

Painting windows/doors

082 Do not paint windows or doors in the closed position.

Rubbing down

083 Rub down and de-nib undercoats for paints and clear finishes to a smooth surface with abrasive paper. Remove all dust before the succeeding coat is applied.

Differing colours of undercoats

084 Ensure each succeeding coat of priming and undercoating paint is sufficiently different in colour to be readily distinguishable.

Unsuitable conditions

085 Do not apply coating:

- to surfaces affected by wet, damp, foggy or frosty weather or other unsuitable conditions;
- to any damp surface; or
- in temperatures below 5^0 Centigrade.
- when heat is likely to cause blistering or wrinkling.

086 Take all necessary precautions including restrictions on working hours, providing temporary protection and allowing extra drying time, to ensure that coatings are not adversely affected by climatic conditions before, during and after application.

Protection of wet surfaces

087 Take adequate care to protect surfaces whilst still wet, by the use of screens and 'wet paint' signs where necessary. Take responsibility for any damage which may be caused by or through wet paint.

Damage to adjoining surfaces

088 Take care not to damage or stain other Works when storing Materials, preparing surfaces, or applying paint or stains. Remove all such stains, making good the stained surface and touching up any paintwork disturbed.

Cleanliness

089 Keep surfaces clean and free from dust during the painting processes. Do not carry out painting in the vicinity of other operations which might cause dust. Provide a suitable movable receptacle into which all liquids (including slop washings) are placed. Ensure this is not tipped down any of the gullies, manholes, sinks, basins, water closets or any other sanitary fittings. Remove all solid refuse or inflammable residues from the Property.

Removal of ironmongery

090 Remove surface fixed ironmongery, fittings and door/window furniture (except hinges) before painting and refix them on completion.

Radiators

091 Take down radiators to allow the proper decoration of the surfaces behind. Refit the radiators and refill the systems including inhibitor and balance if required.

Protection of furniture

092 Protect all furniture and fittings, use dust sheets and remove items such as curtains before commencing the Works. Rehang or reinstate on completion of the Works.

Protection:

093 Adequately protect both internal and external surfaces which are not to be coated, by covering with dust sheets or other suitable materials. Exhibit 'Wet paint' signs and provide barriers where necessary to prevent damage to freshly applied coatings.

Concealed Joinery Surfaces:

094 Where one or more additional coats are specified to be applied in the factory, they must be applied to all surfaces, including those which will be concealed when incorporated into the Property.

Painting Existing Concrete:

095 Preparation: - Remove surface salts and other loose material with stiff brush. Leave for 48 hours and repeat process if necessary. Apply one coat of fungicide solution and leave for 72 hours, apply one coat proprietary sealer/primer, carefully remove all loose or defective areas of coating to a firm edge. Thoroughly clean by wiping down with white spirit or washing with water containing detergent. Remove heavy deposits of oil, grease, etc. with a suitable proprietary cleaning solution, sand down surfaces while still wet to provide a key, rinse off and allow to dry, patch prime as specified. fill joints, cracks, holes and other depressions with filler worked well in and finished off flush with surface. Sand smooth and remove dust, apply additional coats to areas where paint has been removed to restore the original coating thickness (Bring forward). Sand down junctions to give a flush surface.

096 Apply initial coat of exterior quality water based masonry paint and one finishing coat of exterior quality water based masonry paint.

Painting New Concrete:

097 Preparation: - Remove surface salts and other loose material with stiff brush. Leave for 48 hours and repeat process if necessary. Apply one coat of fungicide solution and leave for 72 hours, apply one coat proprietary sealer/primer, apply one coat of exterior quality water based masonry paint thinned as necessary in accordance with the manufacturer’s technical data sheet. Sand down junctions to give a flush surface.

098 Apply initial coat of exterior quality water based masonry paint and one finishing coat of exterior quality water based masonry paint.

Painting Existing Render:

099 Preparation: Take back to a firm edge all areas of poorly adhering or defective coatings. Remove all loose or powdery material by vigorously brushing down with suitable stiff brushes and dust off. Where appropriate on smooth surfaces, rub down sound areas to produce the necessary key for good adhesion and dust off. Cut out and make good all cracks, holes, open joints and other imperfections etc., with an approved proprietary filler, rub down smooth and dust off. Prime all sound bare areas exposed by the removal of coatings with one coat of exterior quality water based masonry paint, thinned as necessary in accordance with the manufacturer's technical data sheet. Apply stabilising primer to all areas. Bring forward all areas which during preparation were taken back to bare substrate or disfigured/exposed by the removal of the previous coating with one coat of exterior quality water based masonry paint of the selected shade.

100 Apply initial coat of exterior quality water based masonry paint and one finishing coat of exterior quality water based masonry paint.

Painting New Render:

101 Preparation: Thoroughly clean down to remove all surface contamination, mortar splashes, nibs etc. Allow to fully dry. Cut out and make good all cracks, holes, open joints and other imperfections etc., with an approved proprietary filler, rub down smooth and dust off. Apply one coat of exterior quality water based masonry paint, thinned as necessary in accordance with the manufacturer's technical data sheet.

102 Apply initial coat of exterior quality water based masonry paint and one finishing coat of exterior quality water based masonry paint.

Painting Existing Concrete/Render with Anti-Graffiti Paint:

103 Preparation: Carefully remove all loose or defective areas of coating to a firm edge. Thoroughly clean by wiping down with white spirit or washing with water containing detergent. Remove heavy deposits of oil, grease, etc. with a suitable proprietary cleaning solution. - Sand down surfaces while still wet to provide a key. Rinse off and allow to dry, patch prime as specified, fill joints, cracks, holes and other depressions with filler worked well in and finished off flush with surface. Sand smooth and remove dust. Apply additional coats to areas where paint has been removed to restore the original coating thickness (Bring forward). Sand down junctions to give a flush surface.

104 Apply initial coat of two pack water based epoxy anti-graffiti paint and one finishing coat of two pack water based epoxy anti-graffiti paint.

Painting New Concrete/Render with Anti-Graffiti Paint:

105 Preparation: Remove surface salts and other loose material with stiff brush. Leave for 48 hours and repeat process if necessary. Apply one coat of fungicide solution and leave for 72 hours, fill joints, cracks, holes and other depressions with filler worked well in and finished off flush with surface. Sand smooth and remove dust. Apply one coat proprietary sealer/primer. Sand down junctions to give a flush surface.

106 Apply initial coat of two pack water based epoxy anti-graffiti paint and one finishing coat of two pack water based epoxy anti-graffiti paint.

Painting Existing Coated Brickwork/Blockwork:

107 Preparation: Carefully remove all loose or defective areas of coating to a firm edge. Thoroughly clean by wiping down with white spirit or washing with water containing detergent. Remove heavy deposits of oil, grease, etc. with a suitable proprietary cleaning solution. Sand down surfaces while still wet to provide a key. Rinse off and allow to dry, patch prime as specified. Fill joints, cracks, holes and other depressions with filler worked well in and finished off flush with surface. Sand smooth and remove dust. Apply additional coats to areas where paint has been removed to restore the original coating thickness (Bring forward). Sand down junctions to give a flush surface.

108 Apply one initial coat of exterior quality solvent based masonry paint, and one finishing coat of exterior quality solvent based masonry paint.

Painting New Brickwork/Blockwork:

109 Preparation: Carefully remove all loose mortar etc. Thoroughly clean by wiping down with white spirit or washing with water containing detergent. New brickwork/blockwork: Remove surface salts and other loose material with stiff brush. Leave for 48 hours and repeat process if necessary. Apply one coat of exterior quality solvent based masonry paint thinned as necessary in accordance with the manufacturer’s technical data sheet. Sand down junctions to give a flush surface.

110 Apply one initial coat of exterior quality solvent based masonry paint, and one finishing coat of exterior quality solvent based masonry paint.

Painting Existing Plaster – Oil based Paint:

111 Preparation: Remove dirt and surface deposit with a stiff brush and rub down to remove nibs, trowel marks, plaster and paint splashes. Widen cracks sufficiently to receive proprietary filler. Brush cracks to remove any loose plaster and fill with proprietary filler and rub flush with surface. Apply one coat proprietary primer/sealer.

112 Apply one initial coat of oil based vapour barrier paint and one finishing coat of oil based vapour barrier paint.

Painting New Plaster – Oil based Paint:

113 Preparation: Lightly rub over-trowelled glossy plaster with worn abrasive paper. Fill all depressions, holes and cracks and lightly rub down flush with surface, apply one coat proprietary sealer/primer.

114 Apply one initial coat of oil based vapour barrier paint and one finishing coat of oil based vapour barrier paint.

Painting Existing Plaster – Emulsion Paint:

115 Preparation: - Remove dirt and surface deposits with a stiff brush. Widen cracks sufficiently to receive proprietary filler. Brush cracks to remove any loose plaster and fill with proprietary filler and rub flush with surface. Rub down to remove nibs, trowel marks and plaster and paint splashes, lightly rub over-trowelled glossy plaster with worn abrasive paper, fill all depressions, holes and cracks and lightly rub down flush with surface, apply one coat proprietary sealer/primer.

116 Apply two finishing coats of emulsion paint.

Painting New Plaster – Emulsion Paint:

117 Preparation: - Remove dirt and surface deposits with a stiff brush. Rub down to remove nibs, trowel marks and plaster splashes, lightly rub over-trowelled glossy plaster with worn abrasive paper, fill all depressions, holes and cracks and lightly rub down flush with surface, apply one coat proprietary sealer/primer, apply one coat of emulsion paint thinned as necessary in accordance with the manufacturer's technical data sheet.

118 Apply two finishing coats of emulsion paint.

Painting Existing Plaster – Eggshell Paint – Fire Retardant Paint

119 Preparation: Thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants. Carefully scrape back to a firm edge all areas of poorly adhering or defective coatings. Powdery and friable surface coatings are to be completely removed by scraping, brushing and washing. Allow the surface to fully dry before proceeding. Where appropriate rub down sound areas to produce the necessary key for good adhesion and feather broken edges of existing coating. Dust off. Make good holes, cracks and other imperfections with an approved proprietary filler, rub down and dust off.

120 Initial coats: Prime all sound bare areas with one coat of eggshell paint thinned in accordance with the manufacturer's technical data sheet.

121 Apply two finishing coats of eggshell paint.

Painting New Plaster – Eggshell Paint – Fire Retardant Paint

122 Preparation: Remove dirt and surface deposits with a stiff brush. Rub down to remove nibs, trowel marks and plaster splashes, lightly rub over-trowelled glossy plaster with worn abrasive paper, fill all depressions, holes and cracks and lightly rub down flush with surface, apply one coat proprietary sealer/primer, apply one coat of eggshell paint thinned in accordance with the manufacturer's technical data sheet.

123 Apply two finishing coats of eggshell paint.

Painting Existing Plaster – Vinyl Matt Paint

124 Preparation: Thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants. Carefully scrape back to a firm edge all areas of poorly adhering or defective coatings. Powdery and friable surface coatings are to be completely removed by scraping, brushing and washing. Allow the surface to fully dry before proceeding. Where appropriate rub down sound areas to produce the necessary key for good adhesion and feather broken edges of existing coating. Dust off. Make good holes, cracks and other imperfections with an approved proprietary filler, rub down and dust off.

125 Initial coats: Prime all sound bare areas with one coat of vinyl matt paint thinned in accordance with the manufacturer's technical data sheet.

126 Apply two finishing coats of vinyl matt paint.

Painting New Plaster – Vinyl Matt Paint

127 Preparation: Remove dirt and surface deposits with a stiff brush. Rub down to remove nibs, trowel marks and plaster splashes, lightly rub over-trowelled glossy plaster with worn abrasive paper, fill all depressions, holes and cracks and lightly rub down flush with surface, apply one coat proprietary sealer/primer, apply one coat of vinyl matt paint thinned in accordance with the manufacturer's technical data sheet.

128 Apply two finishing coats of vinyl matt paint.

Painting Existing Painted Internal Surfaces – Anti Graffiti Paint

129 Preparation: Remove existing graffiti with an approved appropriate graffiti removal system, thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants. Carefully scrape back to a firm edge all areas of poorly adhering or defective coatings. Powdery and friable surface coatings are to be completely removed by scraping, brushing and washing. Allow the surface to fully dry before proceeding. Where appropriate rub down sound areas to produce the necessary key for good adhesion and feather broken edges of existing coating. Dust off. Make good holes, cracks and other imperfections with an approved proprietary filler, rub down and dust off.

130 Prime all sound bare areas with one coat of anti graffiti paint sealer, bring forward sealed areas with anti graffiti paint primer, apply two finishing coats of anti-graffiti paint.

Painting Internal Surfaces – Anti Graffiti Paint

131 Preparation: Thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants. Powdery and friable surface coatings are to be completely removed by scraping, brushing and washing. Allow the surface to fully dry before proceeding. Where appropriate rub down sound areas to produce the necessary key for good adhesion and feather broken edges of existing coating. Dust off. Make good holes, cracks and other imperfections with an approved proprietary filler, rub down and dust off.

132 Prime all sound bare areas with one coat of anti graffiti paint sealer, bring forward sealed areas with anti graffiti paint primer, apply two finishing coats of anti-graffiti paint.

Painting Existing Painted Internal Surfaces – Class "O" Fire Retardant Finish

133 Preparation: Remove existing graffiti with an approved appropriate graffiti removal system, thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants. Carefully scrape back to a firm edge all areas of poorly adhering or defective coatings. Powdery and friable surface coatings are to be completely removed by scraping, brushing and washing. Allow the surface to fully dry before proceeding. Where appropriate rub down sound areas to produce the necessary key for good adhesion and feather broken edges of existing coating. Dust off. Make good holes, cracks and other imperfections with an approved proprietary filler, rub down and dust off. Seal marks or suspect areas and surfaces that remain powdery and friable after thorough preparation with one coat of stain blocker.

134 Finishing system: Apply three coats of Class "O" as Instructed by the Employer's Contract Manager. Fire retardant basecoat applied strictly in accordance with the manufacturer's technical data sheet. Apply two finishing coats of eggshell paint.

Painting New Internal Surfaces – Class "O" Fire Retardant Finish

135 Preparation: Thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants. Allow the surface to fully dry before proceeding. Where appropriate rub down sound areas to produce the necessary key for good adhesion. Dust off. Make good holes, cracks and other imperfections with an approved proprietary filler, rub down and dust off.

136 Finishing system: Apply three coats of Class "O" as Instructed by the Employer's Contract Manager. Fire retardant basecoat applied strictly in accordance with the manufacturer's technical data sheet. Apply two finishing coats of eggshell paint.

Painting Previously Painted Internal Metal – Gloss Paint

137 Preparation: Thoroughly clean down to remove all surface contamination. Carefully scrape back to a firm edge all areas of damaged paint coatings. Scrape and wire brush corroded steel to produce a clean metal surface. Rub down with a suitable abrasive and dust off. All surfaces should be prepared to the minimum standard recommended in the applicable Standard at the time of coating. Prime all bare metal with two coats of zinc phosphate primer, applied in accordance with the manufacturer's technical data sheet. Bring forward primed areas with one coat of undercoat.

138 Apply two finishing coats of 8 years all weather protection metal gloss finish paint, applied in accordance with the manufacturer's technical data sheet.

Painting New Internal Metal – Gloss Paint

139 Preparation: Thoroughly clean down to remove all surface contamination. Rub down with a suitable abrasive and dust off. All surfaces should be prepared to the minimum standard recommended in the applicable Standard at the time of coating at the time of coating. Prime all metal with two coats of zinc phosphate primer, applied in accordance with the manufacturer's technical data sheet. Apply one coat of undercoat.

140 Apply two finishing coats of 8 years all weather protection metal gloss finish paint, applied in accordance with the manufacturer's technical data sheet.

Painting Previously Painted External Metal – Gloss Paint

141 Preparation: Thoroughly clean down to remove all surface contamination. Carefully scrape back to a firm edge all areas of damaged paint coatings. Scrape and wire brush corroded steel to produce a clean metal surface. Rub down to smooth edges with a suitable abrasive and dust off. All surfaces should be prepared to a minimum standard recommended in the applicable Standard at the time of coating. Prime all bare metal with two coats of zinc phosphate primer or other equal approved, applied in accordance with the manufacturer's technical data sheet. Bring forward primed areas with one coat of undercoat.

142 Apply two finishing coats of 8 years all weather protection metal gloss finish paint, applied in accordance with the manufacturer's technical data sheet

Painting New External Metal – Gloss Paint

143 Preparation: Thoroughly clean down to remove all surface contamination. Rub down with a suitable abrasive and dust off. All surfaces should be prepared to the minimum standard recommended in the applicable Standard at the time of coating at the time of coating. Prime all metal with two coats of zinc phosphate primer, applied in accordance with the manufacturer's technical data sheet. Apply one coat of undercoat.

144 Apply two finishing coats of 8 years all weather protection metal gloss finish paint, applied in accordance with the manufacturer's technical data sheet.

Painting Galvanised Steel – Gloss Paint

145 Preparation: Wash with white spirit to remove dirt and grease then wash with mild detergent solution and rinse off with clean water. Pretreat with mordant solution. Retreat non-blackened areas to achieve blackening of whole of surface. If galvanizing is defective obtain instructions before proceeding.

146 Apply one coat zinc phosphate primer, apply one coat of undercoat.

147 Apply two finishing coats of 8 years all weather protection metal gloss finish paint, applied in accordance with the manufacturer's technical data sheet.

