

ARCHITECTURAL TENDER SPECIFICATION

For
Extension works to an existing Primary School
-Queen of Angels, Wedgewood, Sandyford-

Prepared By:
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NOTE:

The Architectural Drawings shall take precedence over the Architectural Specification in the event of any discrepancy or inconsistency, unless expressly stated otherwise.

This Specification is to be read as a complementary document to the Drawings.

Contractors shall:

Refer to and comply with all relevant Drawings and Specifications.

Read the Drawings and Specifications in conjunction with each other.

Read the Architectural Specification in conjunction with specifications and information prepared by other disciplines, including but not limited to Civil & Structural, Mechanical, Electrical, and Fire Engineering documentation.

Any discrepancies, omissions, or conflicts between documents shall be reported to the Design Team for clarification prior to commencement of the affected works.

No assumptions shall be made.

1.0 PRELIMINARIES

GENERAL DESCRIPTION OF WORKS

This specification refers to the works required for the construction of an extension for a primary school. The Proposed Development will comprise of:

Construction of proposed entrance canopy, Entrance lobby, three mainstream classrooms with associated toilets, linking corridor circulation, two special education needs classrooms and associated quiet spaces, toilets for independent use, central activity space with daily living skills area, storage, sensory room, secure lobby, SEN Office, universal access toilet, SEN two staff toilets, alterations to existing school consisting of alterations to classroom windows, removal of one tree and part existing hedge in order to form SEN pupil & fire brigade access to building. Also the creation of six additional parking spaces including one disabled parking space and installation of attenuation with infiltration tank.

This specification is to be read in conjunction with all attached tender drawings and documentation. All conflicts between the information contained in different documents is to be queried with the Architect before works commence.

Commencement date

It is anticipated that works are to commence on site no later than:

- **THE START DATE WILL BE CONTAINED WITHIN BUILDING CONTRACT**

Completion Date

Works are to be completed on site:

- **THE COMPLETION DATE WILL BE STATED IN THE CONTRACT DOCUMENTS**

Finished works are subject to "Snagging" by Architect and time is to be allowed for correction of any issues identified in the Snag list. Discussions on phasing of works, amending completion dates and any associated penalty clauses are to be carried out before contract is signed.

GENERAL NOTES

All building materials to comply with Part D of the Building Regulations 2013

Materials include products, Components, fittings, items of equipment and backfilling for excavations.

Materials should be: -

- (a) of a suitable nature and quality in relation to the purposes and conditions of their use, and
- (b) adequately mixed or prepared, and
- (c) applied, used or fixed so as to perform adequately the functions for which they are intended.
- (d) Materials used in building work should, as far as is practicable, be free of chlorofluorocarbons (CFCs).

NOTES:

On completion, third party certification of heating & ventilation system will be required.

General Performance Items:

(a) All materials, components, design and workmanship shall, as a minimum standard, comply with all relevant Irish and British Standards, Codes of Practice or equivalents and be in accordance with good building practice.

(b) All materials, components, design and workmanship shall, as a minimum standard, have approval under an appropriate agreement / standard as and where one such exists or shall be demonstrable to be at least equivalent in every respect.

(c) All materials and components shall be new, be of best quality and be designated heavy contract / heavy duty grade as appropriate to comply with Architect's requirements.

The building structure and fabric shall have a minimum service of 30 years subject to only regular routine maintenance.

(d) The building shall be designed, detailed and constructed in all respects to fully meet all the requirements of the current Building Regulations including all amendments current at the time of contract and in particular the current Part L and M.

(e) The building shall be designed, detailed and constructed in all respects to fully meet all the requirements of BS 5588 – Fire Precautions in the Design, Construction and Use of Buildings, and be in accordance with the relevant Code of Practice as detailed in the Fire Certificate where appropriate.

(f) Minimise, where possible, the adverse environmental effects of this project and operations. Recycled or recyclable products are to be preferred whenever they are available. Projects are to be designed to minimise the consumption of energy, avoid the consumption of products associated with the destruction of tropical rainforests or threatened animal species, avoid the emission of pollutants, harmful radiation or ozone layer depleting chemicals and avoid the use of noxious substances.

(g) Preference shall be given to materials and components which hold a current Agreement Board Certificate.

(h) Existing services and roads / access routes / infrastructure etc, shall be in operation at all times.

(i) Materials and components shall be selected to ensure that additional quantities and / or replacement parts shall be readily available.

INTRODUCTORY NOTE:

The following notes apply to all specification elements.

The Contractor shall be deemed to have carefully examined the drawings and to have visited the site to satisfy themselves as to the scope of works.

The Contractor shall appoint only competent supervisors and staff including Contracts Manager, Safety Officer, Quality Manager, Site Manager, etc., all of whom must submit current C.V.'s to Architect.

The currency of standards shall be deemed to be current dated version or its replacement where such applies.

Shop drawings shall be provided by the Contractor to show compliance with contract drawings by domestic sub-contractors. The drawings must be to scale and be accompanied by an information programme and method statement.

The Architects comments on submitted documentation shall relate to general performance, aesthetic and overall functional matters, not to the detailed function and construction of components, which shall remain the complete and sole responsibility of the Contractor.

Mock-ups and samples for each different material and finish shall be allowed for in tender sum. Allow for testing of all major floor, walls and roof installations by the National Standards Authority Ireland or similar Architect approved standards agency or expert.

The Contractor shall guarantee to replace any part, element or building material which fails in material or workmanship. Guarantee period commences at date of Certificate of Practical Completion.

Maintenance manuals and as-built drawings shall be provided including one master copy and five copies IN SOFT COPY FORMAT. The submissions must include name, address and phone / fax numbers of each supplier or manufacturer, technical performance specification; history of construction process; any problems experienced; routine maintenance requirements; procedures for replacement; period and terms of guarantees; and a schedule of spare parts, materials and their price.

Fixing methods shall be generally concealed except where expressly permitted by the Architect. The Contractor shall ensure compatibility of materials so as to eliminate the risk of corrosion or other adverse action. Electrical bonding to BS 6651 or better.

The minimum maintenance free life of replaceable items shall be in excess of 20 years for any material or component. Where 'equal' or 'equivalent' is used it shall mean equal and approved by the Architect.

The Contractor is to determine and use a safe method of working throughout the building project construction period which complies with HSA and CDM requirements.

Contractor to note that substantial completion will not be given for this building until the contractors Safety Plan and all associated documents are given to the Employer.

Important Note

In these specifications trade names and/or suppliers are sometimes used. Other materials/ suppliers may be put forward for consideration as equivalent materials to those stated in the specification.

Approval for substitution of equivalent materials/ suppliers will be given where the alternative material/ supplier is demonstrable equal in full accord with the original specification.

Equivalence of an offered substitution will be judged on the basis of objective, clear and verifiable independent proof of similar compliance with equal standards to those specified.

Where appropriate verification is provided through a detailed technical dossier, drawings, data sheets and/or a test report from a recognised body, a material/ product substitution will be permitted by the architect who is the client representative. Any increased costs arising whatsoever from such a substitution in terms of redesign, rescheduling, health and safety issues etc. shall be borne by the Contractor.

The evaluation of substitute materials/ products will include assessment of their environmental characteristics.

Alternative suppliers/ installers will need to prove their ability to perform their sub-element part of the main contract through the submission of proof of their technical and/or professional capacity (education, experience, equipment etc); including their ability to manage in an environmentally sound manner such as EMAS or other certified environmental management systems or details of such measures taken in previous contracts.