Painting Previously Painted Internal Timber – Gloss Oil Paint

148 Preparation: Carefully scrape back to a firm edge all areas of poorly adhering or defective coatings. Rub down to feather broken edges of existing coating and dust off. Wash down the surfaces with soap and water, detergent solution or suitable solvent to remove all dirt, grease and surface contaminants. Whilst wet, rub down the surfaces with a suitable abrasive, taking care to avoid exposing timber on sharp edges. Finally rinse down and allow to dry. Make good all nail holes, open joints and open grain etc with an approved proprietary filler, rub down smooth and dust off. Apply two thin coats of knotting solution to all knots and resinous areas and allow to harden. Spot prime any bare metal, metal fixings, nail heads etc., with one coat of metal primer; prime all bare areas and areas exposed by the removal of coatings with one coat of wood primer, thinned as manufacturer's technical data sheet. Bring forward areas with undercoat.

149 Apply one coat of oil based undercoat and one finishing coat of gloss oil based paint.

Painting Previously Painted Internal Timber – Gloss Water Based Paint (Micro Porous)

150 Preparation: Carefully scrape back to a firm edge all areas of poorly adhering or defective coatings. Rub down to feather broken edges of existing coating and dust off. Wash down the surfaces with soap and water, detergent solution or suitable solvent to remove all dirt, grease and surface contaminants. Whilst wet, rub down the surfaces with a suitable abrasive, taking care to avoid exposing timber on sharp edges. Finally rinse down and allow to dry. Make good all nail holes, open joints and open grain etc., with an approved proprietary filler, rub down smooth and dust off. Apply two thin coats of knotting solution to all knots and resinous areas and allow to harden. Spot prime any bare metal, metal fixings, nail heads etc., with one coat of metal primer; prime all bare areas and areas exposed by the removal of coatings with one coat of wood primer, thinned as manufacturer's technical data sheet. Bring forward areas with undercoat.

151 Apply one coat of water based undercoat and one finishing coat of micro porous gloss water based paint.

Painting New Internal Timber – Gloss Oil Paint

152 Preparation: Wash down the surfaces with soap and water, detergent solution or suitable solvent to remove all dirt, grease and surface contaminants. Whilst wet, rub down the surfaces with a suitable abrasive. Finally rinse down and allow to dry. Make good all nail holes, open joints and open grain etc with an approved proprietary filler, rub down smooth and dust off. Apply two thin coats of knotting solution to all knots and resinous areas and allow to harden. Spot prime any bare metal, metal fixings, nail heads etc., with one coat of metal primer; apply one coat of wood primer.

153 Apply two coats of oil based undercoat and one finishing coat of gloss oil based paint.

Painting New Internal Timber – Gloss Water Based Paint (Micro Porous)

154 Preparation: Wash down the surfaces with soap and water, detergent solution or suitable solvent to remove all dirt, grease and surface contaminants. Whilst wet, rub down the surfaces with a suitable abrasive. Finally rinse down and allow to dry. Make good all nail holes, open joints and open grain etc with an approved proprietary filler, rub down smooth and dust off. Apply two thin coats of knotting solution to all knots and resinous areas and allow to harden. Spot prime any bare metal, metal fixings, nail heads etc., with one coat of metal primer; apply one coat of wood primer.

155 Apply two coats of water based undercoat and one finishing coat of micro porous gloss water based paint.

Painting Previously Painted External Timber – Exterior Quality Gloss Paint

156 Preparation: Thoroughly clean down surfaces to remove all dirt, grease and surface contaminants. Remove all areas of blistered, poorly adhering or defective coatings. Where flaking has occurred or coatings are defective, the entire member or section must be stripped back to the nearest joint. Open up all joints which are not tight fitting and rake out thoroughly. Rub down to feather broken edges of existing coating and dust off. Abrade the surfaces in the direction of the grain to remove any grey denatured timber and raised grain, round all sharp edges. Make good all cracks, nail holes, open joints and open grain etc., with an approved proprietary filler, rub down smooth and dust off. Apply two thin coats of knotting to all knots and resinous areas and allow to harden. Spot prime any bare metal, metal fixings, nail heads etc., with one coat of metal primer. Prime all bare areas and areas exposed by the removal of coatings with one coat of exterior preservative primer. Bring forward all primed and/or filled areas to match existing with one coat of 8 years all weather protection exterior micro porous flexible undercoat of appropriate shade.

157 Apply one coat of 8 year all weather protection micro porous undercoats of appropriate shade, and one finishing coat of 8 year all weather protection micro porous exterior high gloss paint.

Painting New External Timber – Exterior Quality Gloss Paint

158 Preparation: Thoroughly clean down surfaces to remove all dirt, grease and surface contaminants. Abrade the surfaces in the direction of the grain to remove any grey denatured timber and raised grain, round all sharp edges. Make good all cracks, nail holes, open joints and open grain etc., with an approved proprietary filler, rub down smooth and dust off. Apply two thin coats of knotting to all knots and resinous areas and allow to harden. Spot prime any bare metal, metal fixings, nail heads etc., with one coat of metal primer. Apply one coat of exterior preservative primer.

159 Apply one coat of 8 year all weather protection micro porous undercoats of appropriate shade, and two finishing coats of 8 year all weather protection micro porous exterior high gloss paint.

Painting Previously Painted Internal Plastic – Gloss

160 Preparation: Carefully scrape back to a firm edge all areas of poorly adhering or defective coatings. Rub down to feather broken edges of existing coating and dust off. Wash down the surfaces with soap and water, detergent solution or suitable solvent to remove all dirt, grease and surface contaminants. Whilst wet, rub down the surfaces with a suitable abrasive. Finally rinse down and allow to dry. Prime all bare areas with preservative primer. Bring forward all primed areas with one coat of gloss paint.

161 Apply one finishing coat of gloss paint.

Painting Previously Painted External Plastic – Gloss

162 Preparation and making good: Carefully scrape back to a firm edge all areas of poorly adhering or defective coatings. Rub down to feather broken edges of existing coating and dust off. Wash down the surfaces with soap and water, detergent solution or suitable solvent to remove all dirt, grease and surface contaminants. Whilst wet, rub down the surfaces with a suitable abrasive. Finally rinse down and allow to dry. Prime all bare areas with preservative primer. Bring forward all primed areas with one coat of 8 year all weather protection micro porous exterior gloss.

163 Apply one finishing coat of 8 year all weather protection micro porous exterior gloss paint.

Previously Wood-stained Internal Timber – Decorative Protection

164 Preparation: Carefully scrape back to a firm edge all areas of poorly adhering or defective coatings. Rub down to feather broken edges of existing coating and dust off. Wash down the surfaces with soap and water, detergent solution or suitable solvent to remove all dirt, grease and surface contaminants. Whilst wet, rub down the surfaces with a suitable abrasive, taking care to avoid exposing timber on sharp edges. Finally rinse down and allow to dry. Make good all nail holes, open joints and open grain etc., with an approved proprietary filler, rub down smooth and dust off. Touch in any bare areas with one coat of decorative wood-stain of appropriate shade, thinned as manufacturer's technical data sheet.

165 Apply two finishing coats of decorative wood-stain of selected shade, apply wood-stain in flowing coats, redistribute excess material by brushing before wood-stain has set, allow not less than 24 hours between coats.

New Internal Timber – Decorative Protection

166 Preparation: Wash down the surfaces with soap and water, detergent solution or suitable solvent to remove all dirt, grease and surface contaminants. Rinse down and allow to dry. Make good all nail holes, open joints and open grain etc., with an approved proprietary filler, rub down smooth and dust off. Apply one coat of decorative wood-stain of appropriate shade, thinned as manufacturer's technical data sheet.

167 Apply two finishing coats of decorative wood-stain of selected shade, apply wood-stain in flowing coats, redistribute excess material by brushing before wood-stain has set, allow not less than 24 hours between coats.

Previously Opaque Wood-stained External Timber – Decorative Protection

168 Preparation: Thoroughly clean down surfaces to remove all dirt, grease and surface contaminants. Remove all areas of blistered, poorly adhering or defective coatings. Where flaking has occurred or coatings are defective, the entire member or section must be stripped back to the nearest joint. Open up all joints which are not tight fitting and rake out thoroughly. Rub down to feather broken edges of existing coating and dust off. Abrade the surfaces in the direction of the grain to remove any grey denatured timber and raised grain, round all sharp edges. Make good all cracks, nail holes, open joints and open grain etc., with an approved proprietary stopper/filler designed for use with a wood-stain system, rub down smooth and dust off. Apply two thin coats of knotting solution to all knots and resinous areas and allow to harden. Prime all

sound bare areas and areas exposed by the removal of coatings with one coat of 8 year all weather preservative basecoat. If required, touch in any primed areas with 8 year all weather protection stain to match the surrounding timber for colour and build. Allow to dry.

169 Apply two finishing coats of opaque 8 year all weather protection wood-stain of selected shade, apply wood-stain in flowing coats, redistribute excess material by brushing before wood-stain has set, allow not less than 24 hours between coats.

Opaque Wood-stained New External Timber – Decorative Protection

170 Preparation: Thoroughly clean down surfaces to remove all dirt, grease and surface contaminants. Abrade the surfaces in the direction of the grain to remove any grey denatured timber and raised grain, round all sharp edges. Make good all cracks, nail holes, open joints and open grain etc., with an approved proprietary stopper/filler designed for use with a wood-stain system, rub down smooth and dust off. Apply two thin coats of knotting solution to all knots and resinous areas and allow to harden. Apply one coat of 8 year all weather preservative basecoat.

171 Apply three finishing coats of opaque 8 year all weather protection wood-stain of selected shade, apply wood-stain in flowing coats, redistribute excess material by brushing before wood-stain has set, allow not less than 24 hours between coats.

Previously Transparent Wood-stained External Timber – Decorative Protection

172 Preparation: Thoroughly clean down surfaces to remove all dirt, grease and surface contaminants. Remove all areas of blistered, poorly adhering or defective coatings. Where flaking has occurred or coatings are defective, the entire member or section must be stripped back to the nearest joint. Open up all joints which are not tight fitting and rake out thoroughly. Rub down to feather broken edges of existing coating and dust off. Abrade the surfaces in the direction of the grain to remove any grey denatured timber and raised grain, round all sharp edges. Make good all cracks, nail holes, open joints and open grain etc., with an approved proprietary stopper/filler designed for use with a wood-stain system, rub down smooth and dust off. Apply two thin coats of knotting solution to all knots and resinous areas and allow to harden. Prime all sound bare areas and areas exposed by the removal of coatings with one coat of 8 year all weather preservative basecoat. If required, touch in any primed

areas with 8 year all weather protection stain to match the surrounding timber for colour and build. Allow to dry.

173 Apply two finishing coats of transparent 8 year all weather protection wood-stain of selected shade, apply wood-stain in flowing coats, redistribute excess material by brushing before wood-stain has set, allow not less than 24 hours between coats.

Transparent Wood-stained New External Timber – Decorative Protection

174 Preparation: Thoroughly clean down surfaces to remove all dirt, grease and surface contaminants. Abrade the surfaces in the direction of the grain to remove any grey denatured timber and raised grain, round all sharp edges. Make good all cracks, nail holes, open joints and open grain etc., with an approved proprietary stopper/filler designed for use with a wood-stain system, rub down smooth and dust off. Apply two thin coats of knotting solution to all knots and resinous areas and allow to harden. Apply one coat of 8 year all weather preservative basecoat.

175 Apply three finishing coats of transparent 8 year all weather protection wood-stain of selected shade, apply wood-stain in flowing coats, redistribute excess material by brushing before wood-stain has set, allow not less than 24 hours between coats.

Previously Varnished Internal Timber – Polyurethane Varnish

176 Preparation: and making good: Carefully scrape back to a firm edge all areas of poorly adhering or defective coatings. Rub down to feather broken edges of existing coating and dust off. Wash down the surfaces with soap and water, detergent solution or suitable solvent to remove all dirt, grease and surface contaminants. Whilst wet, rub down the surfaces with a suitable abrasive, taking care to avoid exposing timber on sharp edges. Finally rinse down and allow to dry. Make good all nail holes, open joints and open grain etc with an approved proprietary filler, rub down smooth and dust off. Touch in any bare areas with one coat of interior polyurethane varnish or other equal approved, thinned as manufacturer's technical data sheet.

177 Apply two finishing coats of gloss, satin or matt interior polyurethane varnish as specified, brush well in avoiding aeration and layoff, rub down lightly between coats along the grain.

Previously Preservative Treated Sawn Timber; External

178 Preparation: Brush down to remove loose fibres, grey denatured timber and poorly adhering or defective coatings. Thoroughly clean down the surfaces with soap and water, detergent solution or suitable solvent to remove all dirt, grease and surface contaminants. Rinse with clean water and allow to dry. Surfaces which are contaminated with mould and/or vegetable growths should be scraped and treated with an appropriate fungicidal wash applied strictly in accordance with the manufacturer's technical data sheet. Ensure all surfaces are completely dry. Apply two thin coats of knotting solution to all knots and resinous areas and allow to dry. Spot prime all knots and bare areas with two coats of coloured timber preservative primer.

179 Apply one or two (as specified by Client's Representative) finishing coats of opaque fencing timber preservative of selected shade.

Preservative Treated New Sawn Timber; External

180 Preparation: Brush down to remove loose fibres and grey denatured timber Thoroughly clean down the surfaces with soap and water, detergent solution or suitable solvent to remove all dirt, grease and surface contaminants. Rinse with clean water and allow to dry. Apply two thin coats of knotting solution to all knots and resinous areas and allow to dry. Spot prime all knots and bare areas with two coats of coloured timber preservative primer.

181 Apply two finishing coats of opaque fencing timber preservative of selected shade.

Stripping Wallpaper:

182 Strip wall paper, lining paper, etc., clear away debris, remove dirt and surface deposits with a stiff brush, rub down to remove trowel marks, plaster and paint splashes. Lightly rub glossy plaster with worn abrasive paper. - Fill all depressions, holes and cracks with suitable filler and lightly rub down flush with surface.

Vinyl Covered Backgrounds:

183 Where these are to be stripped, the paper backing may be retained as a lining if in good condition and firmly adhering. Stick down any lifting edges and corners.

Treatment of Organic Growths:

184 Remove all loose growths and infected coatings/decorations. Apply appropriate biocidal solution to growth areas and surrounding surfaces. Scrape or brush off all dead growth. Remove infected materials immediately to ensure that no other areas become infected. Apply appropriate residual effect biocidal solution to inhibit re-establishment of growths. Biocides must be approved and registered by the Health and Safety Executive (HSE) and listed as surface biocides.

Hanging Wallpaper, Lining Paper etc., Generally:

185 All joints must be truly vertical and/or horizontal, straight and fully adhered with edges neatly cut to ceilings and skirtings. Finished coverings must be securely adhered, smooth and free of air bubbles, wrinkles, gaps, tears, adhesive marks and stains.

Sizing:

186 Where specified size surfaces with a solution of wallpaper paste diluted in accordance with the manufacturers technical data sheet.

Lining Paper:

187 Apply size to walls and hang lining paper with adhesive to applicable Standard with butt joints and turn all edges. When not specified otherwise, select type and weight to suit covering and background. Hang lengths with butt joints; do not overlap. Hang lengths transversely to direction of covering. Leave to dry for 24 hours before hanging covering.

Adhesive:

188 When not specified otherwise, type to be as recommended by the covering manufacturer or, in the absence of such recommendation, type to be approved. Adhesives to contain a fungicide and be made up in accordance with the manufacturer’s technical data sheet.

Coverings:

189 Self edged coverings to be trimmed to a true straight edge before hanging, unless manufacturer recommends overlap joints. Hang wall coverings vertically unless specified otherwise. Hang ceiling coverings parallel to the main window wall unless specified otherwise. Isolate any metallic foil/fabric coverings from electrical contact.

Joints in Coverings:

190 Hang lengths with neat butt joints generally with the patterns matching where applicable. Hang lengths with neat overlapped joints only when permitted by the covering manufacturer where butt joints are impractical.

191 Hang lengths in one piece generally. Cross joints are only permitted where single lengths are impractical.

Joints in Coverings - Overlapped and Cut:

192 Hang lengths with neat overlapped joints. Cut through when stable to a true straight edge, without damaging the background, and bond joints. Hang lengths in one piece generally. Cross joints are only permitted where single lengths are impractical.

Shading:

193 Use lengths in the sequence they are cut from the roll. Check each length for colour and pattern match before hanging.

194 Do not reverse alternate lengths unless recommended by the covering manufacturer.

195 Check for shade variation after hanging the first three lengths. Inform the Client's Representative of any variation before proceeding.

Graffiti Removal

196 Apply a low odour bio-degradable chemical remover to the graffiti treating small areas at a time.

197 After the detergent remover has taken effect, the surface can be cleaned using a hot/cold power washer with a fan jet head. Pressure should be restricted to less than 1500PSI to avoid possible damage to masonry surfaces.

198 All applications shall be carried out in accordance with current Health and Safety requirements and with the manufacturer's technical data sheet. Suitable detergent cleaners only shall be selected for the surface to be cleaned.

Mould Growth Treatment

199 Clean all infected surfaces and surrounding area with anti-bacterial mould growth remover.

200 Wash down cleaned surfaces and apply anti-fungicidal solution to prevent re-growth.

201 Where repainting is required proprietary anti-fungicidal paint systems shall be used.

202 All paint and chemical solutions must be applied strictly in accordance with the manufacturer's Health and Safety instructions on their technical data sheet, and fully comply with current Health and Safety requirements.

Cleaning Rainwater Gutters and Pipes

203 Clear all dirt and debris from inside of gutter and clean.

204 Clean out defective joints of gutters and seal with suitable jointing material to satisfaction of the Client.

205 Clean outside face of gutters, when the inside has been cleaned.

206 Clear all dirt and debris from inside of rainwater pipes.

207 Clean out defective joints of rainwater pipes and seal with suitable jointing material to satisfaction of the Client.

208 Clean outside face of downpipes, when the inside has been flushed.

Employer's current manufacturers/suppliers/products

209 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

TECHNICAL SPECIFICATION

18-GLAZING

GLAZING

MATERIALS

001 Clear float, obscured pattern and Georgian wired glass shall comply with the applicable Standard

002 Laminated safety, toughened glass and polycarbonate sheet shall comply with and meet the requirements of the applicable Standards.

003 Panes to be accurately and squarely cut, with clean, undisfigured, free from all specks, bubbles, bladders and all other defects, and having undamaged edges and surfaces, to suit the sizes of the openings. Dimensions of edge cover and clearance, positions and materials of distance pieces, setting and location blocks to be to the requirements of the applicable Standard and glass and sealant manufacturer's recommendations.

004 For clear float glass, use 'ordinary glazing quality'.

005 For obscure/patterned glass, use clear cast glass either to match the existing glass or of a pattern approved by the Client's Representative.

006 For polished plate glass, use 'glass for glazing quality'.

007 For wired glass, use Georgian wired cast or Georgian wired polished plate glass, as specified. Ensure the wire extends to the edges of the glass and is free from rust. Cut Georgian wired glass to ensure that any edge is parallel to the alignment of the wires. Care to be taken to ensure that the wires in adjacent panes line up either horizontally or vertically.

Double and triple glazed units

008 Ensure flat dual/hermetically sealed double glazing units are manufactured using low-E coating on inner face s and have a minimum 5 (five) year guarantee. Provide details of the guarantee to the Employer's Contract Manager. Units to comply with the requirements of the applicable Standards, with units to be clearly marked on at least one section, the spacer bar with the BS kitemark or equivalent standard or compliance with the applicable Standard, the manufacturer's name and number and the date of manufacture, to the month. All units to have argon gas filling.

009 Secure double glazed units into rebates with double-sided PVC-u foam closed cell high density security glazing to PAS 24.

010 Install units in accordance with the applicable Standards, and the Glass and Glazing Federation Glazing Manual or equivalent.

Putty

011 For glazing to wood use timber slips and sealants.

012 On timber windows the bottom slip shall be a proprietary drained aluminium bead complete with end caps and spacers, use linseed oil putty or equivalent.

Intumescent mastic

013 Ensure mastic to fire doors/windows is of a type of fire protection sealant to applicable Standard and approved by the Client's Representative.

Plastic Protection Channels:

014 Preformed proprietary protection channel are to suit particular glass thickness, and fitted securely to bottom edge of glass.

Condensation Channels:

015 Proprietary pre-formed PVC-u/metal condensation channel are to be complete with stop ends, glazing gaskets and proprietary fixings. Channel to be bedded in recommended sealant to bottom member of window.

Ventilated Glazing Beads:

016 Proprietary pre-formed PVC-u or aluminium ventilated glazing bead are to be complete with stop ends, glazing gaskets and proprietary fixings and fixed in accordance with manufacturer's technical data sheet.

Glass Locking System:

017 Proprietary plastic/metal body and clip and fixed in accordance with manufacturer's technical data sheet.

WORKMANSHIP

Glazing generally

018 Glass generally shall comply with applicable Standard. Undertake all glazing in accordance with the applicable Standards, the Glass and Glazing Federation Code of Practice and the current Building Regulations.

019 Ensure that glass/plastics, surround materials, primers, mastics, sealers and paints which are used together are compatible.

020 Glazing to be the responsibility of the unit manufacturer.

021 Safety Glass – to identify the grade of safety glass used, each pane should be indelibly marked so that the marking is visible after installation. The markings should include:

- The manufacturer's name or trade mark;
- The product number for the type of glass;*
- The impact performance classification to be to applicable Standards for:
    - toughened glass;
    - laminated glass:
    - heat soaked thermally toughened glass;

022 Fire Glass – all glazing units forming or part of a composite unit i.e. door, window, sidelight etc., should be manufactured to allow compliance with fire testing and rated accordingly to the component unit as a whole and comply with Building Control.

023 Accurately and squarely cut glass with clean, undisfigured and undamaged edges and surfaces, to size with a small clearance. Provide a clearance of 3mm on timber, 5mm on PVC-u windows all round between the edge of the double glazed unit and the frame to permit drainage and ventilation. Cut Georgina Wired glass to ensure that any edge is parallel to the alignment of the wires. Care shall be taken to ensure that the wires in adjacent panes line up either horizontally or vertically.

034 Ensure glass, except that bedded in patent glazing strip, is bedded back and front and around the perimeter with mastic neatly trimmed and cleaned off.

025 Ensure glazing is sprigged to wood, or fixed with aluminium, timber beads or PVC-u beads and security clips or double edged security tape.

026 If gasket glazing is required, ensure the glazing gaskets and weather seals are extruded from EPDM (Ethylene Propylene Diene Monomer).

027 Install obscured glass in single glazing with the "rough" side to the inside of the Property. Install obscure glass to sealed double glazed units with the "rough" side to the inside of the unit and the obscure glass to the inside of the Property.

028 Seal and prime rebates and beads before glass is inserted.

Double glazing units

029 Glazing packers are to be in accordance with the applicable Standards and should not obstruct the drainage with profile specific bridging packers used. Use setting blocks and distance pieces so as to centralise the glass, unit or infill within the opening and ensure that it cannot move in the wind. Use setting blocks at the bottom edge of the frame. For fixed windows, position them as near the quarter points as possible. Where it is necessary to avoid undue deflection of the frame, place them nearer the sides, but never less than 85mm from the corner. Use setting blocks that are 3mm wider than the glass unit or infill and as thick as the designed edge clearance. Allow for toeing and healing.

030 Use setting blocks that are at least 25mm in length and approximately 2 No evenly spaced for each metre of major glass dimension to applicable Standard. For vertically pivoted windows, use setting chocks that are at least 75mm in length. Do not place blocks where these will inhibit drainage.

031 Use location blocks between the edges of the glass unit or infill and at the top and sides of the frame in an opening light.

032 Use distance pieces 25mm long and 3mm less in height than the rebate depth. Ensure the thickness is at least 3mm and such as to ensure that the glass is held firmly in the glazing rebate. Insert rigid PVC-u shims if necessary, to ensure that the distance pieces are a tight fit between the face of the glass and rebate. For beads which fit into continuous grooves, insert the first distance pieces 75mm from each corner, and the remainder at approximately 30mm centres. For beads fixed by screws or other studs, insert the distance pieces at the fixing points provided.

033 Composition of Double Glazing Units as tabled below:

DOUBLE GLAZING UNITS TO DOORS – CLEAR SAFETY		
Pane material/thickness		
Inner pane 6.8mm laminated clear low-E glass	12mm thermally broken warm edge spacer bar with 90% argon fill	Outer pane 6.8mm laminated clear glass
Overall thickness of the units: Not less than 25.6mm		

DOUBLE GLAZING UNITS TO DOORS – OBSCURE SAFETY		
Pane material/thickness		
Inner pane 6.8mm laminated clear low-E glass	12mm thermally broken warm edge spacer bar with 90% argon fill	Outer pane 6.8mm laminated obscured pattern safety glass
Overall thickness of the units: Not less than 25.6mm		

DOUBLE GLAZING UNITS TO SIDELIGHTS – OBSCURE SAFETY		
Pane material/thickness		
Inner pane 4mm toughened clear low-E glass	14mm thermally broken warm edge spacer bar with 90% argon fill	Outer pane 6.8mm laminated obscured pattern safety glass
Overall thickness of the units: Not less than 24.8mm		

DOUBLE GLAZING UNITS TO SIDELIGHTS – CLEAR SAFETY		
Pane material/thickness		
Inner pane 4mm toughened clear low-E glass	14mm thermally broken warm edge spacer bar with 90% argon fill	Outer pane 6.8mm laminated clear safety glass
Overall thickness of the units: Not less than 24.8mm		

DOUBLE GLAZING UNITS TO WINDOWS – CLEAR FLOAT		
Pane material/thickness		
Inner pane 4mm clear low-E glass	16mm thermally broken warm edge spacer bar with 90% argon fill	Outer pane 4mm clear glass
Overall thickness of the units: Not less than 24mm		

DOUBLE GLAZING UNITS TO WINDOWS – OBSCURE		
Pane material/thickness		
Inner pane 4mm clear low-E glass	16mm thermally broken warm edge spacer bar with 90% argon fill	Outer pane 4mm obscured pattern group 4 glass
Overall thickness of the units: Not less than 24mm		

DOUBLE GLAZING UNITS TO WINDOWS – CLEAR SAFETY		
Pane material/thickness		
Inner pane 4mm toughened clear low-E glass	16mm thermally broken warm edge spacer bar with 90% argon fill	Outer pane 4mm toughened clear glass
Overall thickness of the units: Not less than 24mm		

DOUBLE GLAZING UNITS TO WINDOWS – CLEAR SAFETY		
Pane material/thickness		
Inner pane 6.8mm laminated clear low-E glass	16mm thermally broken warm edge spacer bar with 90% argon fill	Outer pane 6.8mm laminated clear glass
Overall thickness of the units: Not less than 29.6mm		

DOUBLE GLAZING UNITS TO WINDOWS – CLEAR FLOAT		
Pane material/thickness		
Inner pane 4mm clear low-E glass	20mm thermally broken warm edge spacer bar with 90% argon fill	Outer pane 4mm clear glass
Overall thickness of the units: Not less than 28mm		

DOUBLE GLAZING UNITS TO WINDOWS – OBSCURE		
Pane material/thickness		
Inner pane 4mm clear low-E glass	20mm thermally broken warm edge spacer bar with 90% argon fill	Outer pane 4mm obscured pattern group 4 glass
Overall thickness of the units: Not less than 28mm		

DOUBLE GLAZING UNITS TO WINDOWS – CLEAR SAFETY		
Pane material/thickness		
Inner pane 4mm toughened clear low-E glass	20mm thermally broken warm edge spacer bar with 90% argon fill	Outer pane 4mm toughened clear glass
Overall thickness of the units: Not less than 28mm		

DOUBLE GLAZING UNITS TO WINDOWS – CLEAR SAFETY		
Pane material/thickness		
Inner pane 6.8mm laminated clear low-E glass	20mm thermally broken warm edge spacer bar with 90% argon fill	Outer pane 6.8mm laminated clear glass
Overall thickness of the units: Not less than 33.6mm		

DOUBLE FIRE GLAZING UNITS– CLEAR SAFETY		
Pane material/thickness		
Inner pane 6.8mm laminated clear low-E glass	12mm thermally broken warm edge spacer bar with 90% argon fill	Outer pane 6mm clear Georgian Wire Fire Glass
Overall thickness of the units: Not less than 24.4mm		

DOUBLE FIRE GLAZING UNITS– OBSCURE SAFETY		
Pane material/thickness		
Inner pane 6.8mm laminated clear low-E glass	12mm thermally broken warm edge spacer bar with 90% argon fill	Outer pane 6mm Georgian Wire Fire Glass obscured pattern group 1
Overall thickness of the units: Not less than 24.4mm		

FIRE GLAZING, DOUBLE FIRE GLAZING UNITS– CLEAR SAFETY		
Pane material/thickness		
Inner pane 4mm toughened clear glass	Stainless steel spacer bar with argon gas filling	Outer pane 11.0mm safety fire grade glass fully UV stable, clear
Overall thickness of the units: Not less than 24.0mm		

FIRE GLAZING, DOUBLE FIRE GLAZING UNITS– TEXTURED/PATTERNED SAFETY		
Pane material/thickness		
Inner pane 4mm toughened textured/ patterned glass	Stainless steel spacer bar with argon gas filling	Outer pane 11.0mm safety fire grade glass fully UV stable, clear
Overall thickness of the units: Not less than 24.0mm		

FIRE GLAZING, DOUBLE FIRE GLAZING UNITS– TEXTURED/PATTERNED SAFETY		
Pane material/thickness		
Inner pane 4mm toughened textured/ patterned glass	Stainless steel spacer bar with argon gas filling	Outer pane 11.0mm safety fire grade glass fully UV stable, clear
Overall thickness of the units: Not less than 24.0mm		

FIRE GLAZING, DOUBLE FIRE GLAZING UNITS– CLEAR SAFETY		
Pane material/thickness		
Inner pane 6.8mm laminated clear (safety Class A) glass	Stainless steel spacer bar with argon gas filling	Outer pane 7.0mm internal fire grade glass fully UV stable, clear
Overall thickness of the units: Not less than 24.0mm		

FIRE GLAZING, DOUBLE FIRE GLAZING UNITS– CLEAR SAFETY		
Pane material/thickness		
Inner pane 4mm toughened clear glass	Stainless steel spacer bar with argon gas filling	Outer pane 10.0mm safety fire grade glass fully UV stable, clear
Overall thickness of the units: Not less than 24.0mm		

FIRE GLAZING, DOUBLE FIRE GLAZING UNITS– TEXTURED/PATTERNED SAFETY		
Pane material/thickness		
Inner pane 4mm toughened textured/ patterned glass	Stainless steel spacer bar with argon gas filling	Outer pane 10.0mm safety fire grade glass fully UV stable, clear
Overall thickness of the units: Not less than 24.0mm		

FIRE GLAZING, DOUBLE FIRE GLAZING UNITS– CLEAR SAFETY LOW –E HARD COAT		
Pane material/thickness		
Inner pane 4mm toughened low-E hard coat clear glass	Stainless steel spacer bar with argon gas filling	Outer pane 10.0mm safety fire grade glass fully UV stable, clear
Overall thickness of the units: Not less than 24.0mm		

FIRE GLAZING, DOUBLE FIRE GLAZING UNITS– CLEAR SAFETY		
Pane material/thickness		
Inner pane 6.4mm laminated clear (safety Class B) glass	Stainless steel spacer bar with argon gas filling	Outer pane 7.0mm external fire grade glass fully UV stable, clear
Overall thickness of the units: Not less than 24.0mm		

Neoprene glazing gaskets

034 Fit glass to PVC-u windows using glazing gaskets appropriate to the window. Angle all glazing gaskets if possible, but in any event mitre all corners and comply with Clause 021 above.

Cleaning:

035 Remove cement and plaster based spillage whilst wet. Remove all smears and excess glazing materials. Leave glazing clean and free from scratches inside and out.

Damage:

036 Replace all glass and fixing materials broken or damaged before completion and redecorate.

Fire Resistant Glazing

037 Fire resistant Glazing Cassette to Door Sets with cassette interlocking system with male/female connectors, 24.4mm double glazing unit comprising 6.8mm laminated clear low–E safety glass inner pane, 12mm thermally broken warm edge spacer bar with 90% argon fill, 6mm clear Georgian wired fire glass or 6mm Georgian wire fire glass obscure pattern group 1, fire retardant glazing sealant as intumescent aperture lining/filler, installed in accordance with UKAS accredited report for fire resistant glazing and in accordance with glazing manufacturer's technical data sheet.

038 Fire resistant Glazing Cassette to Door Sets with cassette interlocking system with male/female connectors, 26mm double glazing unit comprising 6.8mm laminated clear low–E safety glass inner pane, 12mm thermally broken warm edge spacer bar with 90% argon fill, 6mm clear Georgian wired fire glass or 6mm Georgian wire fire glass obscure pattern group 1, fire retardant glazing sealant as intumescent aperture lining/filler, installed in accordance with UKAS accredited report for fire resistant glazing and in accordance with glazing manufacturer's technical data sheet.

039 Fire resistant glazing to fanlights and sidelights with 24.4mm double glazing unit comprising 6.8mm laminated clear low–E safety glass inner pane, 12mm thermally broken warm edge spacer bar with 90% argon fill, 6mm clear Georgian wired fire glass or 6mm Georgian wire fire glass obscure pattern group 1, fire retardant glazing sealant as intumescent aperture lining/filler, installed in accordance with UKAS accredited report for fire resistant glazing and in accordance with glazing manufacturer's technical data sheet, aluminium powder coated glazing bead extrusion with flexible intumescent glazing compound to entire length of glazing bead extrusion and fixing in accordance with the manufacturer's technical data sheet.

Employer’s current manufacturers/suppliers/products

040 Ensure all Materials are compatible with and standardised to the Employer’s current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer’s current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

TECHNICAL SPECIFICATION

19-PLUMBING

PLUMBING

GENERAL

Generally

001 Ensure all Materials comply with the requirements of the applicable water Utility Provider.

002 Use rust proofed ancillary and fixing Materials. Ensure all Materials in direct or indirect contact are compatible so as to prevent electrolytic or chemical corrosion.

003 Note that the Client's Properties may contain a variety of disposal systems manufactured from conventional materials and also a wide range of manufacturer's proprietary systems.

004 Seal any pipework entering a vertical service duct all round with intumescent sealant to prevent the passage of fire or smoke.

MATERIALS

Plastic rainwater gutters and pipes

005 Match the colour of the systems, the profile of gutters and the rainwater pipe jointing and fixing to the existing systems unless the Employer's Contract Manager Instructs otherwise.