The contracting authority through its architect who is the client representative, will determine on a case-by-case basis, from a technical, aesthetic and functional perspective, what constitutes an equivalent standard/ product. Verification will take place on/ after the award of contract, as part of the contract management regime. Sufficient time is to be allowed to check submissions and provide samples as indicated in this specification.

Pyrite

Contractor to carry out Pyrite testing on or present a pyrite certificate for all concrete aggregate material to be used on site.

GENERAL WORKS

Demolition Works

Contractor is to remove from site, to as suitably licensed landfill or recycling centre, all materials identified on the attached drawings and documentation as structures to be demolished. This is to include all spoil and materials unsuitable for re-use as fill, excess topsoil, general demolition rubble and general construction waste generated

on site.

GENERAL SITE / OPERATIONAL NOTES

Site Wind Speed

The Contractor shall determine the applicable design wind speed with reference to Technical Guidance Document A (2012) – Structures.

Revision Clouds

Some revision clouds communicating changes among members of the design team may have been retained on the drawings. These clouds should not be considered as the only changes to the architectural drawings since any previous Tender documents issued previously.

Mastics

While suggested names of mastics have been listed throughout this document, it is the Contractor's responsibility to ensure compatibility of mastics.

All mastics must be suitable for their intended use and compatible with each other if they should come into contact, either intentionally or accidentally.

Dimensions

Dimensions on drawings are finished dimensions unless otherwise stated.

Samples & Shop Drawings

Where approval of commodities is specified, submit samples well in advance of time required to order, with name and address of the supplier and such information, instructions and directions as the supplier has issued. Do not confirm orders for commodities until approval has been obtained from architect. Retain approved samples on site for comparison with commodities used in the works. Remove when no longer required. Where samples of finished work are specified, obtain approval before proceeding with the works. All materials delivered to and used upon the works must be at least equal in quality to the same and the Contractor shall ensure that it complies with all manufacturer's instructions and recommendation. Any materials condemned by the Architect as unfit for use in the works or otherwise shall be immediately removed for the site and the Contractor's expense. Contractor to remove samples when no longer required.

The contractor shall include for samples and shop drawings as mentioned in the architect's drawings. Contractor also to produce shop drawings for the following trades: Roof finishes, Rain water installation, External and Internal Doors frames including, Ironmongery, Aluminium Glazing Systems, Internal Glazed Screens, Rendering, Plasterboard Partitions and Wall linings including timber wall linings, All ceiling types, Ceramic and Wall tiling, Fire stopping, Sanitary ware, Vanity Units and Shower cubicles, Toilet partitions, Lights, all joinery, countertops, Sliding folding partitions, entrance block glazed screens, vinyl, terrazzo and linoleum floor finishes, raised access floor, movement joints and skirting, sundry steelwork including hatches, external railing, mechanical and electrical and lift installations.

Contractor shall, at the Contractor's own expense provide temporary samples as specified on drawings to also include sample panels of Brickwork, Blockwork, Finishings, Concrete Work, Joinery, Plastering, Painting, External Wall systems, Internal and external cladding and

the work of other trades as may be directed by the Architect. At least three 2metres X 1.5metres panels of each shall be required for each sample.

In addition, the Contractor shall be responsible for obtaining and delivery of all shop drawings from subcontractors and suppliers to the Architect and Design Team and for copying their responses to the respective subcontractors. The Architect and Engineers will require 15 working days for the review of any drawings or other information submitted and this shall be deemed to be included in the contractor's programme. Each re-submission of incorrect drawings by the Contractor will require a further 10 working days for review by the Architect and Engineers and this shall be deemed to be included in the Contractor's programme.

All the services in a particular area shall be indicated on a single drawing and shall show their relationship to each other and to all other elements of the building. The Contractor shall include for the preparation of co-ordinated builders work and services drawings and as-built drawings.

Obtaining approval of the above drawings and providing ten copies of all such approved drawings to the Architect at least two months before any relevant work is put in hand or any orders are places, where appropriate.

SITE ACCESS/CONDITIONS

The Contractor shall familiarise themselves fully with the site, it's surroundings and all access routes prior to commencement of Works, having regard to the Contract Drawings and all other information available to them.

The Works to take place during summer holidays but start date as early as possible to allow for any enabling works that may be required to be carried out. Works will take place during normal working hours and, as such, may involve interaction with the public and students.

Hoarding will be required around the works area, and it is to be secured from unauthorised access. Dust suppression is to be implemented on site.

Staff parking and deliveries are to be contained on-site inside the defined site boundary and are not to impact on existing facilities. Access for emergency services to be maintained throughout the Works.

Contractor to make allowance for vehicles and HGVs delivering and removing material from site. Roadways are to be kept clear, regularly cleaned and a temporary wheel wash facility is to be installed at the entrance to the site.

Salvaged materials and other construction/demolition waste, generated from the works are to be stored securely on the site until such time as materials can be loaded safely onto HGVs. Contractor to remove all debris and waste materials from site periodically and to leave site clear on completion of Works.

Existing use of the building is to be facilitated in so far as possible, Site is a live School and as such interaction with facility users may be unavoidable. Approach roads are quite narrow & contractor should be aware of this when taking delivery of construction equipment & materials.

DESCRIPTION OF WORKS & SCOPE OF CONTRACT

This contract includes for the provision of all Plant, Equipment, Transport, Materials, Labour, Supervision of workmen and workmanship as may be required to carry out the works as set out on the attached drawings and for whatever ancillary works are shown on the drawings or as described in this specification.

Hoarding shall be erected around the works to prevent dust and debris escaping and to restrict public access. All materials and tools shall be stored securely inside the work zones and removed from site when not in use.

Clearing & demolition to include for removal, disposal or storage off site of materials as appropriate. The contractor is to consult with the client in relation to phasing of works.

RESTRICTED USE OF PLANT

If, for any reason, the Architect or his representative is of the opinion that any excavator, mechanical digger or other plant is undesirable or unsuitable for the purpose of excavation or for use on the Works or any part of them, the Architect may instruct the Contractor not to use and/or to remove the plant from the site. A permit to dig system is to be implemented on site.

Prior to excavation by machine, the contractor is to satisfy themselves as to the location of all underground services by examining services drawings and through the use of radio detection and ground penetrating radar or slit trenches as required. Where underground services are located, excavation is to be undertaken by hand only. "Goal Posts" are to be set up around overhead services to prevent plant connecting with electrical wires and cables.

SITE LIMITS

The site limits are to be established by agreement ON SITE prior to the commencement of work in consultation with the Client and Sweeney Architects. Contractor to provide all required safety signage, barriers and security measures to ensure site is secured from unauthorised access during works.

NOTICES AND CHARGES

All works, the subject of this contract, are to have individual connections to all services and as such it will be the responsibility of the Contractor to ensure that all road Opening Licenses for connection to all public services are obtained and provision shall be made for the full restoration of all openings made in respect of these services.

EXAMINE DRAWINGS

The Contractor shall carefully examine all Drawings, Details and Documents in relation to the Contract, check all dimensions, satisfy himself/herself as to their accuracy and that they cover all the work involved.

TEMPORARY SERVICES

The Contractor shall consult with the relevant Authorities and obtain permission if necessary for the provision of Temporary Services i.e., Water, Electricity etc.

WATER

If water for the Works is not available from a Public Utility Undertaking supply the Engineers approval shall be obtained regarding the source of supply and manner of its use. The water used for concrete and testing shall be clean and free from oil, acid, organic matter or other deleterious substance in suspension or solution.

SUPPORT EXISTING

Where any or all existing sewers, water mains, heating pipes, or other appurtenances in connection therewith that are met in excavation, together with all electrical cables, main supply wires, etc. are to be properly slung, held, supported or shored in position during the excavation of the works and properly made good on completion.

It is the responsibility of the Contractor to ensure that existing services are undisturbed during construction and any damage to existing services is rectified prior to completion of works.

MARKING, LIGHTING AND WATCHING

The Contractor shall supply all necessary lighting, watching, hoarding, planks, temporary fencing, access gates and bridges and all other items needed for the protection of the works against damage and for the safety of Workmen and for the safety and convenience of others.

The Contractor shall further indemnify the Client against all claims, costs, expenses, damages or proceedings resulting from or due to the insufficiency or unsuitability or failure of any of the foregoing safeguards or provisions.

PROTECTION OF THE WORKS

The works shall be protected at all times against damage from inclement weather, traffic, impact or other cause. The Contractor shall make good any works so damaged.

REMOVAL OF RUBBISH

The Contractor shall dispose of all rubbish and building waste materials from the site from time to time and on completion of the works or part thereof to a Licensed Tip. The Contractor on final completion shall leave the site in a perfectly clean, neat and tidy manner.

PREVENTION OF POLLUTION

On no account should slurry or other solid pollution liquid matter be allowed to enter any sewer or drain serving any of the existing buildings.

PROTECTION AND RESTORATION OF SURFACES

The Contractor shall be responsible in so far as is practicably possible for the prevention of unnecessary damage to existing surfaced areas of the Site by machines and or lorries or other vehicles used in the delivery of materials and or for construction purposes and if

surfaces are damaged shall maintain and repair same to the satisfaction of the supervising Architect.

Public roads/footpaths/kerbs and approaches to the sites must be maintained and kept clear of mud/debris at all times.

All damaged surfaces must be repaired/reinstated to match their original condition.

MATERIALS AND WORKMANSHIP

All materials which the Contractor proposes to use in the construction of the works shall comply with the requirements of the latest edition of the Irish Standards for such material and workmanship if one has been published, or with the appropriate British Standard Specification.

Materials and building systems that hold a current IAB certificate from the NSAI are to be used in preference to those that hold alternative certification. If no appropriate standard has been published, the material it is proposed to use shall be the best of its respective kind available and shall be to the satisfaction of the supervising Architect.

ALL MATERIAL AND WORK SHALL COMPLY STRICTLY WITH THE 1997 to 2016 BUILDING REGULATIONS.

FOREMAN/ FOREPERSON

The Contractor shall give all personal superintendence required during the course of construction of the works and shall keep on site at all times at least one good competent and experienced Foreperson who shall be constantly on the works to ensure their smooth and successful completion and with the power to act on behalf of the Contractor in his absence and for all purposes as his General Agent.

OFFICE

The Contractor shall provide suitable site office accommodation and welfare facilities for their operatives.

The Contractor shall ensure that a responsible representative is present on site at all times during the Works and that reliable means of communication are available at all times. All costs associated with same shall be borne by the Contractor (i.e. a telephone to be provided for immediate site use and all bills in relation to this telephone to be paid and up to date in order to ensure its availability).

ARTICLES OF AGREEMENT

The contract will be based on the Articles of Agreement drawn up by the Employer's Legal Representative and shall be available for inspection prior to the signing of such Contract.

ADDITIONAL DETAILS

The Contractor shall not carry out any work for which additional instructions or details are required or about which there is doubt or difficulty, without first applying to the Architect in good time for such directions or detailed Drawings as they may think fit to supply.

CHARACTER OF THE SITE

Such information as may be given on the Drawings and Specification as to the present condition and character of the site and structures and as to the position of cables, pipes and other mains is given without any guarantee of accuracy, and the Contractor shall be deemed to have made himself fully familiar and responsible for all the information he requires. He should also satisfy himself as to the nature of any difficulties that may be experienced underground and to any obstructions or ground water level that may influence the works.

The Contractor must accept the site as he finds it and any work that may be necessary to complete the contract must be provided for in his contract price.

VISIT TO SITE

The Contractor shall be held to have satisfied himself by inspection of the site as to the amount of work to be executed including all items reasonably and obviously inferred although not described on the Drawings and Specification.

The contract is for completely finished works, fully adapted for that purpose in strict accordance with the true extent and meaning of the Drawings and Specification.

The Contractor shall visit the sites and familiarise himself with the access there to and the work involved in all preparation for the commencement and execution of the works.

UNDERGROUND SERVICES

Excavation shall be carried out in accordance with BS 6031 "Code of Practice for Earthworks".

The contractor shall carry out such explorations that are required to accurately determine the exact location of services and take all precautions necessary to prevent damage of any kind to these services.

The Contractor shall accurately set out all lines and levels in relation to the works from the Drawings. They shall notify the Architect when any lines or levels are set out ready for inspection and/or checking and these lines and/or levels shall be agreed prior to proceeding with the work unless otherwise indicated on the Contract Drawings.

The Contractor shall submit to the Architect proposals of the method illustrating dimensions, levels, lines and profiles along which he proposes to excavate along with a detailed programme for the phasing of the works, so that the Architect may review his proposals. The Architect's consent to his proposals however, will not relieve the Contractor of their responsibility. Prior to the opening of any cut area the Contractor shall acquaint himself with the location and nature of all existing underground services by reference to all available drawings and other documents and by the excavation of trial holes and trial trenches, and by consulting with the relevant service authorities to ascertain the exact location of all such services. The excavations shall be performed in whatever material may be found.

The use of ground penetrating radar and/or radio detection equipment is required prior to excavation by mechanical excavator if the presence of underground services is anticipated.

A radio detection scan is to be performed by a suitably qualified LUGS operator prior to all mechanical excavations.

METHODS OF EXCAVATION

The Contractor shall include for excavation of material by hand or machine and for levelling and consolidating surfaces prior to commencing any constructional work.

The faces and beds of all excavations, having been excavated to the required dimension, shall be carefully trimmed to the required profiles and levels and cleaned of all loose mud, dirt and other debris.

EXCAVATED MATERIAL

No excavated material suitable for, or required, for reuse in the Works shall be removed from the Site except on the instruction, or with the permission of the Engineer.

Disposal of surplus excavated material from the site, not required for reuse in or on the works, shall comply with the requirements of the Waste Management Act 1996.

All excavated material shall be removed from site to a Licensed Tip.

ARCHITECTS INSPECTIONS

The Contractor will notify the Architect of key milestones in the project as identified in the Inspection Notification framework.

NOTE:

APPROVALS GIVEN AT SUCH INSPECTIONS SHALL NOT RELIEVE THE CONTRACTOR OF FULL RESPONSIBILITY FOR THE QUALITY OF THE WORK THROUGHOUT.

ORDER AND METHOD OF WORK

The Contractor shall be required, on acceptance of his Tender to furnish the Architect with a Programme of Work, showing all elements of construction and setting out the time scale for completion of each element.

This must be supplied prior to the commencement of work on the site and this Programme of Work shall form part of the Contract Documents.

The Contractor shall ensure that progress on the site is in keeping with the submitted Programme of Work.