Cast iron rainwater gutters and pipes

006 For gutters use half round or ogee. Match all new gutters and pipes to the existing system unless the Client's Representative Instructs otherwise. Time saver joints are to be used, flexi seal connectors are not to be used.

Aluminium rainwater gutters and pipes

007 Ensure aluminium rainwater disposal systems match the existing system.

Plastic soil and vent pipes

008 Ensure the colour and jointing and fixing match the existing pipework unless the Client's Representative Instructs otherwise.

Cast iron soil and vent pipes

009 Ensure the jointing and fixing methods match the existing pipework unless the Client's Representative Instructs otherwise. Time saver joints are to be used, flexi seal connectors are not to be used.

Plastic waste pipes, fittings and traps

010 Use PVC-u plastic to applicable Standard for soil/ventilating pipework and fittings. Use polypropylene plastic to applicable Standard for waste and warning pipework, fittings and traps. Fully protect any external polypropylene and ABS pipes and fittings from sunlight. Ensure waste pipes, fittings and traps match the existing waste systems unless the Client's Representative Instructs otherwise.

Copper waste pipes and fittings

011 Ensure the gauges of pipework and types of fittings match those of the relevant existing pipework.

Plastic water supply pipes and fittings

012 Use blue polyethylene pipes with copper fittings for pipework laid underground for potable water supplies.

Copper water supply pipes and fittings

013 Use lead free capillary fittings for potable water supplies.

Fittings for lead supply pipes

014 Use lead to copper mechanical joint fittings for connecting dissimilar pipes to existing lead water services.

Overflow pipes and fittings

015 Ensure the pipework for overflows complies with the same requirements as for water supply pipework.

Solder

016 Do not use lead based solders or solders containing lead in Works associated with potable water supplies. Use tin/copper or tin/silver compositions instead.

Float valves

017 Use float operated valves.

Taps

018 Use chromium plated metal taps. For lavatory basins and sinks, use 1/2 inch taps; for baths, use 3/4 inch.

019 Taps to kitchen sinks for Persons with Disabilities use:

- deck pattern chromium plated kitchen sink mixer with metal handle lever action operation control with colour discs, left hand red for hot and right hand blue for cold;

020 Taps to baths for Persons with Disabilities use:

- deck pattern chromium plated bath pillar taps suitable for both high and low pressure with metal handle lever action operation control with colour discs, left hand red for hot and right hand blue for cold;

021 Taps to wash hand basins for Persons with Disabilities use:

- vertical pattern chromium plated basin taps with metal handle lever action operation control with colour discs, left hand red for hot and right hand blue for cold;

Sanitary fittings

022 Ensure all sanitary fittings are approved by the Employer's Contract Manager.

023 For lavatory basins and pedestals, to applicable Standard use white vitreous china with:

- size 560mm x 440mm, one tap hole with pedestal;
- wall brackets secured in accordance with the manufacturer's technical data sheet;
- chromium plated to applicable Standard deck mounted mono mixer, quarter turn lever action;
- chromium plated rotative clicker waste stopper;
- polypropylene trap, 76mm seal, with combined overflow; and
- all fittings necessary to connect to services and disposal systems.

024 For hand rinse wash basins, to applicable Standard use white vitreous china with:

- size 360mm x 265mm, one tap hole without pedestal;
- wall brackets secured in accordance with the manufacturer's technical data sheet;
- chromium plated deck mounted mono mixer, quarter turn lever action;
- chromium plated rotative clicker waste stopper;
- polypropylene trap, 76mm seal, with combined overflow; and
- all fittings necessary to connect to services and disposal systems.

025 For corner rinse wash basins, to applicable Standard use white vitreous china with:

- size 500mm x 400mm, one tap hole without pedestal;
- wall brackets secured in accordance with the manufacturer's technical data sheet;
- chromium plated deck mounted mono mixer, quarter turn lever action;
- chromium plated rotative clicker waste stopper;
- polypropylene trap, 76mm seal, with combined overflow; and
- all fittings necessary to connect to services and disposal systems.

026 For baths, use heavy duty pressed steel to applicable Standard, with bolt on adjustable legs.

027 Supply baths with:

- 1700 mm rectangular pattern, single centre tap holes, twin handle grips and slip resistant base;
- chromium plated deck pattern over bath/shower fitting comprising height adjustable lockable slide rail, shower bracket, fastening set, shower hose (minimum 1500mm) soap dish and adjustable head outlet
- chromium plated deck mounted mono mixer to match mono basin mixer, quarter turn lever action;
- chromium plated rotative clicker waste stopper;
- DN 40 polypropylene shallow seal trap with combined overflow;
- bolt on adjustable feet
- galvanised mild steel floor plates to be provided under bath feet; and
- all fittings necessary to connect to services and disposal systems.

028 Supply baths with:

- 1500 mm rectangular pattern, single centre tap holes, twin handle grips and slip resistant base;
- chromium plated deck pattern over bath/shower fitting comprising height adjustable lockable slide rail, shower bracket, fastening set, shower hose (minimum 1500mm) soap dish and adjustable head outlet
- chromium plated deck mounted mono mixer to match mono basin mixer, quarter turn lever action;
- chromium plated rotative clicker waste stopper;
- DN 40 polypropylene shallow seal trap with combined overflow;
- bolt on adjustable feet
- galvanised mild steel floor plates to be provided under bath feet; and
- all fittings necessary to connect to services and disposal systems.

029 Where it not feasible to install a gravity over bath/shower mixer assembly, a deck mounted quarter turn lever action chromium plated bath filler mixer taps with maximum mixed water outlet temperature for bath fill of 48 degree C, an electric shower is also to be provided over the bath.

030 For WC pans to applicable Standard, use white vitreous china toilet pan, horizontal outlet, standard pan connector to applicable Standard to ‘P’, ‘S’ or turned ‘P’ coloured to match pan; and, thermoplastic Type 2 seat and cover to applicable Standard, with thermoplastic colour matched plastic hinges, buffers to be either synthetic or natural rubber or thermoplastic with a minimum of two integral distance pieces or a maximum of four buffers attached to underside of seat, seat colour black or white.

031 For dual flush WC cisterns to applicable Standard, use white vitreous china type for use with close coupled suites. Ensure the cisterns are complete with:

- lid;
- ball valve low pressure type;
- siphon;
- cistern to be dual flush 6 litres/4.5 litres capacity with dual flush button;
- wall brackets;
- cistern inlet connector to wc pan; and
- all fittings necessary to connect to services, disposal systems and overflow.

032 For Close Coupled WC Pan and Cistern to applicable Standard use:

- White vitreous china pan to applicable Standard;
- Thermoplastic Type 2 seat and cover to applicable Standard, with thermoplastic colour matched plastic hinges, buffers to be either synthetic or natural rubber or thermoplastic with a minimum of two integral distance pieces or a maximum of four buffers attached to underside of seat, seat colour black or white;
- Standard pan connector to applicable Standard to ‘P’, ‘S’ or turned ‘P’ coloured to match pan;
- White vitreous china cistern to applicable Standard with lid;
- Dual flush 6 litres/4.5 litre capacity to applicable Standard;
- Operating control, ball valve low pressure type to applicable Standard, diaphragm pattern of copper alloy/plastic construction with plastic float to applicable Standard;
- Dual flush button operating mechanism, with cistern inlet connector to WC Pan;
- Internal overflow into WC pan through the flush valve supplied by the manufacturer.

033 Provide Automatic WC Pan and Cistern use:

- Automatic WC shower toilet providing flushing, washing and warm air drying WRAS approved;
- Combined WC/Bidet with addition of drying air to applicable Standard;
- White vitreous china arrangement with low level wash down and horizontal outlet;
- Seat and cover as supplied by manufacturer;
- Pan connector, standard to applicable Standard ‘S’ trap (vertical fall) or ‘P’ trap (horizontal) white to match pan;
- Cistern, as supplied by the manufacturer;
- Flushing operation, as supplied by the manufacturer;
- Operating control, as supplied by the manufacturer;
- Water service, 15mm cold water service only with isolation valve, from storage or mains water supply;
- Boiler capacity, as supplied by the manufacturer;
- Cistern capacity, as supplied by the manufacturer;
- Internal overflow into WC pan through the flush valve supplied by the manufacturer.;
- Electrical services, 230/240V 1 Phase 50Hz AC earthed supply, Maximum Power 1300 watts, Load 10A, Rating IPX4
- Installation, a fused spur is required for isolation, located in accordance with the applicable Standard for electrical installations;
- Height, to be raised above floor level to enable easy transfer from wheelchair to WC pan.

034 Provide Bidet to applicable Standard use;

- Standard to applicable Standard;
- Pedestal type in white vitreous chine with over-rim supply;
- Water supply fittings, pillar taps or centre set taps with pop up waste, chromium plated finish;
- Standard waste, DN30 flush grated waste fitting, standard to applicable Standard, un-slotted tail, brass, with external parts chromium plated with solid brass back nut;
- Standard 50mm (minimum) seal polypropylene trap DN30 kite marked to applicable Standard.

Stainless steel sinks

035 Provide stainless steel inset sinks to applicable Standard with single bowl, single drainer, 2 tap holes. Supply 0.9mm satin polish finish sinks with:

- deck pattern chromium plated sink mixer with metal handle control with colour discs, red for hot and blue for cold to ;
- DN 40 chromium plated combined plug type waste and overflow unit with unslotted or slotted tail (for use with an appliance with overflow);
- DN 40 polypropylene 76mm (minimum) seal trap to applicable Standard chrome plated sink waste chain and stay with black rubber or plastic plug; and
- all fittings necessary to connect to services and disposal systems.

Shower trays and enclosures

036 Provide fibreglass level access shower trays to applicable Standard (CE Mark = EN14527-CL2) preferred optimum size 850mm x 1200mm (on site variations to be considered):

- Weight – loading of 380 kilos/60 stone;
- Level access (no greater than 5mm above finished floor level at point of entry with rounded/bevelled lip);
- Waste – shower trap with removable waste fitting (supplied as standard with shower tray) and installed in accordance with the manufacturer's technical data sheet;
- Sealing – seal to be achieved between wall and shower with proprietary shower sealing tape, all other sealing as per manufacturer's technical data sheet and mould resistant sealant to applicable Standard low modulus; and
- Workmanship – tray to be installed no greater than 5mm above finished floor level with rounded /bevelled lip at point of entry. For the avoidance of doubt the point of entry is the line where the finished floor and edge of shower tray butts.

037 Provide fibreglass or stone resin step in shower trays to applicable Standard (CE Mark = EN14527 CL2), preferred optimum size 850mm x 1200mm (on site variations to be considered):

- Weight – loading of 380 kilos/60 stone;
- Step in tray (a maximum step of 85mm is recommended);
- Waste – shower trap with removable waste fitting (supplied as standard with shower tray) and installed in accordance with the manufacturer's technical data sheet;
- Sealing – seal to be achieved between wall and shower with proprietary shower sealing tape, all other sealing as per manufacturer's technical data sheet and mould resistant sealant to applicable Standard low modulus; and
- Workmanship – tray to be installed no greater than 5mm above finished floor level with rounded /bevelled lip at point of entry. For the avoidance of doubt the point of entry is the line where the finished floor and edge of shower tray butts;

038 Provide fibreglass wet room former to applicable Standard (CE Mark = EN14527 CL2), preferred optimum size 850mm x 1200mm (on site variations to be considered):

- Weight – loading of 380 kilos/60 stone;
- Fibreglass floor former with integral floor covering;
- Waste – shower trap with removable waste fitting (supplied as standard with shower tray) and installed in accordance with the manufacturer's technical data sheet;
- Sealing – seal to be achieved between wall and shower with proprietary shower sealing tape, all other sealing as per manufacturer's technical data sheet and mould resistant sealant to applicable Standard low modulus.

039 Shower Tanking System, Liquid Applied Tanking To Floors:

- Acrylic based flexible waterproofing liquid applied in accordance with manufacturer's instructions as part of a shower tanking system.
- Background: sand/cement screed.
- Preparation: primed as recommended by manufacturer.
- Area: to cover entire shower room floor.

040 Shower Tanking System, Liquid Applied Tanking To Walls:

- Acrylic based flexible waterproofing liquid applied in accordance with manufacturer's instructions as part of a shower tanking system.
- Background: plaster skim.
- Preparation: primed as recommended by manufacturer.
- Area: to cover walls from floor to ceiling, a minimum of 150mm beyond dimensions of shower tray or former.

041 Shower Tanking System Polyester Tape:

- Reinforcement for junctions of walls, floors, shower bases, upstands, outlets, cracks and joints.
- Applied in accordance with manufacturer's instructions as part of a shower tanking system.

042 Provide shower enclosure manufactured to applicable Standard (CE Mark = EN14428 CA-IR-DA)

- Half height bi-fold/tri-fold toughened glass/plastic enclosures which shall not break or shall break safely;
- Powder coated aluminium frame and plastic parts;
- All seals to be watertight with 180 degree rise and fall hinges;
- Magnetic closing doors with locking handle and fitted seals;
- Fitted with full height shower curtain and H track curtain rail, supplied with all necessary heavy duty clip, fixings and hooks;
- Curtains to be durable polyester weighted by 50 grams to prevent swing;
- Sealing – fit as manufacturer's technical data sheet to ensure all seals on moving parts are watertight when in operation. Fixed sealing undertaken using mould resistant sealant to applicable Standard low modulus.

043 Provide shower enclosure manufactured to applicable Standard (CE Mark = EN14428 CA-IR-DA)

- Half height bi-fold/tri-fold toughened glass/plastic enclosures which shall not break or shall break safely;
- Polished chrome frame and plastic parts;
- All seals to be watertight with 180 degree rise and fall hinges;
- Magnetic closing doors with locking handle and fitted seals;
- Fitted with full height shower curtain and H track curtain rail, supplied with all necessary heavy duty clip, fixings and hooks;
- Curtains to be durable polyester weighted by 50 grams to prevent swing;
- Sealing – fit as manufacturer's technical data sheet to ensure all seals on moving parts are watertight when in operation. Fixed sealing undertaken using mould resistant sealant to applicable Standard low modulus.

044 Provide shower enclosure manufactured to applicable Standard (CE Mark = EN14428 CA-IR-DA)

- Full height toughened glass/plastic enclosures with watertight door seals and magnetic closing doors and fitted seal;
- Powder coated aluminium frame and plastic parts;
- Sealing – fit as manufacturer's technical data sheet to ensure all seals on moving parts are watertight when in operation. Fixed sealing undertaken using mould resistant sealant to applicable Standard low modulus.

045 Provide ABS Plastic grab rails:

- All rails shall be manufactured from ABS plastic (virtually indestructible plastic) and shall have a a slip resistant grip with broad flanged fittings to be plastic welded to rail for fixing with non-corrosive screws to wall or floor;
- All rails to have easy bends and no sharp corners;
- Rails should contract in colour and luminance with the background against which they are seen;
- It is of the utmost importance that the wall construction should allow a sec ure fixing of grab rail to suit changing needs or specific needs of an individual;
- The grab rail shall be 32mm to 35mm diameter fixed with a clearance between the rail and the wall of 50mm to 60mm with a good grip when wet;
- The rail should not deteriorate when exposed to extremes of heat and cold;
- Sizes to suit site conditions and left or right handing;

046 Provide Grab Rail - single or double folding rails:

- Manufactured from 32mm to 35mm diameter mild steel and coated with a white epoxide/polyester finish and fitted with a strongly constructed locking device to enable the rail to be locked in the vertical position;
- Double folding rails shall be fitted with a toilet roll fitment;
- Drop down rails should be of a type that can be pulled down by a person when seated on the WC;
- They shall incorporate vertical support struts, set back from the front edge of the rail by at least half its projection from the wall so as not to impede wheelchair access;
- Projection of rails shall vary according to need.

047 Provide Grab Rail - double folding rails with foot support:

- Manufactured from 32mm to 35mm diameter mild steel and coated with a white epoxide/polyester finish and to be used where the mechanical strength of the wall is doubtful;
- In the down ward position the supporting leg shall take most of the applied load;
- In the upright (Vertical) position the locking device shall enable the rail to be used as a HAND HOLD and shall not be considered as suitable as a GRAB RAIL when in the vertical position;
- Projection of rails shall vary according to need.