SUBCONTRACTORS

The Contractor shall allow for all normal general attendance and facilities on all subcontractors' work.

MANUFACTURER AND TYPE

Where "Manufacturer" is used in the Specification, it shall mean the firm under whose name the particular product is marketed.

Where "type" is used, it shall mean the proprietary brand name, reference or other quality by which the product is recognised or identified.

The Contractor shall notify the Architect prior to the use alternative materials to those specified and ensure that the product carries similar certification.

VARIATIONS

A variation shall be deemed to be an alteration arising from the Architects Instruction to the extent or quality of the works as expressed or implied in these Documents.

COPIES OF DRAWINGS

Copies of Drawings in addition to the electronic copy issued, shall be provided at the Contractors expense, one copy of the drawings shall be kept in good condition on the site at all times for reference and inspection.

MATERIALS

All materials used in the works shall be new unless otherwise described or directed.

QUALITY

The Contractor shall ensure that where materials or components are specified to comply with a National Standard Specification, the relevant Standard Number shall be marked on the commodity itself or on the delivery note accompanying the commodity or product.

MANUFACTURER CERTIFICATES

The Contractor shall provide in respect of materials, components or products on request manufacturer's certificates of compliance.

TESTS AND SAMPLES

The Contractor shall pay the cost of fees and charges for the testing of materials which the Architect may require. Allow for all costs in preparation and delivery of samples for testing, etc.

INSURANCE & BOND AND REQUIREMENTS UNDER CURRENT TAX LEGISLATION

The Contractor shall accept liability for and indemnify the Employer against liability for damage to persons and to property and insure against these liabilities by effecting and maintaining Public Liability and Employer's Liability Insurances.

The Contractor shall furnish evidence of all such Insurances prior to the commencement of work and copies of these shall be retained for the duration of the Contract, where the expiration of the current Policy falls within the Contract Period, the Contractor will be asked to provide evidence in the form of an Official Receipt from his Insurers that the policy has been successfully

renewed. The Contractor will also be obliged to provide evidence of his or current Tax Clearance status by producing in person his current C2 Certificate.

HEALTH AND SAFETY

The Contractor, having accepted the role of Project Supervisor Construction Stage (PSCS), shall carry out the duties of the PSCS as specified in the Health, Safety and Welfare at work regulations (construction) 2013. This is to include co-ordination and co-operation with the PSDP and client in matters of site safety and assist in the compilation of the safety file to be provided to the client on completion of the project.

Prior to the commencement of development, they shall produce a SITE SPECIFIC Safety Statement as is required under current legislation and shall observe all the necessary requirements in respect of SITE SAFETY and shall ensure that all sub- contractors and directly employed staff and personnel comply with all elements of the current Legislation in respect of Health & Safety pertaining to the Construction Industry.

TEMPORARY WORKS

Temporary works are not envisioned, however, should temporary works be required during the construction the contractor is to appoint a temporary works co-ordinator to liaise with the PSDP in all matters relating to temporary works on site.

ASBESTOS

The Contractor shall familiarise themselves with all asbestos-related information provided as part of the Contract Documents prior to commencement of the Works.

The Architect is to be informed if the presence of asbestos is suspected in other areas.

The contractor is to appoint a suitably qualified contractor to remove, transport and dispose of any asbestos containing material from site to a suitable off-site asbestos disposal facility.

COMPLETION PERIOD

The contractor shall complete the works and make same fit for use within the stated contract period.

THE START DATE WILL BE CONTAINED WITHIN BUILDING CONTRACT.

2.0 WOODWORK

2.1 SUSTAINABLE TIMBER REQUIREMENTS

The client requires wood that is used for construction of its products to be legal and sustainable.

Contractors must avoid sourcing illegally logged timber in accordance with the EU illegal logging action plan known as F.L.E.G.T.

Endangered species on the C.I.T.I.E.S. should not be used.

Contractors are required to demonstrate their compliance with the client's timber sustainability requirements. Such compliance should be demonstrated by credible evidence of verification which shows that the timber used is both legal and sustainable.

There are a number of existing commercial certification systems which are acceptable, namely CSA, FSC, PEFC, and SFI. However, the client recognises that other sources and forms of proof and verification that timber is legal and sustainable may be submitted to demonstrate compliance with its legal and sustainability requirements. Such sources or forms of verification should take the form of 'verification of source' under the terms of the European Union procurement policies; an appropriate chain of custody standard; the requirements for the protection of endangered species; and independent assurances of sustainable forestry practices.

2.2 MATERIALS

Timber Generally

Timber shall be sound, well-conditioned, properly seasoned to suit the particular use and free from defects or combination of defects, rendering it unsuitable for the purpose intended and shall comply with IS 127, EN 519, EN 942 and BS 1186 as appropriate.

All timbers must be from sustainable and managed plantations.

White oak of European or North American origin.

Red and White deal of Northern Swedish or Canadian Origin.

Other hardwoods as shown on the drawings.

All hardwood shall be well cut and shall be in conformity with samples approved by the Architect prior to commencement of work.

Note: All joinery and furniture dimensions on Architects drawings are finished dimensions.

Hardwood

Hardwood which is exposed to view in woodwork shall be hardwoods as shown on the drawings totally free from the following defects: Knots, sapwood, waney edges, warping, pith, brittle heart, rot, stain and beetle attack.

Softwood

Softwood timber where used in woodwork which will be exposed to view will be European Redwood red deal Class 1 of BS 1186 or J10 of EN 942. The following defects will NOT be permitted:

Pith shown on the surfaces, sloping grain exceeding one in eight, checks splits and shakes, knots, excepting isolated sound tight knots of less than 20 mm diameter, any evidence of beetle attack or rot.

Softwood not exposed to view will be accepted with minor defects with the exception of

beetle attack or rot.

Moisture Content

The moisture content of the timber when the woodwork is manufactured and kiln dried shall comply with EN 942 and B.S.5268 Part 2. Unless to the contrary, moisture content of manufactured woodwork at time of erection shall be within the following limits:

INTERNAL JOINERY / FLOORING		EXTERNAL JOINERY CLADDING / STRUCTURAL	
Minimum	8%	Minimum	15% 16%
Maximum	12%	Maximum	18% 20%

Plywood

Plywood generally shall comply with B.S. 1088' B.S. 4079 and EN 636. All plywood shall be minimum WBP (or as specified on the drawings) bonded first grade and shall be faced with veneer as specified. One side shall be completely free from joints and surface defects. Joints and minor blemishes will be permitted on the reverse side only. Where both sides of the plywood are exposed, these shall be totally free of joints and surface defects.

Oriented Strand Board

OSB shall comply with EN 300

Chipboard

Chipboard shall comply with EN 312

Fibreboard

Medium density fibreboard shall comply to EN 622 and shall be **formaldehyde free**.

Fire Proof Board

Shall be non-combustible, asbestos free, laminate board with calcium silicate matrix reinforced with vermiculite and natural organic fibres.

Wood Veneers

Wood veneers to be prime quality, a sample of which shall be submitted and approved by the Architect. The Architect is to be informed when the whole of the stock is ready for his inspection and approval before work is commenced. **Minimum thickness 0.6mm.**

Plastic

Plastic laminate shall be of approved make, pattern and grade.

Firecheck Glazing Channel

Firecheck glazing channels to be fully in accordance with 'Pyrostop' detail or equal and approved by the Architect.

Intumescent Materials

Intumescent strips, seals, caulking and paste, shall be of approved quality, design and manufacture to comply with B.S. 476.

Doors

All new doors shall be as per drawings.

Flush doors shall have outer frame widths as shown with an infill 100% of solid timber, as described or other approved material; 6 mm plywood, as described above, shall be rigidly fixed to core without framing showing through. All edges to be lipped with hardwood lipping, tongued and grooved to core frame. The lippings shall be checked on both sides to allow the plywood facing extend to the edges of the door. Lock blocks shall be provided at least 250 mm high.

Fire resisting doors shall comply with Euroclass B in accordance with EN 13501-1:2002 and B.S. 476.

See Architects drawing for details of special doors. Certificate of compliance will be required from the manufacturer.

Glues

Glues shall be of synthetic resin adhesive to E.N. 301 type WBP applied strictly in accordance with, manufacturer's instructions. Borden RS – 12 A – RXS – 22A adhesive is an approved glue. Other glues require Architects approval. Adhesives for Fire Resistant elements to be Type 1 to EN 301 which supersedes B.S. 1204.

Allowance for wrought faces

Where timber is specified as 'sawn' an allowance of not more than 3 mm reduction of the wrought dimensions shall apply in respect of each sawn face. The permissible deviation for wrought timber is + 0.5mm for the dimension shown on the drawing.

Regularised Timber to be used.

Basic sawn timber has a -1 mm to + 3mm permissible deviation on sizes up to 100mm. Basic sawn timber is not permissible for stud walling and floor joists as it cannot achieve good level finishes.

Basic sawn timber must have been regularised to a permissible deviation of 1 mm prior to stud walling or flooring use. Timber sizes to EN 336.

2.3 PRESERVATION TREATMENT IN ACCORDANCE WITH EUROPEAN STANDARD E.N.

335, E.N.599 and B.S. 8417.

The EN standards are based upon the required service life for timber in any given hazard class situation. Water based micro emulsion preservatives to be in accordance with B.S. 8417 rather than B.S. 5268-5.

The Contractor and Sub-contractors should note that the preservation of timber is vital no matter which preservative methodology is used.

Where sapwood is to be used, or heartwood which does not have adequate natural durability for its intended end use, preservative shall be applied according to its Hazard Class, as defined in EN 335 definition of Hazard Classes. Other European Standards relevant

to the determination of appropriate treatment are EN 350 Natural Durability Classes, EN 351 Penetration and Retention Classes and EN 599 Performance Tests for Preservatives. A certificate of preservation shall be attached to each delivery of each Hazard Class and copies sent to the architect. The moisture content of the timber to be delivered to site shall not exceed that specified. Inorganic waterborne preservative to EN 599, e.g. Copper Triazole or ACQ. Organic solvents to B.S. 5707, EN 599, e.g. Prevac or Vac-Vac. Micro-emulsions to EN 599, e.g. Prevac or Vac-Vac.

Hazard Class/Service Situation

Hazard Class 1:

Floorboards, floor joists (excluding ground floor), timber above ground floor not built into external walls.

Hazard Class 2:

Ground floorboards and joists, frame timbers in timber frame houses, roof timbers, timbers built into external walls, timbers in flat roofs, tiling battens.

Hazard Class 3A:

External cladding, joinery, fascias, bargeboards, soffits and valley gutter timbers, above D.P.C. level and finished with a protective coat finish to Architects satisfaction.

Hazard Class 3B:

External timbers without an approved protected coating above D.P.C. level but not in ground contact.

Hazard Class 4A:

Sole plates below D.P.C., fence posts; playground equipment (if in ground contact).

Hazard Class 4B:

Timbers in contact with the ground or fresh water, permanently exposed to wetting.

Hazard Class 5:

Marine, saltwater contact.

Re- Treatment of cut surfaces

All known cutting, machining, profiling and notching must be complete prior to assembly. Any unforeseen cutting of treated surfaces must have the Architect's approval. Where the Architect gives such approval, all exposed surfaces shall be retreated with a liberal brush or spray application of a suitable concentrate preservative. Ripsawing, planing and heavy sanding will not be permitted unless the timber is returned for re-treatment to EN standards.

Screws & Nails

Screws shall comply with BS 1210 and nails with BS 1202. In every case the size and material of screws and nails shall be as specified or appropriate to the nature of the fixing and of the materials involved.

Screws, nails or metal fastenings in hazardous locations or conditions must be non-ferrous, e.g. stainless steel, silicone bronze. No other screws or nails are permitted.

The fixing of external cladding, joinery or window beads with non stainless steel or silicon bronze screws, nails or fixing pins will be rejected.

Bolts

All bolts, nuts and washers described as galvanised shall be hot dipped galvanised and stainless steel where used externally.

Where bolt sizes have been called up on the contract drawings as imperial sizes and if it is the Contractor's intention to use ISO metric bolts instead, these bolts diameters must be equal to or greater than the imperial.

Bolt holes shall be drilled to diameters as close as possible to the nominal diameter of the bolt and in no case more than 1.6 mm larger than the bolt diameter. A minimum of one complete thread shall protrude from the nut. Care shall be taken to avoid placing a bolt in any end split. The washer size shall comply with Table 76 of BS 5268: Part 2. Note: Nylon sleeves to be used between dissimilar metals throughout.

Tightening of bolts or connectors

Care must be taken to avoid the over-tightening of bolts in bolted or connector joints such that no crushing of the wood occurs under the washer.

Adhesives

Adhesive shall be WBP type (Weather Proof and Boil Proof) Adhesive Type 1 to E.N. 301 : or as otherwise described. PVA glues will **NOT** be permitted. **Borden RS – 12A – RXS – 22A is an approved adhesive.**

Adhesives for windows to be Class D4 of EN 204. (where applicable)

Mixing of the adhesive shall be carried out in clean containers and mix proportions, method of mixing, air temperature, method of application, rate of spreading, method of clamping including any pressure requirements, curing etc., shall be strictly in accordance with the adhesive manufacturer's instructions.

Adhesive spreading shall be carried out within the manufacturer's stated "open storage" time and any adjustments in alignment or clamping after the two mating surfaces have been brought into contact, shall be carried out within the manufacturer's stated "closed storage" time.

At the time of adhesive application, the moisture content of the timber shall not exceed 15% or as required by the Manufacturer's instructions.

The surfaces of the timber to be fixed with adhesive shall be machined and the application of adhesive carried out within 48 hours of machining.

Care shall be taken that the adhesive to be used is compatible with preservative treated timber.

Where any adhesive joints occur on exposed area of timber, the exposed areas shall be

wrought after application of adhesive such that all adhesive which has been "squeezed out" of the joint is removed to the satisfaction of the Architect.

Intumescent Paste

Intumescent paste shall be Dufaylite 'Interdens' paste or equal and approved applied in accordance with manufacturer's recommendations / instructions.

Intumescent Strips

Intumescent strips and smoke strips shall be Dufaylite or otherwise described fixed in accordance with manufacturer's recommendations / instructions.

2.4 FIRE RETARDANT TREATMENT

Surface applied intumescent paints are not acceptable.

DRICON treated timber does not require additional preservative treatment as described elsewhere since it contains an inherent natural biological durability preservative within its fire-retardant treatment system. In a similar manner to the preservative treatment system, the DRICON fire retardant treatment system requires a precise and exact method of preparation, execution, quality control and site handling. DRICON is manufactured by Arch Timber Protection, United Kingdom phone 0044-0-1977 714000 Contact: Jacqui Clay www.archtp.com. Any proposed alternatives must have a matching British Board of Agreement approval or equivalent. The fire retardant must be INT2 to comply with BE EN 15912.