048 Provide shower curtain tracks:

- Track may be straight, ‘L’ shaped or ‘U’ shaped;
- Rail shall be manufactured from anodised aluminium;
- Rail is to be easy to bend and supplied with all necessary fixing brackets and hooks;

049 Provide shower curtain:

- Curtain to be shower proof plastic with hem weighted by 50 grams to ensure correct hanging and supplied with all necessary clips and fixings

050 Provide shower seat:

- Seat to be manufactured to applicable Standard
- Wall mounted seat with height adjustable support legs and be able to fold upwards when not in use;
- Complete with fixed or detachable padded seat, back and arms for extra comfort;
- Powder coated frame;
- Stainless steel rawlbolt fixings to suit wall construction in accordance with the fixing manufacturer's technical data sheet;
- Weight – not to exceed a loading of 254 kilos/40 stone;

051 Padded Back Rest (for toilet seat):

- Type: Back rest for disabled toilet
- Materials:
    - Rail: 32 mm (nominal) diameter steel coated formed into shape with easy bends and no sharp corners, polyester powder coated finish.
    - Pad: Polyurethane foam, wipe clean and splash-proof
- Colour: White, unless recommended otherwise for visual contrast.
- Fixing: Broad flanged fittings fixed with non-corrosive screws as recommended by manufacturer and suitable for wall construction to ensure a secure fixing.
- To withstand a maximum test load of 135kg and rated load of 90kg
- Nominal dimensions:
    - Tube diameter: 32mm
- Flange centres: 400mm
- Flange diameter: 84mm
- Tube wall thickness: 1.5mm
- Projection from wall (with pad): 314mm
- Pad size: 280 mm wide x 140 mm high x 60 mm thick

052 Bath/Shower Screen:

- Type: 6mm toughened safety glass shower screen, tested to applicable Standard;
- Wall post and screen profile; polished aluminium
- Hinge; rise and fall mechanism – left or right fitting
- Nominal dimensions; 1500mm height x 800mm wide
- Fixing – Supplied with all necessary fixing brackets, seals, cover caps
- Sealing – fit as per manufactures technical data sheet to ensure all seals on moving parts are watertight when in operation. Fixed sealing undertaken using mould resistant sealant to applicable Standard low modulus

053 Bath/Shower 2 Panel Screen:

- Fixed panel and door screen used to allow door opening, due to closely fitted adjacent wash hand basin;
- Type: 6mm toughened safety glass shower screen, tested to applicable Standard
- Wall post and screen profile; polished aluminium
- Hinge; rise and fall mechanism – left or right fitting
- Nominal dimensions; 1500mm height x 1400mm wide
- Fixing – Supplied with all necessary fixing brackets, seals, cover caps
- Sealing – fit as per manufactures technical data sheet to ensure all seals on moving parts are watertight when in operation. Fixed sealing undertaken using mould resistant sealant to applicable Standard low modulus

054 Provide thermostatic shower mixing valve to applicable Standard BEAB Care, TMV2, YMV3 and WRAS approved:

- Thermostatic shower control to mix hot and cold water to the desired water temperature;
- Surface mounted shower control, with extended lever control to distinguish between flow and temperature for disabled use;
- Chrome plated finish;
- Temperature range, Thermostatic control range 35 to 45 degrees C;
- Inlet water supply temperatures, 15 degrees C Cold and 65 degrees C Hot;
- Maximum hot water system temperature: 60 degrees C;
- Automatic shut down within 3 seconds in the event of failure in the cold water supply;
- Multi-mode showerhead with a 1m (minimum) length slide bar and soap dish, 1.5m (minimum) length flexible hose with retaining ring and all necessary fittings for surface fixing;
- Minimum maintained pressure: 0.1bar;
- Maximum maintained pressure: 5.0 bar;
- Maximum static pressure: 10.0 bar;

Tanks

055 Ensure tanks are complete with tightly fitting removable lids. Use moulded plastic tanks to applicable Standard. Ensure the tank is complete with a float valve and all fittings necessary to connect the services and overflow.

Copper cylinders

056 Ensure hot water storage copper cylinders are to applicable Standard Grade 3 factory insulated, fitted with sacrificial anodes and complete with:

- immersion heater boss, cap and washer screwed boxes; and
- all fittings necessary to connect to the primary pipework supply and draw off pipework.

Combination hot water storage units

057 Provide indirect or direct combination tanks to applicable Standard as appropriate. Ensure the proprietary units are complete with:

- sacrificial anodes;
- insulation;
- float valve;
- immersion heater boss, cap and washer, screwed boxes; and
- all fittings necessary to connect to the primary supply, draw off and overflow pipework.

Insulation

058 Use preformed, fully flexible, closed cell elastomeric insulation fire rated as insulation for hot and cold pipework that meets the requirements of the Utility Contractor.

Paint

059 Ensure paint used in repairs complies with the “Painting and Decorating” Section.

WORKMANSHIP

Water supply

060 Support pipework at centres recommended by the manufacturer with approved clips or brackets of a type to suit the background to which it is required to be fixed.

061 Ensure that pipes used in repairs are similar to the existing pipework, but repair lead pipework using appropriate plastic pipe and approved compression fittings. Do not use copper pipework for repairs to lead pipework. Use either compression or lead free solder capillary ring fittings.

Sanitary appliances

062 Properly install sanitary fittings. Take care to ensure that integral overflows are not obstructed with jointing compounds. Fix sanitary fittings securely to structure without taking support from pipe lines, level and plumb and fall to drain as intended, use jointing and bedding compounds as recommended by the manufacturers of appliances, accessories and pipes technical data sheets to form watertight joints between appliances and backgrounds (except cisterns) , and between appliances and discharge pipes, Ensure that noggins, bearers etc., necessary to support sanitary appliances and fittings are accurately positioned and securely fixed.

063 Isolate waste, taps and other fittings from the sanitary fittings with the appropriate flexible washers making an effective seal.

064 On cisterns, obtain from manufacturer, float operated valve matched to pressure of water supply, fix overflow pipe to falls and located to give visible warning of discharge.

065 Assemble taps, fix securely, making a watertight seal with the appliance, a suitable set of flanged insert plug/sleeve and washers shall be fitted to each and evert tap for securing tap in position and for anti-rotation purpose.

066 Assemble wastes and overflows to appliances, bed in waterproof joint compound and fix with a resilient washer between appliance and backnut.

Rainwater Harvesting- Design Criteria

067 The collection tank is to be buried. Rainwater is to enter the drainage system through sealed gullies and pass through a pre-filter to remove leaves and other debris prior to entering the collection tank. A submersible pump controlled by the monitoring and sensing panel is to deliver recycled rainwater on demand. The non-potable distribution pipework to the washing machine, cleaner’s tap, outside tap and toilets etc., must either be a boosted system or configured for a header tank in the loft, with mains supply back-up with monitors and sensors located in or adjacent to the header tank.

068 Rainwater harvesting systems must include an automatic switchover to the mains water back-up supply, upon depletion of the stored rain water.

Grey Water Recycling – Design Criteria

069 Waste water from baths, showers and washbasins collected by conventional pipework, is to collected in a pre-treatment sedimentation tank to remove larger dirt particles. Water then is to pass to the aerobic treatment tank in which cleaning bacteria ensure that all bio-degradable substances are broken down. The water then passes onto a third tank, where an ultra-filtration membrane is to remove all particles larger than 0.00005 mm, (this includes viruses and bacteria) to disinfecting the recycled grey water. A fourth tank is to store the clean water from where it is pumped on demand under the control of monitors and sensors in the control panel. Recycled grey water may be used for toilet and urinal flushing, for laundry and general cleaning, and for outdoor use such as vehicle washing and garden irrigation. If there is insufficient space, then the tanks may be buried but with adequate arrangements for maintenance access.

070 Grey water harvesting systems must include an automatic switchover to the mains water back up supply, upon depletion of the stored grey water.

Employer's current manufacturers/suppliers/products

071 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

TECHNICAL SPECIFICATION

20-CLEANING

CLEANING

General Requirements

001 The Contractor is to provide a comprehensive cleaning service to void, occupied, communal and other residential properties owned or managed by the Employer as instructed by the Employer's Contract Manager.

002 The service shall include routine cleans, deep cleans, specialist cleaning, bio-hazard cleaning, infection control cleaning, pest-related cleaning and any associated cleaning activities required to return a property to a lettable standard.

003 SERVICE OUTCOME: Upon completion, all areas subject to cleaning shall:

- Be visibly clean and hygienic;
- Be free from dirt, dust, grease, cobwebs, debris and residue;
- Be free from objectionable odours attributable to cleanliness;
- Present a clean and uniform appearance under normal lighting conditions;
- Be suitable for immediate occupation by incoming residents;
- Achieve the Employer's "Ready to Let" standard;

The Contractor shall not regard the task as complete until the required outcome has been achieved.

004 COMPLIANCE REQUIREMENTS: The Contractor shall comply with all applicable legislation regulations, approved codes of practice and industry guidance including but not limited to:

- Health and Safety at Work Act 1974;
- Control of Substances Hazardous to Health (COSHH) Regulations;
- Management of Health and Safety at Work Regulations;
- Environmental Protection Act;
- Waste Duty of Care Requirements;
- Hazardous Waste Regulations;
- Equality Act 2010;
- Data Protection Act 2018;
- Current BICSc cleaning standards;
- Relevant Regulator of Social Housing requirements.

005 HEALTH, SAFETY and WELFARE: The Contractor shall:

- Undertake suitable and sufficient risk assessments;
- Undertake COSHH assessments for all cleaning substances;
- Maintain method statements for all cleaning activities;
- Provide copies to the Employer upon request.

006 COMPETENCY REQUIREMENTS: All operatives shall receive training appropriate to the services being delivered, including but not limited to:

- Cleaning techniques;
- COSHH awareness;
- Manual handling;
- Inspection, prevention and control;
- Sharps awareness;
- Biohazard response procedures;
- Asbestos awareness;
- Safeguarding awareness;
- Waste handling procedures;
- Lone working procedures.

Training records shall be maintained and provided to the Employer upon request.

007 PERSONAL PROTECTIVE EQUIPMENT: The Contractor shall provide and ensure proper use of:

- Gloves;
- Eye protection;
- Respiratory protection, where required;
- Protective footwear;
- High visibility clothing, where necessary;
- Disposable coveralls for contamination cleaning.

008 ASBESTOS AWARENESS: Where materials suspected of containing asbestos are encountered:

- Works shall cease immediately;
- The area shall be secured;
- The Employer shall be notified immediately;
- The Contractor shall not disturb suspect materials.

009 SAFEGUARDING and CONFIDENTIALITY: The Contractor shall:

- Respect the confidentiality of all residents and former Tenants;
- Report safeguarding concerns immediately;
- Comply with the Employer's Safeguarding Policy;
- Comply with Data Protection legislation;
- Secure any personal documents or information discovered during cleaning.

Service Delivery Requirements

010 RESPONSE TIMES: The Contractor shall:

Service Type	Target Response
Routine Cleaning	Within 3 working days
Short Notice Cleaning	Within 48 hours
Urgent Cleaning	Within 24 hours
Emergency Cleaning	Within 4 hours

The Employer may issue instructions verbally in Emergency circumstances and shall confirm instructions subsequently.

011 INSPECTION STANDARD: Unless otherwise instructed:

- No visible dust should remain on accessible surfaces;
- No grease deposits shall remain within kitchens;
- Sanitary fittings shall be free from limescale, staining and residue;
- Floors shall be free from visible dirt and debris;
- Internal glazing shall be clean and smear free;
- Surfaces shall be capable of passing visual inspection from a distance of one metre.

012 ACCESS: Details of access arrangements for each property will be provided by the Employer when ordering the works to the relevant property.

013 DEFECTS: Any cleaning defect identified by the Employer shall be rectified:

- Within 24 hours of notification; or
- Within a shorter period where specified by the Employer.

All remedial works undertaken at no additional cost.

014 QUALITY ASSURANCE: The Contractor shall maintain a documented quality management system. The Contractor shall:

- Undertake 100% post clean inspections;
- Retain inspection records;
- Maintain photographic evidence;
- Provide digital completion reports when requested;
- Maintain Corrective action records.
- Before and after photographs shall be taken of:
  - Kitchens
  - Bathrooms
  - Areas of contamination
  - Specialist cleaning activities
  - Areas requiring significant cleaning interventions.

The Employer shall carry out their own check on each void before accepting completion of Orders. Remaining cleaning Orders shall have random checks implemented by the Employer's Contract Manager.

015 VOID PROPERTY CLEANING REQUIREMENTS: Unless otherwise instructed, the Contractor shall:

- Remove all non-hazardous rubbish;
- Remove abandoned foodstuffs;
- Clean all internal glazing;
- Clean meter cupboards;
- Clean extractor fans and grilles;
- Remove adhesive residue;
- Clean internal doors, frames and ironmongery;
- Remove cobwebs throughout the property;
- Sanitize bathrooms and kitchens;
- Remove smells associated with pets, smoking, refuse or neglect;
- Leave the property ready for occupation.

Waste Management

016 GENERAL WASTE: The Contractor shall report on all waste identified within a property. Unless otherwise instructed, non-hazardous waste generated by cleaning activities shall be removed and disposed of lawfully.

017 HAZARDOUS MATERIALS: The Contractor shall immediately report

- Clinical waste;
- Sharps and needles;
- Drug paraphernalia;
- Asbestos containing materials;
- Biological waste;
- Animal carcasses

Such materials shall not be removed unless specifically authorized and appropriately licensed. All waste removal activities shall comply with statutory waste management requirements. Waste transfer documentation shall be provided to the Employer upon request.

018 INFECTION PREVENTION AND CONTROL: The Contractor shall:

- Utilise colour coded cleaning systems;
- Prevent cross contamination between rooms;
- Use approved disinfectants;

- Clean and disinfect reusable equipment;
- Segregate contaminated waste;
- Follow recognised infection control processes.

Equipment used within sanitary areas shall not be used elsewhere unless disinfected.

019 COMPLETION: The works on any Order shall only be considered complete when:

- The specified cleaning activities have been completed;
- The required outcome standard has been achieved;
- All waste has been managed in accordance with the requirements;
- Photographic evidence has been provided where required;
- The Employer has Accepted the works.

Specialist Cleaning Services

The Contractor shall provide, where instructed

020 DEEP CLEANING: Including the following

- Heavy grease contamination;
- Extensive staining;
- Long-term vacancy cleaning
- Estate Management cleaning.

021 BIOHAZARD CLEANING: Including the following

- Bodily fluids;
- Blood contamination;
- Human waste;
- Sharps incidents.

022 HOARDING CLEANING: Including the following

- Clearance support;
- Deep cleaning;
- Disinfection;
- Odour treatment.

023 FIRE AND FLOOD CLEANING: Including the following

- Smoke residue cleaning;
- Soot removal;
- Decontamination;
- Post flood sanitisation;

024 PEST CONTROL INTERFACE: Including the following

- Rats;
- Mice;
- Cockroaches;
- Bed bugs;
- Fleas;
- Ants;
- Wasps.

The Contractor shall:

- Record findings;
- Provide photographic evidence;
- Notify the Employer immediately;
- Secure the affected area where appropriate.

The Contractor shall NOT apply pesticide treatments unless specifically authorised by the Employer.

Environmental Requirements

025 The Contractor shall support the Employer's Environmental Policy and shall:

- Use environmentally responsible products wherever practicable;
- Minimise water consumption;
- Minimise chemical usage;
- Reduce single use plastics;
- Segregate recyclable waste where appropriate;
- Prevent pollution arising from cleaning operations.

Detailed Cleaning Standards

026 ENTRANCE HALLS, LANDINGS AND STAIRCASES: The Contractor shall:

- Clean entrance doors and frames, internally and externally, with warm soapy water;
- Sweep flooring and clean with a damp mop, where applicable;
- Vacuum carpets, where applicable;
- Clean stair handles with warm soapy water;
- Dust and damp wipe skirtings, accessible sills and ledges;
- Dust and remove high level cobwebs;
- Dust behind radiators
- Spot clean door faces, light switches and finger plates.

027 LOUNGE / DINING AREA / BEDROOMS: The Contractor shall:

- Sweep flooring and clean with a damp mop, where applicable;
- Vacuum carpets, where applicable;
- Dust and damp wipe skirtings, doors (including frames) accessible sills and ledges;
- Dust and remove high level cobwebs;
- Dust behind radiators
- Spot clean door faces, light switches and finger plates.

028 BATHROOMS AND TOILETS: The Contractor shall:

- Dust and damp wipe all horizontal surfaces;
- Clean and sanitize toilet bowls, seats and lids;
- Clean hand basins, taps, counter tops, and surrounding tile areas;
- Descale handbasins where required;
- Clean over bath shower area including washing down tiles, cleaning shower head, and bath interior;
- Clean and polish mirrors;
- Sweep flooring and clean with damp mop;
- Dust all pipework and ledges;
- Dust and remove high level cobwebs;
- Dust behind radiators
- Spot clean door faces.

029 KITCHEN AREAS: The Contractor shall:

- Dust and damp wipe all horizontal surfaces;
- Clean and sanitize work surfaces, cupboard / drawer fronts and tops of wall units;
- Cooker spaces to be thoroughly cleaned and wiped down;
- Clean interior of cupboards and drawers;
- Clean and polish sinks and taps;
- Clean and descale sink area;
- Sweep flooring and clean with damp mop, machine scrub where required;
- Spot clean door faces, light switches and finger plates;
- Dust and remove high level cobwebs;
- Dust behind radiators

TECHNICAL SPECIFICATION

21-ELECTRICAL WORKS

ELECTRICAL WORKS

GENERAL

Regulations

001 All electrical Works must be carried out in accordance with the applicable Standard - Requirements for Electrical Installations IET Wiring Regulations co-published by the British Standards Institution ("BSI") and the Institution of Engineering and Technology ("IET").

Equipotential bonding

002 Standard: To applicable Standard

General: Connect the following metallic parts to the main earthing terminal, where they are extraneous-conductive parts to:

- metal water installation pipes;
- metal gas installation pipes, as near practical to the point of entry of the service into the premises and before any branch pipework where the meter is fitted externally.
- Where practicable the connection shall be made within 600mm of the meter outlet union where the meter is installed internally;
- central heating system pipework;
- other installation pipework (including oil and gas supply pipes) and ducting; and
- exposed metallic structural parts of the building.

003 Sizes of bonding conductors are given in applicable Standard.

Supplementary equipotential bonding

003 Standard: To applicable Standard

004 General: Within the zone formed by the main equipotential bonding, provide connections to:

- baths;
- sinks;
- exposed pipes; and
- heating systems.