Preparation for Treatment

1. Timber and plywood should preferably be new, clean and unpainted. All inner and outer bark must be removed from solid timber prior to treatment.
2. The moisture content must not exceed 22%. Timbers to be machined to close tolerances should be dried down to their estimated service equilibrium moisture content prior to machining and treatment. See moisture content requirement of this specification.
3. As far as possible all ripping, profiling and extensive machining should be completed before treatment. Slight dimensional changes can occur during treatment and the Company should be consulted.
4. To obtain a rapid treatment service it is advisable to contact the Castleford office to establish the best method of parcelling timber to suit the plant dimensions and handling equipment.

Gluing

Glued assemblies can safely be treated with DRICON provided suitable waterproof glues have been used.

It is however recommended that advice be sought from the Company before sending material for treatment.

When DRICON treated material is to be glued, the Company's Technical Department should be consulted for suitable recommendations. Phenol formaldehyde, melamine formaldehyde or resorcinol types are recommended depending on the end use of the product. The method of gluing should be in accordance with the glue manufacturer's

recommendations. Please consult Arch Timber Protection for further advice.

Quality Control

Full details of every phase of DRICON treatment are to be recorded for each change treated. This ensures that the treatment conforms to specification and that the correct treatment has been followed. The specifier may, on demand, obtain a copy of this Charge Sheet record or he may ask for a **Certificate of Treatment**. If he so wishes he may witness the treatment by prior arrangement with the plant concerned.

Furthermore, every aspect of DRICON processing including raw materials, chemical manufacture, management systems, treatment, drying, performance and properties has been the basis of a British Board of Agreement assessment and the issuance of certificate number 87/1841. Any other fire-retardant treatment must possess an equivalent standard.

Sawn Ends

The Contractor is to be instructed as follows to ensure adequate preservation:

Surfaces exposed by cross-cutting, drilling, notching etc. must be liberally brushed with DRICON concentrate. Rip sawn pieces must be returned for re-impregnation.

Note: It is important that solid timber is cut to size as far as practical prior to treatment and that rip-sawing on site is avoided. Cross-cutting plywood in any direction is permissible, but edges should be brushed with DRICON concentrate.

Handling and Use on Site

Non-toxic chemicals are used in the DRICON treatment, therefore DRICON wood products should be handled with the same precautions as untreated wood. The user should be aware of proper handling and personal hygiene practices, which are much the same as for untreated wood, specifically:

1. DRICON fire-retardant treated wood should be installed only where it will NOT be exposed to precipitation or direct wetting.
2. When storing DRICON wood, the material should be kept off the ground and covered to shield it from precipitation.
3. When painting or staining, the paint or stain manufacturer's recommendations should be followed. As with untreated wood, the surface should be clean and dry. Light sanding may be necessary.
4. The chemicals in DRICON wood will not harm those involved in the use and handling of the product. However, common sense precautions should be taken. This applies to all construction -whether with DRICON wood, untreated wood or other building materials. Dust masks and eye protection devices are recommended to avoid possible irritation from dust or chips. Gloves will help avoid splinters. Hands should be washed after doing construction work.
5. Allow for sanding to remove 'white bloom', raised grain, etc., prior to site erection to ensure suitable surface finish.

Decorating

The appearance of timber is not significantly affected by DRICON treatment, and it may be used unpainted. It may, however, be painted by conventional methods following the manufacturer's recommended Codes of Practice. DRICON treated materials have been successfully coated with a wide range of products; clear, pigmented and opaque.

However, it should be established that any finishes applied do not affect the spread of flame control achieved by the DRICON treatment, for instance highly flammable finishes such as nitro-cellulose based lacquers must not be used.

2.5 WORKMANSHIP

Storage

Timber shall be delivered as early as possible to the site and shall be stored under cover, clear of the ground and protected from dampness. Timber that is not stored in this manner will be rejected.

Generally

All woodwork is to be carried out in the best manner. Plates, ceiling joints, etc., shall be in one length where possible. All joints shall be made directly over supports and these shall be scarfed and spiked where required.

All joinery is to be finished with a clear wrought face. Surfaces intended for painting shall be such that is properly finished with matt paint, imperfections in manufacture will not be apparent. Surfaces for gloss or matt transparent finish shall be such that when so finished no imperfections shall be apparent.

Joinery intended to be painted is to be fixed by nails. Nail heads are to be punched below the surface and are to be filled with lead less paste filler. Joinery intended for transparent finishes is to be secretly fixed. Heads of screws are to be left in and pelleted in the same wood and with matching colour and grain.

Unless timber is impregnated with preservative, the backs of frames etc., to be fixed to walls and all other bedding surfaces are to be painted with two coats preservative before priming.

All work to be painted is to be treated with knotting as necessary and given one brush coat of priming to all faces. Surfaces to be joined are not to be prime. The number of coats and methods of application of all finishes are to be as specified.

Make Good Defective Work

Should any shrinkage and warping occur, or any other defects appear in the joinery work before the end of the Defects Liability Period, such defective work is to be taken down and renewed to the Architect's satisfaction and any work disturbed in consequence must be made good at the Contractors expense.

Plugging

The term plugging shall mean the provision and fixing of hardwood or approved proprietary plugs, at the Contractor's option, fixing by means of a cartridge operated rivet gun or

approved expansion plugs and prices are to include for all necessary wedging and drilling of wood, concrete or brickwork.

Where plugging and screwing of door or window frames is measured this shall be deemed to include plugs and screws of adequate size and strength to suit the frame size including proprietary frame fixings as manufactured by 'Upat' 'Rawplug' etc.

Fire Doors and Screens

Fire doors and screens shall comply with B.S. 476, Parts 20 –23 and proposed EN.

Manufacture of fire doors and screens shall be carried out by an approved joinery manufacturer who can produce a relevant Certificate of Fire Resistance acceptable to the Fire Officer.

Lipping: to edges to be minimum 10mm thickness in matching timber species supplied to all edges before veneering. All lippings to be square.

Veneers: shall be from logs previously selected and in White Oak quarter sawn veneer laid in a **mismatching** manner horizontally or as described.

Finish: of veneer panel to be fully finished (including acoustic holes of 6mm at 50mm centres to some panels) before delivery with specially formulated pre-catalysed lacquer applied in two/three coats giving a semi-matt finish.

Surface Flame Spread of panels to circulation, foyer and concourse areas to have a Class O/ EN 13501-1:2002 rating as defined by the Building Regulations.

Fixing method to be as per detail drawings and / or manufacturer's instructions.

Hygrothermal: Panels must show excellent dimensional stability and appearance retention under varying temperature and humidity regimes.

Workmanship and Manufacturers: The joinery shall be constructed as indicated on the Architect's details and the manufacturer is to be responsible for the sound construction of the components using recognised forms of joints in appropriate positions.

Workmanship in general shall be in accordance with B.S. 1186, Part 2, and in particular with Clauses 2.1 ; 2.2.1; 2.3.4; 2.4.2; 2.5 and 5.

Joiners full scale setting out drawings and construction details must be seen and approved by the Architect before work begins. Facilities are to be given for the Architect to inspect all work in progress in shops and on the site.