005 In locations containing a bath or shower, supplementary equipotential bonding is to comply with applicable Standard

006 Sizes of supplementary equipotential bonding conductors are given in applicable Standards.

007 Electrical equipment and/or electrical circuits installed in a room containing a bath or shower shall have RCD protection, complying with applicable Standards.

008 Where all electrical requirements in the dwelling to the applicable Standard for electrical installations are met, supplementary equipotential bonding as Clause 003 may be omitted.

MATERIALS

Earth Electrode

009 Standard: to applicable Standard

General: Conductive part, which may be embedded in the soil or in a specific conductive medium, in contact with the earth;

Materials: Copper, with hardened steel driving cap, hardened steel tip and phosphor bronze coupling screws;

Mechanical protection: Each earth electrode shall be protected from mechanical damage by enclosing in a heavy duty cast-iron box with lid or a heavy duty concrete box with lid. The earth lead shall be enclosed, where exposed in heavy gauge galvanised steel conduit. Permanent labels to applicable Standard indelibly marked “Safety Electrical Earth Do Not Remove” shall be attached to the earth lead at both the meter cupboard and at the electrical electrode.

Conduit/trunking/ducting

010 Do not use surface conduit or trunking without an Instruction to do so from the Employer's Contract Manager.

Steel Conduit and fittings

011 Standard: to applicable Standard

Type: Plain threadable rigid conduit;

Size: In accordance with applicable Standard;

Fittings: Circular boxes shall be malleable cast-iron;

Finish: Class 4 hot dipped galvanised;

Mounting/support: Conduit shall be secured to surfaces using galvanised steel clips/saddles;

Mounting/support: Conduit shall be secured to surfaces using galvanised steel clips/saddles

Installation: Use maximum practical lengths to minimise number of joints. Form bends by machine and remove burrs from cut ends. Use bends and or/junction boxes at changes of direction. Elbows or tees shall not be used without the consent of the Client's Representative. Conduit system to be secured using brass screws an fibre/plastic plug. Boxes must be fixed independently of conduit. Tightly screw all joints to ensure electrical continuity, with no thread showing. All threads to be treated with rust inhibiting paint. Use expansion couplings where conduit crosses movement joints in structure. Make secure connections to boxes, trunking etc., with screwed coupling and provide rubber bushes at open ends.

PVC-u conduits and fittings

012 Ensure PVC-u conduits and fittings comply with the following:

- strength: heavy gauge super high impact;
- shape/colour: round, white;
- jointing: push fit and solvent welded;
- fittings: standard;
- mounting/support: screw the conduit to surfaces using the conduit manufacturer's clips/saddles;
- use maximum practical straight lengths to minimise number of joints;
- use proprietary bends and/or junction boxes at changes of direction;
- do not use elbows, tees or site formed bends without the approval of the Client's Representative;
- secure the conduit system using boxes, plated screws and fibre/plastic plugs;
- fix boxes independently of the conduit; and
- form secure joints, using expansion couplings where recommended by the manufacturer and connectors at equipment and terminal fittings.

PVC-u surface cornice trunking system

013 Use PVC-u surface cornice trunking in conjunction with mini trunking for the mechanical protection of sub-mains cables and final circuit cables in accessible locations at ceiling level, where approved by the Client's Representative. Ensure the trunking complies with the following:

- fittings: use the manufacturer's standard fittings;
- colour: white;
- mounting/support: secure to surfaces using plated screws and fibre/plastic plugs; and
- use proprietary units to form junctions and changes of direction wherever possible.

PVC-u surface mini-trunking system

014 Use PVC-u surface mini-trunking for the mechanical protection of final circuit cables in accessible locations. Ensure the trunking complies with the following:

- fittings: use the manufacturer's standard fittings;
- colour: white;
- mounting/support: secure to surfaces using plated screws and fibre/plastic plugs; and
- use proprietary units to form junctions and changes of direction wherever possible.

Fire stopping of trunking/ducting

015 Seal trunking/ducting internally with firmly packed rock fibre or intumescent type material supplied by the trunking/duct manufacturer.

Cables generally

016 Ensure cables are BASEC certified. Use cables in the locations and for the uses specified in the table below:

Location/Use:	Cable Type:
General (includes central heating, ventilation and smoke detector systems)	PVC insulated and sheathed
Conduit system (complete)	PVC insulated and sheathed or PVC insulated only
Sub-mains distribution	PVC split concentric
Sub-mains distribution armoured and PVC sheathed	PVC insulated, PVC sheathed, steel wire armour and PVC sheathed
Fire alarm system	PVC insulated and sheathed
Immersion heater (final connection)	EP rubber/HOFR sheath, Heat resistant PVC flexible cable

PVC-u insulated and sheathed cables and PVC-u insulated split concentric cables

017 Colour code cables for identification.

Electrical accessories generally (wall mounted)

018 Ensure wall mounted accessories for the connection and control of power, lighting and low voltage equipment are:

- manufactured using white moulded plastic;
- complete with surface or flush type mounting box except where specified otherwise;
- from the same manufacturer in a single installation; and
- marked to show their function where they are a control switch for e.g. an immersion heater, a cooker, a refrigerator, a washing machine or a circulating pump etc.,.

019 Ensure metal boxes for flush mounting switches and sockets are manufactured from galvanised steel complete with an earth terminal.

020 Fix all boxes using brass screws, fibre or plastic plugs.

Electrical accessories generally (ceiling mounted)

021 Ensure ceiling mounted accessories for the connection and control of power, lighting and low voltage equipment:

- are manufactured using white moulded plastic;
- are complete with mounting box where required;
- are from the same manufacturer where used in a single installation;
- are fixed with brass or sheradised screws, with fibre or plastic plugs as required; and
- in conduit systems have a white insulated break-ring between the ceiling roses and cord switches and the respective terminal boxes.

Consumer unit

022 Ensure consumer units:

- have a surface non-combustible pattern unit complete with lid;
- have a main switch of 80/100 amp DP rating;
- are fitted with RCBO’s to applicable Standard;
- located adjacent to the meter at the incoming supply position; and
- have each way permanently labelled to identify the circuit and rating.

023 In installations without Protective Multiple Earthing it must be a surface non-combustible unit complete with lid, fitted with RCBO's to applicable Standard and must be labelled to correspond to the following circuit allocations:

Circuit No Allocations	**RCBO Rating**
Lighting Downstairs	6
Lighting Upstairs	6
Boiler	6
Immersion Heater	16
Kitchen Ring Main Circuit	32
Shower	45
Cooker	32
Power Ring Main Circuit – RCD/RCBO protected	32
Mains Powered Smoke Alarms	6

Residual current device/residual current circuit device (RCD/RCCD)

024 Ensure RCDs and RCCDs:

- function as both isolators and switches;
- have a current rating of 80 amp DP;
- have a sensitivity of 30m amp; and
- are complete with an insulated cover or terminal shrouds.

Residual current circuit breaker (RCCB)

025 Ensure RCCBs:

- function as both isolators and switches;
- have a current rating of 63 amp DP;
- have a sensitivity of 30mA; and
- have a white PVC enclosure.

Residual current circuit breaker with override protection (RCBO)

026 Ensure RCBOs:

- function as both isolators and switches;
- have a current rating of 80A DP;
- have a sensitivity of 30mA; and
- are complete with an insulated cover or terminal shrouds.

ISCO connectors

027 For ISCO connectors ensure:

- the covers and bases are manufactured from black phenolic resin material; and
- the connector blocks are manufactured from brass with electro-tin finish.

Door bells

028 Ensure door bells:

- are primary mains supply, transformer , 6v secondary outlet;
- have a white bell push PVC-u cover; and
- are screw fixed.

Bulkhead light fitting (fluorescent) (metal base)

029 Ensure metal base bulkhead light fittings:

- have a corrosion resistant die-cast or pressed metal base complete with a vandal resistant diffuser;
- have the wiring within the fitting protected by heat resistant sleeving;
- are installed complete with a 20W compact fluorescent lamp with integrated control gear;
- lamp efficacy to be greater than 45 lumens per circuit-watt;
- controlled manually by Customers; and
- are screw fixed.

Bulkhead light fittings (fluorescent) (polycarbonate base)

030 Ensure polycarbonate base bulkhead light fittings:

- have a heavy duty polycarbonate base with a vandal resistant diffuser;
- have the wiring within the fitting protected by heat resistant sleeving;
- are installed complete with a 20W compact fluorescent lamp with integrated control gear;
- lamp efficacy to be greater than 45 lumens per circuit-watt;
- controlled manually by Customers; and
- are screw fixed.

Photocell sensor

031 Ensure sensors to control the landlord's lighting installation are:

- complete with a baseholder and wall mounting bracket;
- screw fixed to masonry or concrete; and
- fixed in a position approved by the Client's Representative.

TV aerial installation

032 Ensure TV aerial installations:

- consist of 20mm diameter PVC-u conduit complete with co-axial cabling run from roof level; and
- terminate at a white plastic surface mounted outlet box complete with a white plastic cover plate with single co-axial TV outlet.

Time switch (24 hour)

033 Ensure time switches:

- have a 24 hour and quartz control mechanism;
- are a 20 amp single pole, single throw time switch; and
- have 2 'on' and 2 'off' programmes with a day omitting device and independent motor connections.

Smoke detectors

034 Ensure smoke detectors:

- have white PVC-u for the housing;
- have a minimum 10 year life expectancy;
- include a photo-electronic sensor to applicable Standard;
- are 240 V mains operated with a sealed-in rechargeable Lithium cell back up supply; and
- include a full function test/hush button control, automatic reset, Green and Red LED indicators to confirm alarm status and low power cell warning signal.

Heat detectors

035 Ensure heat detectors:

- have white PVC-u housing;
- have a minimum 10 year life expectancy;
- comprise a fixed temperature fast response thermistor sensor with a range of 54^{o} – 62^{o} centigrade to applicable Standard;
- are 240V mains operated with a sealed-in rechargeable Lithium cell back up supply; and
- include or have a test button control function, Green and Red LED indicators to confirm alarm status and low power cell warning signal.

Carbon monoxide detectors

036 Ensure carbon monoxide detectors:

- have white PVC-u housing;
- have a minimum 10 year life expectancy;
- incorporate an electrochemical cell sensor module;
- are battery operated to applicable Standard fixed with security screws to ceiling;
- sensor power pack life 10 years;
- include a continuous self check function monitor with test/hush facility;
- have a pre-alarm warning LED;
- include LEDS for battery power pack life, CO level and fault status; and
- have a CO gas test feature.

Fixing electrical accessories/equipment

037 Position accessories accurately and squarely to the vertical and horizontal axes. Where not shown otherwise, align adjacent accessories on the same vertical or horizontal axis (as appropriate). Agree the mounting heights with the Client's Representative.

Multi-gang switches

038 Connect switches so that there is a logical relationship with the lights.

WORKMANSHIP

Installation generally

039 Install, test and commission the electrical work in accordance with the applicable Standards for electrical installations and the design and performance requirements set out in this Section so as to provide a safe, well insulated, earth protected system capable of supplying the anticipated maximum demand.

040 Ensure all installation Works are carried out by qualified electricians fully conversant with the applicable Standards for electrical installations to good workmanship by skilled (electrical) or instructed (electrical) persons and proper Materials shall be used in the electrical installation.

041 Do not allow the number of Apprentices and Trainees at a Property to exceed the number of qualified electricians.

042 Ensure all installation Works are carried out under the direct supervision of a "Qualifying Manager" named in the List of Approved Contractors issued by the National Inspection Council for Electrical Installation Contracting (or equivalent).

043 Use only the types of fastenings, bushes, glands, terminals, connectors, clips, clamps and all other minor accessories necessary to complete the installation that are recommended by the manufacturer of the electrical equipment being installed.

044 Avoid contact between dissimilar metals. Use corrosion resistant fastenings in locations where moisture is present or may occur.

045 Rectify, free of charge to the Contract, any Work which in the opinion of the Client's Representative has not been properly executed and must replace free of charge to the Contract any Materials which do not comply with this Specification.

046 Confirm the voltage and frequency of the supply before ordering any equipment.

047 Include in his tender for the provision of all fixings and the making good by qualified tradesmen to the satisfaction of the Employer's Contract Manager all damage to walls, ceilings, decorations and fitments.

048 Dust sheets are to be used and every consideration given to Occupier's property.

049 After work is completed each day all systems will be left in a safe usable condition and all dust and mess cleared up.

Circuit chart

050 Standard to applicable Standard

Regulation No. 514.9.1

Requirements: For simple domestic electrical installations the information required in

Regulation 514.9.1 may be given in a Schedule

Schedule: A laminated durable copy of the Schedule relating to the Consumer Unit(s) shall be provided securely fixed within or adjacent to each Consumer Unit.

Electricity supply

051 Note that the electricity supply is nominally 240 volt AC, single phase, 50 hertz, 2 wire.

System of wiring

052 For concealed wiring, use PVC sheathed 600/1000 volt grade cable of the size and type specified. Wherever possible, run it in within floor, roof and ceiling voids.

053 Run cables along the sides of joists at the mid point. Clip them at 450mm centres using cable clips of tinned brass secured by nonferrous fixing pins, screws, clips or a similar fixing. Support the wire and equipment located between the joists by a wood bearer of a size of at least 100x25mm.

054 Install the cable:

- with a minimum clearance of 150mm to all heating, gas and waste pipes or ducts; and
- physically separated from other wiring not associated with lighting and power supplies.

055 Where cables cross flooring joists they must be passed through small holes drilled through the centre of the joists. These holes must not exceed 25mm diameter.

056 Ensure cables leaving or crossing joists do so at right angles to the longitudinal side of the joist, on trusses or binders. Do not notch or saw joints. Ensure that cables do not run in positions where they are susceptible to damage by floor nails.

057 Do not run cables in roof spaces on the top of joists or insulation. All cables in a roof space shall be clipped to horizontal timber tray supported on battens secured above roof trusses and kept clear of thermal insulation.

058 Install cables leaving roof voids and within floor spaces or passing through any part of the structure in conduit or trunking as specified.

059 Ensure cables in solid floor that are either laid in screed or in a ceiling void are drawn in through rigid PVC-u conduit as specified and run continuously from the consumer unit to the outlet served.

060 Do not install cables within wall cavities.

061 Contain all wiring to each flat within that flat.

062 Fit conduits complete and then draw the cable through.

063 Cables must be protected, supported and fixed to the requirements of the applicable Standards for electrical installations and all other Regulatory Requirements.

Cables installed in plastered walls

064 Protect cables by rigid PVC-u metric super high impact heavy gauge conduit where no conduit exists at present. Reuse existing conduit where approved by the Employer's Contract Manager.

065 Ensure new conduits are in continuous lengths, smooth in bore, true in size, and terminating in roof spaces and within floor spaces with a minimum projection of 50mm. Provide inside outlet boxes with a universal cleat.

066 Ensure new conduits are vertical and chased into the wall, such that the finished wall will provide a minimum of 10mm plaster cover. Adequately fix the conduit with sheradised nails and saddle clips, such that during the plastering processes, there is no tendency for plaster to push the conduit forward and reduce the cover.

Cables installed in plasterboard partitions

067 In plasterboard partitions with a timber core, draw cables through the partition between the timber studding and noggins. Where timber work occurs, take the cable over the face of the timber by a small chase through the plasterboard and into the timber. Make good the chase with a suitable plaster material finished smooth and flush. Ensure cables installed in partitions are vertical.

068 Take due account of any insulation within the partition when sizing the cables so as to prevent overheating.

Conduit installed on the surface

069 Use super high impact light gauge PVC-u metric rigid conduit and accessories on fairfaced brickwork or unplastered surfaces in heating cupboards, stores, garages, plant rooms, meter compartments and similar areas.

070 Support the conduit by PVC-u spacer bar saddles and wood screws and rawlplugs at intervals not exceeding 400mm.

071 Allow for the expansion of PVC-u conduit.

072 Install the conduit only vertically or horizontally.

Where new cables are to be installed in or under solid floors

073 Protect cables by rigid PVC-u round super high impact heavy gauge conduit laid in continuous lengths from the consumer unit to the outlet served, run in a diagonal line. Use the proper outlet and inspection bends and tees. Adequately fix the whole system to avoid any displacement by subsequent building trades.

Requirements for PVC-u conduit systems

074 Install no more cables in each circular conduit than necessary to permit easy insertion and withdrawal. Do not install more than the maximum recommended in the applicable Standards for electrical installations. Demonstrate to the Employer's Contract Manager that cables can be easily withdrawn and inserted in any section of the installation. If this cannot be done using the existing conduit, then provide new conduit.

075 Use conduits, boxes, fittings and accessories from the same manufacturer and with suitable fixings for the application. Ensure circular conduit is at least 20mm in diameter.

076 Ensure PVC-u outlet boxes and equipment do not become distorted during plastering. Install boxes flush with the finished plaster and the sides vertical, using 1.25" No. 8 woodscrews and rawlplugs or equivalent fixing.

Use of cable trunking

077 Use cable trunking to improve the appearance at points in the installation where a number of conduits terminate or share a common route, and/or at the meter intake positions for the formation of distribution board/local isolator assemblies. Use compact miniature trunking of the appropriate size.