Handling, Storage and Protection

The completed doors, windows and panels shall have their moisture content as described under moisture content and must at all times be protected from the weather and stored under cover and clear of the ground. Transportation shall be in covered trucks. Every possible care and precaution must be taken to avoid damage to framing and all surfaces and arises during handling and storage.

Following installation, the doors, windows and panels shall be protected against moisture penetration and coated with preservative or paint as soon as possible after installation. Protection against damage must be maintained until handover.

2.6 IRONMONGERY

Samples of each door handle type to be approved by Architect prior to placing of ironmongery order. Main contractor to co-ordinate with ironmongery supplier/ joiner to produce an integrated door schedule noting elevation of each door and location. Drawings to indicate all door requirements including hinges/ locks/ electronic equipment/ handles etc. Drawings to be reviewed by Architect prior to ordering of ironmongery.

All door locks and door furniture shall be anodised aluminium in finish with 15 microns anodising with non-fade factor 6-7, including forends, striking plates, cylinders to locks, screws and fixings unless otherwise specified. Cylinder System to be unique patented restricted profile 6 pin AP2000 grade 5 high security cylinders with anti-drill and anti-pick hardened steel pins with multi-group and sub suite capability to allow expansion on original system.

All door locks to be full case heavy sprung with 72mm distance and minimum 55mm back set with transmission bar facility where appropriate.

All lever handles to be successfully tested to exceed EN1906 Class 4 maximum standard with tolerance bearing compensator spindle with anchor clamp with pre stress springing designed to allow grub screw to lock into position based on exact door thickness to prevent slippage and loosening of fixings from door and drooping of lever handles, Torsional Rigidity of spindle = Class 4 @ 60Nm, Tensile Stress Exerted on assembled fittings > Class 4 @ 1300N, Degree of Slack when assembled > Class 4 @ 0.5mm (Class 4= 6mm).

All Closers successfully tested to EN1154, CE Marked AND Independently Fire Tested Overhead Door closers with backcheck, variable power size 2-6 to suit max door leaf width of 1400mm with sliding guide rail arm and backcheck.

Screws/Fixings

All screws and fixings for door locks and door furniture shall be the appropriate type and size suitable for fixing the ironmongery to the different backgrounds required for the works. Screws/fixings finishes shall match the ironmongery finish for which they are required.

2.7 DEFINITIONS

Cross-Section Shapes

Where, in respect of such work, the number of different cross-section shapes is not given the work is deemed to be of identical cross-section shapes.

Strips, Rails, Packings and the like

Strips, rails, packings and the like in materials other than wood are each given separately in metres. Ends, angles, intersections and the like are deemed to be included.

Finished Sizes

The term "(f)" qualifying an expression of size means that the work shall be finished to the size given. The term "(f sizes)" means that all dimensions contained in an expression so qualified are finished dimensions. Note: All joinery dimensions on Architects drawings are finished dimensions.

Exact Sizes

The term "(exact)" qualifying an expression of size means that no deviation from the size given is permitted. The term "(exact sizes)" means that all dimensions contained in an expression so qualified are exact.

Selected

The term "selected" is deemed to include keeping the material so described clean for transparent or any similar finish.

Hardwood or the like

The term "hardwood or the like" which is used as a statement of background to which ironmongery is to be fixed, is deemed to include plywood and other manufactured materials except where these materials are faced with metal, laminated plastics or the like.

Fire Doors

Notwithstanding the information provided on the Architect's drawings, where doors or screens are described as fire resistant, the Contractor shall provide everything necessary (including intumescent fire and smoke seals, bedding ironmongery in intumescent paste - which are not measured) in order to achieve the fire rating specified in accordance with B.S. 476. part 8 (Part 22)/ EN 13501-1:2002 and shall be required to produce an approved Certificate of fire resistance in respect of the doors or screens.

The Contractor will be deemed to have taken this into account in pricing his tender.
See Architect's door schedule & drawings.

3.0 METAL WORK

3.1 MATERIALS

Materials

Materials shall comply with the following specifications:

Steel joints, angles, hollow sections, BS EN 10025

etc.

Cold rolled steel sections

BS 2994

Steel Tubes

BS EN 10025

Steel Hollow Sections

BS EN 10025

Bolts

BS 1494 & 916

Welding

BS EN ISO 14343

Fabrication

BS 729

Galvanising

BS 729

Zinc Spray Coating

BS 2569

Wrought Aluminium Tube

BS EN 573 & 754

Wrought Aluminium Sections

BS EN 573, 755 & 12020

Stainless Steel Plate/Stainless Steel

BS EN 10088-2

Tubes/Stainless Steel Angles

BS EN 10088-2

Anodic Coatings to Aluminium

BS 3987

Extruded Aluminium Alloy

BS 4873

Copper Sheet

BS EN 1172

Mild Steel

Shop drawings shall be prepared to site dimensions for all items to be fabricated which shall be reviewed by the Architect prior to commencement. Samples of materials and fabrication standards shall be supplied if requested by the Architect.

Note: Nylon washers and sleeves to be fitted between all dissimilar metals.

Stainless Steel

All joints, internal, external and fillet welds shall be ground off to a continuous surface free of pitting. Site welds are to be avoided and the method of site assembly of large components should be such as to avoid this. All stainless steel to be 316 type unless otherwise agreed with the Architect to BS EN10088-2 with passivator finish, 0.5 microns smoothness, cleaned with deionised water.

All stainless steel is to have a brushed finish unless otherwise described. Particular care shall be taken to ensure that brushing follows the long axis of the component. In the case of circular bars or tubes, where a circular stop end occurs, circular fixing plates, the brushing shall be carried through continuously and terminate radially. All exposed fixing screws, bolts, studs, etc. Shall be of matching quality stainless steel and shall be surface fixed, countersunk or concealed as directed. Following installations, all polished stainless steel should be thoroughly inspected for scratches or other defects which should be made good before final cleaning and polishing.

Shop drawings shall be prepared to site dimensions for all items to be fabricated which shall be reviewed by the Architect prior to commencement.

Samples of materials and fabrication standards shall be supplied if requested by the Architect.

All stainless steel to be cleaned down with specialist cleaner.

3.2 WORKSMANSHIP

Surface Finishes

All metalwork shall be finished smooth and free from projections and tool marks, to the Architect's satisfaction.

Welding

All welding shall be executed by expert qualified welders and the finished joints shall be left smooth, neat and free from flux or other contaminants. Care shall be taken to avoid distortion due to welding stresses.

FLAME CUTTING AND WELDING

Flame cutting shall be by machine. Flame-cut edges which will be subjected to substantial stresses or which are to have weld metal deposited on them shall be reasonably free from gouges. Occasional notches or gouges not more than 3 mm deep may be permitted. Gouge marks greater than 3 mm which remain from cutting shall be removed by grinding. All re-entrant corners shall be shaped to a radius of at least 15 mm. Flame cutting equipment shall not be used on site without approval, and holes for services through beams shall not be flame cut.

The welding of steel, including tack welds to be incorporated in the finished work, shall comply with BS EN ISO 1434. All welders shall hold an approved proficiency certificate, or approved qualification, appropriate to the class of work on which they are to be engaged. A copy of proficiency certificates shall be submitted on request.