078 Use PVC-u trunking with fitted end covers. Provide a separate earth continuity conductor.

079 Connect trunking to equipment by appropriate screwed couplers, bushes and shakeproof washers, or flanged couplings.

080 Connect trunking to PVC-u conduit by "threaded to plain" adaptors with lock nuts, or clip in adaptors.

081 Clean out trunking before cable is drawn in.

082 Ensure the number of cables installed in trunking does not exceed the space factor specified in applicable Standard

Conductors

083 Ensure all cables comply with British Cable Association recommendations (or equivalent).

084 Carefully remove any insulation in making terminations without causing damage to the conductor. Double the wiring to fill the terminations.

085 Take the sheath of PVC-u sheathed cable inside the outlet boxes or the pattress of ceiling fittings and similar equipment.

086 Securely clamp flexible cords and fit suitable grommets to all terminal boxes.

087 Use cables of the following types and sizes complete with integral earth continuity:

Concealed wiring - copper 2 core and earth PVC 600/1000 volt grade	
Lighting sub-circuits - 1.5mm sq	Dependent upon length of circuit and to comply British Standard
Boiler circuits - 1.5mm sq	
Ring circuits - 2.5mm sq	
Radial circuits - 2.5mm sq	
Cooker circuit - 10.0mm sq	
Shower circuit - 10.0mm sq	
2/3 Kw Immersion Heater - 2.5mm sq	
3 Kw Water Heater - 2.5mm sq	
Flexible cords and cables - heat resistant insulation 300/500 volt grade	
Lighting - pendant lamp holder	0.75mm sq 2 core heat resistant silicone rubber insulated white circular
Lighting - final internal connection for enclosed tungsten fittings in bathrooms, garages, and for exterior light fittings	0.75mm sq 3 core heat resistant butyl rubber
2/3 Kw Immersion heater	2.5mm sq EP rubber/HOFR sheath or heat resistant PVC flexible cable

3 kw Water heater	2.5mm sq EP rubber/HOFR sheath or heat resistant PVC flexible cable

Lighting Circuits

088 Install wiring by the loop-in system. Ensure there are no joints or connectors in the final-circuit from the consumer distribution unit.

089 Install a maximum of two live pairs and one switch pair at each point. Install the wiring for 2-way switching between switch points. Terminate the earth conductor in each lighting and switch point.

090 Install lighting points and arrange the system such that:

- 2/3 bedroom Properties are provided with two 6 amp circuits; and
- small 1 bedroom Properties are provided with one 6 amp circuit in the consumer distribution unit.

091 Limit the number of points controlled by one 6 amp RCBO way to 10. If an installation has an excess of 20 lighting points then provide three 6 amp RCBO circuit ways.

092 Ensure pendant type cord grip, all insulated lampholders and ceiling roses are white plastic and are complete with 225mm of flexible cable as specified for a standard height ceiling. For non-standard Properties, adjust the length of the flexible cable to give a 2.1 metre (7ft) clearance from the lampholder to the floor. Ensure lampholders are all of the insulated heat resisting pattern.

093 Ensure interior light switches (except in bathrooms) are white plastic, flush fitting, single pole, rocker operated 5 amp AC units, mounted in boxes with adjustable fixing lugs. Gang the switches as required, using a multiple plate cover.

094 Where flush fittings and switches cannot be used, mount single pole rocker operated 5 amp AC surface type switches on matching moulded white plastic boxes.

095 Install light switches at a distance of between 450 and 1200mm above the floor level to the centre of the switch, and at least 150mm from the nearest door frame, unless the Employer's Contract Manager Instructs otherwise.

096 Ensure light switches in bathrooms are white plastic 5 amp AC surface pattern operated by a non-conductive pull cord and knob and hang not more than 900mm above floor level. Fit them close to the wall and well clear of the door to the room.

097 Support ceiling fittings that are wired and located between joists by wooden bearers of a minimum size of 100x25mm fixed to the joists at both ends of the bearer.

098 Do not provide lamps except where specifically required by the Schedule of Rates.

13 amp ring circuit installation

099 Connect sockets in ring circuits without spurs using cable as specified, with both ends of each circuit terminated in one 32 amp RCBO at the consumer distribution unit.

100 Prevent overloading of circuits by providing specified appliances with separate final-circuits.

101 For Properties with a total internal floor area not exceeding 100 square metres on a single level, provide one ring circuit with appropriate numbers of sockets or fused connection units connected to the ring and one kitchen ring main.

102 Properties with a total internal floor area exceeding 100 square metres or Properties on two or more levels, are to have a minimum of two ring circuits with the appropriate number of sockets or fused connection units connected to the ring, in addition to a kitchen ring main.

103 Locate sockets and fused connector boxes in the same positions as those existing. Ensure they are 13 amp 3 pin white flush pattern. Gang sockets as required, with a multiple plate cover.

104 Use surface pattern sockets protected with a RCBO device in garages, and elsewhere on fair face brickwork.

105 Ensure sockets have switches unless otherwise specified.

106 Ensure the positions of sockets relative to the floor level are as follows:

Location	Dimensions for socket outlets to floor level
Garages, laundry areas	450mm - 1200mm
General living areas, hall, landings, etc.	450mm - 1200mm
Elderly persons' Properties	450mm - 1200mm
Bedrooms (except elderly persons'	450mm - 1200mm
Kitchens (preferred dimension from bottom of outlet to worktop)	Within 100mm and 300mm above worktop

107 In kitchens, where necessary, increase the above dimensions to ensure a satisfactory match with the layout of the wall tiles. Sockets to be aligned level with each other throughout the room. Agree the exact position of sockets with the Client's Representative before installation to ensure a satisfactory position in relation to storage cupboards and shelves, etc.

108 Recess socket boxes into the walls to just below plaster level and provide them with adjustable fixing lugs.

Cooker circuit

109 For cooker circuits, provide one final-circuit connected to one 32 amp RCBO at the consumer distribution unit using cable as specified.

110 Locate a flush fitting, white plastic cooker control unit with a 45 amp DP main cooker control switch, complete with neon indicator, horizontally within 150-1200mm maximum from the edge of the cooker spaces Instructed by the Employer's Contract Manager. Ensure the dimension from the top of the unit to the floor is 1400mm and from the side of the cooker to the centre line of the unit is 150mm. Where an Occupier owns a separate hob and oven, provide a separate 45A DP switch and cooker connection unit below worktop for each appliance.

111 Ensure a cooker control unit that is located between storage cupboards or shelves and working top surfaces aligns with other sockets around the worktop.

112 Connect the cooker circuit in the cooker control unit. Extend it to terminate in a cooker cable connector outlet mounted 450mm above the finished floor level and immediately adjacent to the cooker. Terminate the cooker wiring at the cooker connector outlet box where no electric cooker is provided. Connect the cooker if the Customer has one.

Immersion heaters

113 For heater circuits, provide one final sub-circuit connected to one 16 amp RCBO at the consumer distribution unit using cable as specified.

114 Provide for the heater to be controlled by a heating boost switch to applicable Standards located above the worktop in the kitchen with a 20A switch located adjacent to the hot water cylinder in the hot press.

115 Use flush fitting units where switches are located outside the hot press. Where flex outlets are located inside the hot press, use either surface or flush fitted units.

116 Terminate the circuit adjacent to the heater using suitable cable and 20A switch. Make the final connection with heat resistant flexible cable as specified and run so as to prevent the hanging of clothes, etc., on the cable.

117 When the supply cable is exposed within a hot press, protect cables with mini-trunking as specified.

Showers

118 For shower circuit, provide one final sub-circuit connected to one 45amp RCBO at the consumer distribution unit using cable as specified. Provide for the shower to be controlled as near as practicable to the shower unit, by a white 45amp AC, DP neon light or indicating flag pull cord switch located in bathroom.

119 New showers are to ne 8.7KW electric shower unit to applicable Standard, BEAB, BEAB CARE, RNIB, CE marked and WRAS approved complete with installation set maximum temperature control, phased shut down, low pressure indicator, installation set timer setting, including plugging walls as necessary, connect to water and electrical supplies including provision of shower circuit including mini-trunking or rigid PVC-u conduit chased to walls etc., incorporating RCBO protection, controlled with 45A DP switch with neon light or indicator flag, all adjustments to pipework, adjust electrical supply as necessary, fill, test, and undertake tests, provide certificate, and remove all waste.

120 Showers are to be supplied with fixed sliding rail, twist and lock shower head mechanism, shower hose with adjustable shower head outlet and soap dish.

Smoke Heat Detectors

121 Smoke alarms must be approved by the Employer's Contract Manager and must be installed to applicable Standard and must be of the mains powered type. The mains power must be supplied from an independent circuit of the distribution board and protected by a suitably rated RBCO breaker. The Contractor must provide the necessary wiring for interconnection of the units. Installation must be strictly as specified by the manufacturer. One set of instructions must be left on site for Occupiers' use. The alarm system shall be tested and a certificate supplied to the Client's Representative in accordance with the applicable Standards.

122 Detectors must be mains operated with either battery or capacitor back up.

123 In premises of two levels, an optical detector is required in each of the circulation spaces and the main habitable room. Manufacturer's technical data sheet requirements must be strictly adhered to.

124 Wiring must be in PVC twin and earth cable looped from an independent circuit at the distribution board.

125 Interconnection must be made using PVC triple and earth cable between the two detectors, using the third core for interconnection, such that in the event of either surrounding the other must also sound.

Installation control and distribution

126 Install, test and commission the electrical work in accordance with the applicable Standards for electrical installations ensuring compliance with design and performance, to provide a safe, well insulated, earth protected system capable of supplying the anticipated maximum demand.

127 Ensure the consumer equipment consists of a non-combustible metal consumer unit with lid complying with applicable Standard complete with:

- main control switch to applicable Standard;
- sufficient RCBO's to accommodate all the sub-circuits scheduled for the Property; and
- additional 20% spare way capacity to the number of electrical circuits installed.

128 Ensure sufficient space is available for the Utility Provider's metering and service cutouts. If required, provide a panel which satisfies the requirements of the Utility Provider for mounting meters, cutout and other equipment.

129 Supply and install PVC connection tails to the Utility Provider's point of supply, using correct coding and matching the cross sectional area to the main isolating switch rating.

130 Upgrade all earthing and bonding to conform to applicable Standard. Do not use metal trunking as an earthing conductor.

131 Meter tails are to be neatly fixed and clipped as specified.

132 Provide all equipment white in colour.

133 Clearly identify each way on distribution equipment.

134 Ensure the mounting height of equipment is such that persons of average height can reach all fuses, switchgear, etc., from floor level without assistance.

135 Conceal cables above the ceilings and maintain access to the cable runs.

136 Enclose cables run in cupboards in mini-trunking.

137 Before and on starting the Works, obtain approval from the Client's Representative to the proposed routes of cable runs and wiring circuits.

138 Agree any alterations to the agreed routes of wiring circuits with the Employer's Contract Manager before starting the Works on them.

139 If Works are carried out before having agreed the routes with the Employer's Contract Manager, return and reroute and rewire cable runs and circuits where Instructed by the Employer's Contract Manager.

Standardisation of components

140 Use matching components with all lighting switches, sockets, fused spurs and similar equipment used in the Works, being from the same manufacturer.

Customer's fittings

141 Refix any existing fittings installed by the Occupier, provided the fitting conforms to applicable Standard.

142 Notify the Client's Representative of any Occupier's fitting which does not meet applicable Standard and which will therefore not be rewired or reconnected.

Removal of floor boarding, etc

143 Carefully remove any floor boarding necessary for the installation of cables. Saw through the tongues only and replace the boards in a workmanlike manner. Joists to be drilled only for the installation of cables. Ensure any new floor boarding is identical in width and thickness. Remove all debris from the joist and roof spaces.

144 Make good all plaster disturbed by the removal of fittings to a true and level surface.

145 Do not disfigure timber frames and mouldings by sawing or chiselling out for the insertion of cables.

146 Where the removal of mouldings, etc. is necessary, ensure the replacement is carried out by a qualified tradesman and that the replacement surface matches the existing surface.

Existing roof insulation

147 Where the roof insulation must be moved for the electrical installation, carefully move it to one side. On completion of the electrical Works carefully replace it to its original position. Take care to cover lengths of cable with insulating material to ensure the current rating of the cable(s) is not unduly altered.

Removal of old cables and fittings

148 Remove old cables and redundant switches, sockets, clips, boxes, etc. from roof spaces, exposed walls and other noticeable places and make good any disturbed surfaces.

COMPLETION

Inspection and testing

149 Ensure that on completion and before being energised, any installation is tested in accordance with applicable Standard.

150 Give not less than 24 hours' notice to the Employer's Contract Manager before commencing the testing.

151 After satisfactory completion of tests, submit copies of all inspection and completion certificates, with all associated schedules and test results if applicable, to the Employer's Contract Manager.

152 Note the testing instrument serial numbers on the test certificates.

153 All charges for testing or re-testing must be borne by the Contractor.

154 The Contractor must provide all the test instruments and test equipment required, make all arrangements for connections of the mains supply and issue to local authority supply company all appropriate test notices.

155 The Contractor must affix to the distribution board a notice in accordance with applicable Standard.

Report and certificates

156 Ensure all inspections, reports and test certificates and forms are the current version at the time of the test and are in the standard format published by IET, the National Inspection Council for Electrical Installation Contracting (NICEIC), the Electrical Contractors' Association (ECA) or other certifying and testing body approved by the Client's Representative.

157 For minor Works or alterations to an electrical installation which involve a change or modification to an existing single circuit, provide a certificate for Minor Electrical Installation Works.

158 Issue an Electrical Installation Completion Certificate for Major Works or alterations to electrical installations which involve:

- a change or modification to two or more existing circuits;
- the addition of one or more new circuits to an existing installation; or
- a new installation.

159 Provide an electrical installations condition report when specifically Instructed by the Employer's Contract Manager.

Operating Instructions

160 Each consumer unit must be supplied with an operating instruction card which must be mounted adjacent to the unit.

161 The Provider must leave with the Occupier printed instructions regarding operation of the consumer unit trip switch.

162 The instruction leaflet for the smoke detectors must be left in a safe place either by the electricity meter or consumer unit.

Employer's current manufacturers/suppliers/products

163 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

TECHNICAL SPECIFICATION

22-MICRO-GENERATION APPLIANCE MAINTENANCE

GENERAL

Applicability

001 This initial general section applies to all subsequent sections of this Specification of Workmanship and Materials **("this Specification")**.

002 This Specification is drafted as a series of instructions that the Contractor must ensure are complied with in relation to the Works. Each instruction includes all tasks necessary to comply fully with the instruction and the Schedule of Rates item(s) to which it relates.

003 The Schedule of Rates payments, as adjusted by the Contractor's tendered Rates, include for carrying out all tasks required by this Specification. No further payment is due to the Contractor in respect of any such tasks beyond the payments provided for in the Schedule of Rates.

004 Specifications across a number of trades may be relevant to each Schedule of Rates item. The Contractor must comply with all requirements of this Specification applicable to the specific type of Works to be undertaken.

005 References to Paragraphs and Sections in this Specification are to the applicable Paragraph and Section of this Specification.

Standards of workmanship and Materials

006 Carry out and complete all Works:

- in accordance with Good Industry Practice;
- in accordance with the Employer's Policies;
- in accordance with any specific requirements for those Works in this Specification; and
- to the satisfaction of the Employer's Contract Manager (acting reasonably).

007 To the extent that the standard of any Works has not been specified in this Contract, agree the relevant standard for the Works with the Employer's Contract Manager before their execution. Where particular Works or working methods are to be "approved by" "agreed with" or are indicated to be "subject to the approval of" the Employer's Contract Manager, give the Employer's Contract Manager adequate notice when such approval or agreement is needed and retain evidence of all approvals given, and items that have been agreed, by the Employer's Contract Manager.

008 To the extent that it is necessary to Design any aspect of the Works, in preparing those Designs use the reasonable skill and care to be expected of an experienced maintenance Contractor that is skilled in undertaking works similar to the Works.

009 Maintain all existing lines and levels at all times and carry through new work to the same lines and levels unless otherwise Instructed by the Employer's Contract Manager.

Applicable Standards & Codes of Practice

010 Ensure all Works undertaken and all Materials used in those Works comply with all applicable Standards or equivalent and Codes of Practice that are current at the time of their use.

011 References in this Specification of Workmanship and Materials to any applicable Standard or equivalent or Code of Practice are to be construed as references to the version current at the time the Order is undertaken.

012 Where a specific Standard or equivalent or a Code of Practice is referred to, this sets out the minimum acceptable standard of Materials or workmanship.

Materials

013 The Employer wishes to standardise the use of Materials across its Properties. This is in order to simplify parts requirements and van stock loads, to improve its repairs processes and to reduce maintenance costs. Wherever possible, match all Materials used to materials currently used in the Properties, particularly in terms of their parts requirements and repair procedures. In this Specification the Employer has set out details of its current Materials to which the Contractor is required to standardise.

014 Where this Specification indicates that Materials are to be "approved by the Employer's Contract Manager", provide samples of the proposed Materials to the Employer's Contract Manager for approval. Any Materials that comply with the functionality and compatibility (including aesthetic compatibility) requirements of this Specification may be proposed. No further approval is required for any Materials listed in this Specification as being the Client's currently used Materials. The purpose of the Employer's Contract Manager's decision on the use and approval of such Materials is to ensure that they meet the Employer's requirements for functionality and compatibility. The decision of the Employer's Contract Manager on this is final.

015 Where this Specification requires Materials to be matched to existing Materials or finishes, this match is subject to the approval of the Employer's Contract Manager.

016 Do not use any Prohibited Materials in carrying out the Works. Prohibited Materials are those Materials which are generally accepted or (having regard to Good Industry Practice) are reasonably suspected of:

- being harmful in themselves;
- being harmful when used in a particular situation or in combination with other Materials;
- becoming harmful with the passage of time; or
- being damaged by or causing damage to the structure in which they are to be affixed.

017 Materials are to be regarded as harmful if, in the context of their use in the Works (whether alone or in combination with other materials) they:

- are prejudicial to health and safety;
- may pose a threat to the structural stability or the physical integrity of any Property; or
- could materially reduce the normal life expectancy of any part of the Property.

018 Use, fix and apply all Materials strictly in accordance with the manufacturer's recommendations, directions or instructions.

019 Participate in joint initiatives with the Employer and other Employer Party to establish supply chain agreements.

020 Where appropriate suggest (economically viable) amendments to this Specification where those amendments may lead to an improvement in environmental performance or sustainability.

021 Provide all information the Employer's Contract Manager reasonably requests regarding the environmental impact of the supply and use of any Materials and goods the Contractor selects for use in the Works.

MICRO-GENERATION HEATING

GENERAL REQUIREMENTS

Immediate Response Service

101 The Contractor shall maintain an office at a location from which the Works may reasonably be undertaken within the response times required, during normal working hours and out of hours. The Contractor shall be equipped to receive calls and orders however transmitted (telephone, radio, fax, email) and provide the Employer's Contract Manager with a single telephone number that can be published.

Contractor's Conduct

102 The Employer is intent on providing an expeditious, safe and efficient Maintenance and Repair Service to its Occupiers and consequently the Consultant shall do his utmost to promote and enhance the image and reputation of the Employer in this respect.

103 The Contractor shall require his Staff engaged upon the Works to be properly and presentably dressed in appropriate uniforms or workwear.

104 The Contractor shall ensure that his Staff shall perform their duties in an orderly and quiet manner as may be reasonable and practicable having regard to the nature of the duties being performed by them.

105 The need to maintain the highest standards of hygiene and courtesy whilst the Contractor's Staff are engaged upon the Works is paramount and consideration must be given to Occupiers when working in or near occupied premises. The Contractor shall observe all of these provisions and also ensure that the said Staff do not cause a nuisance and or disturbance to Occupiers when they are working in or near occupied premises.

106 The Employer's Contract Manager is empowered by this provision to give written notice to the Contractor requiring him to remove from the Works forthwith any Staff member engaged upon the Works, if he is not satisfied in any way with the respective Staff members apparel, conduct, manner, or ability. The Contractor shall on receipt of such notice comply forthwith and remove the Staff member from the Employer's premises and the Staff member shall not be employed or engaged upon or in connection with the Works whilst the Contract remains in force.

107 The Employer will from time to time poll its Occupiers, to obtain their views on the effectiveness of the service provided by the Contractor and the manner adopted by his Staff when discharging their duties. The results of the poll will be taken into account when considering the needs for resourcing future repair and maintenance programmes.

Contractor to be registered

108 The Contractor shall have and maintain throughout the Contract Period registration with the:-

(a) Microgeneration Certification Scheme (MCS) or such other body as may from time to time be approved by regulation and

(b) National Inspection Council for Electrical Installation Contracting (NICEIC) and/or Electrical Providers Association (ECA) or alternatively, the Contractor may employ Staff to be approved by the Employer's Contract Manager under the Contract, who are registered with the National Inspection Council for Electrical Installation Contracting and/or Electrical Providers Association in order to undertake electrical work in connection with the Works.

109 All works shall comply with Part 'J' and 'P' Building Regulations by either obtaining Building Regulation approval or self-certification by registered company.

110 In the event that the Contractor's MCS or NICEIC or ECA registration becomes suspended or withdrawn for whatever reason, the Provider shall immediately notify the Employer's Contract Manager in writing giving full details of the reasons for such and the proposed or intended action and time-scale for gaining reinstatement of its registration(s). With immediate effect from the date of suspension or withdrawal of its registration(s) and until reinstatement the Provider shall, subject to approval of the Employer's Contract Manager be required to employ on a domestic sub-contract basis a suitable registered sub-contractor to undertake Works under the Contract.

111 Should the Contractor be unable within a period of two weeks to engage a suitably registered sub-contractor which meets the Employer's Contract Manager approval and or the period of suspended or withdrawn registration(s) exceeds or is likely to exceed four weeks then, the Employer may at its sole discretion terminate the Contractor's employment under the Contract in writing with immediate effect. Such action on the part of the Employer shall constitute a valid termination in accordance with the Contract Conditions.

Existing Systems

112 The Employer does not guarantee the condition or composition of fluid within wet systems. The cost of the removal of sediment and/or the re-establishment of the correct water/anti-corrosion fluid (or any other chemical) mix shall be deemed to be included in the **Schedule of Rates**, and/or the Provider's tendered percentage adjustment.

Existing Micro-Generation Installations and Appliances

113 As far as the Employer is aware, its existing Micro-Generation Installations and Appliances have been installed and maintained with due regard to both the applicable Standards and the Regulations:-

114 Types of micro-generation installed can include;

- Electricity generation technologies;
  - Solar powered or pholvolataic (PV) systems
- Heat generation technologies
  - Solar thermal hot water
- Co-generation technologies
  - Combined Heat and Power (CHP)

and the maintenance of which is to be undertaken by Microgeneration Certification Scheme (MCS) accredited engineers in strict accordance with the relevant manufacturer's instructions

115 The Contractor in carrying out the Works shall have due regard to all the above and shall not do anything which will compromise or degrade the integrity of the Micro-generation Installations and or Appliances.

Reinstatement to be Provided by the Contractor

116 The Contractor will be required to cut out any chases in floors, ceilings or walls, remove and refix insulation, floorboards, panels and the like to expose pipework for maintenance, repair, exploratory or investigation purposes and on completion to reinstate affected areas, insulation and surfaces to their original condition.

117 Any exposed Work left unattended shall be protected and temporarily covered by the Contractor at his own cost.

Leaks to Pipes Laid in Floors

118 The Contractor shall be required to open up the floor of any Property to trace and identify the source of the leak. The Contractor will drain down the system, remove the defective pipe and/or fittings and carry out the repair using capillary fittings. The system is to be recharged and left standing for 2 hours to test the repair. The Contractor will make good the floor, in the case of screeded floors these shall be made good with asphalt or cement and grano compacted to completely encase the pipework subsequent to covering the pipework with an approved sleeve or wrapping tape. The floor will be allowed to dry out and the Contractor will then recommission and put into use the heating system.

119 Alternatively the Contractor may wish to seek dispensation from the Employer's Contract Manager to bypass the defective pipe in the floor or wall with an exposed run of pipe connected into the circuit at expedient points. The Contractor should not on any account undertake this alternative without first obtaining the Employer's Contract Manager's approval.

Maintenance and Repair Records

120 On each occasion the Contractor gains access to a Property for the purpose of carrying out the Works, he shall before leaving the Property, forthwith complete forms appropriate to the type of work undertaken in the form and manner prescribed hereafter.

121 The Contractor shall at his own cost, provide for each Property a sufficient quantity of forms and notices, for the purposes of recording in ink from time to time, information in respect of the Heating Installations and Heating Appliances. The format and content of the said forms and notices shall be subject to the overriding approval of the Employer's Contract Manager and where required by statute, the Health & Safety Executive.

122 The Contractor shall record upon the forms and notices, general information as follows:-

(1) The address of the Property to which the form applies.

(2) Details of the respective Micro-generation Installations and or Appliances and their location in the Property, clearly indicate any Micro-generation Installations or Appliances which have not previously been contained in the Contractor's and or Employer's records.

(3) Any changes to previously recorded details of Micro-generation Installations and or Appliances.

(4) The name of the firm and the name and signature of the firm's employee who undertook any Work, inspection or check and the date and time of the undertaking.

123 In addition, the Contractor shall record specific information upon the forms and notices as follows:-

Annual Service Log;

124 Details of all Work undertaken during the annual inspection and service.

Repairs Log;

125 Details of all Work undertaken in response to a request for day to day repairs.

Landlord's Micro-generation Safety Record;

126 Details of the routine annual inspection and service as follows:-

(i) the date on which the appliance was checked;

(ii) the address of the Property at which the appliance is installed;

(iii) the name and address of the Employer responsible for the Property (or their agent) at which the appliance is installed;

(iv) a description of and the location of each appliance checked;

(v) any defect identified;

(vi) any remedial action taken;

(vii) confirmation that the routine annual service has included an examination of:-

(a) the effectiveness of any appliance,

(b) the appliances operation pressure and heat input,

(c) the appliances operation so as to ensure its safe functioning and,

(viii) the name and signature of the individual carrying out the annual service and inspection; and

(ix) the registration number with which that individual or his Employer is registered, with MCS.

Actions arising from Forms and Notices

127 The forms and notices completed by the Contractor shall be dealt with and the information thereon, delivered to persons in the form and manner prescribed hereafter:-

Obtain the signature endorsement of the Occupier of the respective Property upon the forms, to provide evidence that the Provider has undertaken an examination of the Micro-generation Installations or Appliances.

The original documents should be delivered to the Employer's Contract Manager within **two** working days of the visit;

The Contractor should retain a copy of the documents for his own records.

A copy only of the Landlord's Micro-generation Safety Record also signed by the individual who undertook the routine annual inspection and service, should be handed to the Occupier.

However, if the Occupier refuses to sign the Landlord's Micro-generation Safety Record (or the occupier at the time is a minor), the Contractor should in each case, deliver the unsigned copy of the said Safety Record signed by the individual who undertook the routine annual inspection and service to the Client's Representative, together with a list of the unsigned documents in the batch of documents.

In the case of the Occupierned by them or for which they are entirely responsible, copies of the said notices should be delivered to the Employer's Contract Manager with the contemporaneous batch of forms.

Service Label

128 Provide at his own cost a durable heat resisting self-adhesive label of a type to be approved by the Employer's Contract Manager. Immediately upon completion of a routine annual inspection and service and or repair to any Micro-generation appliance and or heating system the Contractor shall enter in ink upon the label information as follows:-

- Name of the firm,
- Date of the routine annual inspection and service and or repair together with details of Work undertaken
- The signature of the engineer who undertook the routine annual inspection and service and other Works.

129 Upon completion of the entries on the label the Contractor shall affix the label in a prominent place on or near the appliance subject of the routine inspection and service and or repair.

Repairs Works Order

130 Provide electronically, immediately after responding to a repair Order issued by the Employer's Contract Manager, the nature of the repair undertaken, the date and time when the repair was executed or provide this data electronically

131 Obtain the Occupier's signature on the rear of the Order to indicate that the heating system and or appliance has been left in working order. The Order shall be attached to the respective account submitted by the Provider in accordance with the Contract Conditions.

Materials and Components

132 All Materials used shall comply with applicable Standards, current at the time and only approved replacement parts or components shall be fitted when servicing, maintaining or repairing any Micro-generation Installation or Appliance. Wherever possible Materials, replacement parts and or components fitted by the Provider shall be on a like for like basis but in any case, shall be of comparable quality and finish and be consistent with the performance requirements of the respective systems unless the defective material, part and or component was of an inferior quality to the applicable Standard in which case the Material, replacement part and or component provided by the Provider will be at least to current applicable Standards and be consistent with the performance requirements of the respective installation system and be subject to the Employer's Contract Manager's approval. Workmanship shall comply with the current applicable Standard Codes of Practice.

Annual Servicing

133 The annual inspection and servicing specifications specified hereafter are model requirements only and the Provider shall at his own cost and as part of his undertaking in respect of the Works, obtain the manufacturer's service and maintenance requirements for the respective Micro-generation Installations and Appliances and any other information which will enable the Contractor to identify the full service, maintenance and repair requirements necessary to meet his obligations under the Contract and consequently enable the Employer to fulfil its obligations to its Occupiers.

Response Maintenance

134 Undertake any response maintenance on a Micro-generation appliance, he shall immediately thereafter examine:-

(a) the effectiveness of the appliance,

(b) its operating pressure and heat input,

(c) its operation so as to ensure its safe functioning.

135 Any defects disclosed by the examination should be immediately dealt with by the Contractor, in accordance with the Contract Conditions.

Electrical Installations

136 Check and test, as part of the routine annual service and inspection, all electrical installations and fittings associated with the Micro-generation Installations and Appliances covered by this Contract, so as to ensure their safe operation. All remedial work will comply fully with the applicable Standard for electrical installations.

137 All works shall comply with Part 'P' Building Regulations by either obtaining Building Regulation approval or self-certification by registered company.

Decorative Casings

138 The Contractor shall at his own cost carry out repairs to appliances, decorative casings and finishes.

Service/Test Certificate

139 Upon the successful completion of the routine annual inspection and service shall provide to the Employer no later than 7 days after completion of the service a certificate in a form to be agreed with the Employer's Contract Manager which must be signed by the Contractor's Contracts Manager.

140 In respect of Sheltered Accommodation, Hostels, Residential Care Accommodation, Dwellings in Multiple Occupation or similar with Independent Boilers a copy of the Certificate is to be provided for display prominently within the Property and the Contractor is to allow within his tendered rates for the provision of a copy of the relevant certificate to each Occupier served by the independent Micro-generation appliance.

141 In respect of Sheltered Accommodation, Hostels, Residential Care Accommodation, Dwellings in Multiple Occupation or similar with Communal Boilers a copy of the certificate is to be provided for display within the communal areas of the Property and the Contractor is to allow within his tendered rates for the provision of a copy of the relevant certificate to each Occupier served by the Communal Micro-generation Appliance or Installation.

MATERIALS

Solar Photovoltaic Panels

142 The Employer's preference is for monocrystalline Photovoltaic (PV) panels with self cleaning glass. The panel, frame and fixings must have MCS and British Board of Agrément (BBA) approval.

143 Installations to individual Properties should be connected to the household electrical system and communal systems should be connected to the communal landlord electrical system.

144 Single phase or three phase GSM enabled Passive Systems Compatible Elster generation meters should be installed, as appropriate.

145 The panel should have a 25 year manufacturing warranty cover. The frame, fixtures and fittings should have a 5 year product and workmanship warranty. The inverter should have a 5 year warranty cover.

146 The system should meet either G59 or G83 grid compliance criteria. All proposals must be agreed by the Employer's Contract Manager.

Solar Thermal Panels

147 The Employers preference is for MCS and Solar Keymark approved evacuated tube Solar Thermal (ST) systems. The ST system should be a pressurised closed loop system with an appropriate expansion vessel.

148 The hot water cylinder must be a twin coil system with the bottom coil used for ST and the upper coil for the primary hot water circuit. A 3kW electric immersion must be installed.

149 A temperature controller should be installed with sensors in the collector and cylinder to automate the pump.

150 The solar panels must have a 5 year product and installation warranty cover.

Combined Heat and Power Generating Boilers

151 Combined heat and power generating boilers (CHP) must convert over 90% of their fuel into electricity and useful heat.

152 CHP boilers must generate a minimum of 1kw of electricity per hour and a maximum of 24kw of thermal output.

Employer's current manufacturers/suppliers/products

167 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule

SOLAR THERMAL INSTALLATIONS

MODEL ANNUAL SERVICE SPECIFICATION, REPAIRS AND MAINTENANCE

PARTICULAR TO ANY SOLAR THERMAL INSTALLATION,

201 Maintain throughout the Contract Period registration with MCS or be a member of a class of persons approved for the time being by regulation.

202 Undertake routine servicing, maintenance and repairs to solar thermal installations under this specification as follows:-

1) The solar thermal panel or tubes installed on or in roofs
2) The solar hydraulic pump and solar controller
3) Installation pipework
4) Solar hot water cylinders.

203 The Contract will include for the annual inspection and service as described and in accordance with the manufacturer's recommendations, replacement of all defective materials, parts and components and any additional visits, during or outside normal working hours, to maintain the whole installation in good and safe working order.

204 The Contractor shall be responsible for defining the full nature of the annual inspection and service which together with the day to day response service, repairs and maintenance ordered from time to time by the Client's Representative and defined and undertaken by the Contractor will ensure the safe operation at all times throughout the currency of the Contract, the Employer's solar thermal panels or tubes installation and systems. The routine annual inspection and service shall be carried out in accordance with but not limited to, the recommendations of the manufacturer of the solar thermal panels or tubes installation and systems outlined hereafter.

	Solar Thermal Panels and Tubes General Requirements
1	Check general, condition of solar thermal panels or tubes installed on roof before commencing service.
2	Remove any debris, blown leaves etc that may hinder servicing and operation of solar thermal panel or tubes.
3	Cut off overhanging branches for non tree preservation order trees limiting operation of solar thermal panel or tubes.
4	Clean panels or tubes with iodised water

5	Check operation of solar hydraulic pump, overhaul pump if necessary, clean filters, change hydraulic fluids, adjust
6	Check operation of solar controller, adjust as necessary
7	Check installation pipework and cylinder/storage tank for any leaks
8	Check operation of solar thermal installation and adjust settings on controls, cylinder thermostat etc
9	Affix completed service label adjacent to cylinder.
10	Make good and clear away all debris to approved tip

Employer's current manufacturers/suppliers/products

205 Ensure all Materials are compatible with and standardised to the Employer's current products specified in the table below (listed by manufacturers, suppliers and/or brand names).

Employer's current manufacturers/suppliers/products are included in 00-CCC Top 650 Products Schedule