All welds and adjacent surfaces shall be examined visually for the absence of the following defects:

1. Cracks in the weld or adjacent surfaces
2. Slag inclusions
3. Porosity
4. Lack of fusion at the edge of weld
5. Undercut
6. Concave weld profile
7. Excessively convex weld bead
8. Poor transition between weld and members welded
9. Lack of alignment between components of joints
10. Lack of penetration at the root of the weld
11. Excessive penetration bead

Note: The flame cutting and welding shall apply to the structural steelworks where appropriate.

4.0 DEMOLITIONS, ALTERATIONS AND EXISTING STRUCTURES

Refer to Asbestos Report before commencing works.

Removal of asbestos to be completed carried out by specialist contractors, refer to asbestos report.

4.1 PROTECTION OF EXISTING WORK RETAINED

The **Contractor** shall protect all existing & adjoining work from damage by his workmen or the weather and shall include in his prices for providing and removing on completion all necessary temporary coverings and screens other than those specifically required by the **Architect**. The **Contractor** shall be responsible for the care and protection of all materials described as for re-use, taken to store, etc, from the time of his entering possession of the site.

4.2 DEMOLITION

Demolition generally to be carried out in accordance with B.S. 6187 (1982) and as outlined in this Preamble and in the sequence and times given.

4.2.1 SUPERVISION

Site staff responsible for supervision and control of demolition are to be experienced in this type of work.

4.2.2 PLANT AND EQUIPMENT

All demolition plant and equipment are to be:

1. Suitable in type and standard for the location and nature of work involved.
2. In the charge of competent operatives.
3. Maintained in good condition.

4.2.3 MATERIALS

Remove surplus materials from site during demolition and alteration work. All items described under demolitions and alterations shall be removed from site unless otherwise stated. Costs of removing these items from site shall be deemed to be included in the Bill rates. Materials and items to be re-used or retained shall be cleaned and carefully set aside and stored on site until re-fixed. The **Architect** reserves the right to retain any or all materials or items not at present described as for re-use or re-fixing in the Works.

4.2.4 SAFETY AND AVOIDANCE OF NUISANCE

All work shall be performed in such a manner as to ensure the safety of the works and the public and so as to cause as little inconvenience as possible to the public and adjoining owners and the prices shall include for all necessary precautions to that end.

4.2.5 BURNINGS

Burnings onsite of materials arising from demolition will not be permitted.

4.2.6 EXPLOSIVES

Explosives shall not be used in the demolition works.

4.2.7 DISCONNECTION OF SERVICES

Before starting demolition work, arrange with the appropriate authority for the disconnection of any services and removal of fittings and equipment, water, ESB, gas, telephones, etc, and liaise on site with Architect regarding these existing services.

4.2.8 OVERLOADING

Prevent debris from overloading any part of the structure during demolition.

5.0 PLUMBING INSTALLATION

Certified test by accredited independent tester to BS EN12056 annex NG3 and BS EN 752 Building Drainage. 38mm water gauge air test to be done at every 2 storeys of installation. Upon completion of full installation, prior to plasterboard and finishing, full flood test to appropriate BS to be undertaken by contractor. Blucher socket plug 844.000.110 to be dimpled and clamped at lowest level in order to run flood test. Rainwater stack to be filled at roof level. Stack to be checked for leaks. Contractor to give notice to design team to witness each stage of testing.

Stainless steel pipe brackets at every 3m centres and at each side of bends.

Pipework to be installed by contractor approved by manufacturer.

5.1 SANITARY FITTINGS

5.1.1 Wall linings

Wall linings to toilet areas as to be protected during construction and professionally cleaned before handover.

5.1.2 Fittings

All fittings to as per Architect's schedule drawings. Fittings to be supplied by "Armitage Shanks" or equal and approved or otherwise stated in schedule. Fittings to be Vitreous China conforming to BS3402:1969 with a mean value of water absorption greater than 0.5% of the dry weight. Vitreous china to have 99.5 vitreosity.

Supplier to have manufacturing quality BS EN ISO 9002.

Wash hand basins and pedestals (where applicable) to conform with BS 1188:1994.

Vitreous china sanitary appliances to conform with BS 3402-1969.

Sanitary tapware to BS EN200:1992.

5.1.3 Fixing

Include for the necessary temporary fixing, disconnecting, setting aside and re-fixing of sanitary fittings to suit other trades.

The Contractor shall include for fixing all sanitary fittings in the positions shown on the drawings and for all screws, timber plates and grounds, and for leaving or cutting holes and making good in or through walls, partitions, floors, etc., for cantilever

brackets and passage of pipes and for holderbats or pipe clips required.

5.1.4 Testing

On completion test all sanitary fittings, new & existing, and leave in a clean and serviceable condition.

6.0 WALL FINISHES & FLOOR FINISHES

6.1 Internal Walls

6.1.1 Gypsum Plaster

Gypsum plaster shall be 'Gyplite' supplied by Gypsum Industries Ltd., Clonskeagh Road, Dublin 14, and shall be to B.S. 1191, and used in strict accordance with manufacturer's instructions. On no account shall sand or any other aggregate be added to the plaster.

6.1.2 Plasterboard

Plasterboards shall be boards of appropriate size to suit spacing of supports as described on drawings. The boards shall be of European manufacture and shall conform to IS 41 : 1975 covering plain foil-backed or vapour-check boards or as may be specified. Boards shall have tapered edges.

Dry-lining boards shall not be damaged and shall be stacked and handled so as to be in good condition without warp or surface defects at fixing.

Fire resistant dry-lining board shall be Gyproc Duraline tapered edge board. Gyproc Duraline board has heavy duty paper facings and high density core, 13.5 thick unless otherwise stated. 13.5mm thick Duraline board's weight = 11.9kg/m^2 and thermal resistance of $0.05\text{m}^2\text{K/W}$. Standards and certification to EN 520 Type D, F, I, R and Reaction to fire A2-S1, d0

Where specified Gyproc Soundbloc board to be 12.5mm thick unless otherwise stated on drawings. 12.5mm thick Soundbloc weighs 10.9kg/m^2 with thermal resistance of $0.06\text{m}^2\text{K/W}$. Standards and certification to EN 520 Type D and Reaction to fire A2-S1, d0.

Gyproc Moisture Resistant board to be 12.5mm thick unless otherwise stated on drawings. 12.5mm thick Soundbloc weighs 11.1kg/m^2 with thermal resistance of $0.05\text{m}^2\text{K/W}$. Standards and certification to EN 520 Type H1 and Reaction to fire A2-S1, d0

Gypsum 'C' studs, Acoustic Braces etc all to meet specifications as set out on gypsum architect's manuals or equivalent.

Note: All metal stud partitions to have 'soundbloc' boards, two layers each side plus acoustic roll to achieve a RW 52 acoustic performance.

6.1.3 AltroFix Whiterock

To be stored and fitted as per manufacturers guidelines. All substrate surfaces shall be smooth, sound, dry and free of contamination. The working environment must also be clean and dust free. All loose flaking paint and dust to be removed. All surfaces to be free from grease. Ceramic tiles must be thoroughly cleaned, degreased, rinsed and left to dry. Loose tiles to be removed and depressions in the substrate made good using sand and cement with Unibond mix, hardwall gypsum render coat or a comparable thickness plywood infill. All electrical switches, power points etc. should be in a first fix state where possible. Plumbing and pipework should be removed to be at first fix state and "tails" left protruding from the substrate. Whiterock panels can then be drilled and slid over the pipe "tails". All holes should be drilled 3mm oversize to allow for expansion. Hot pipes and steam pipes should be insulated and a 3-5mm expansion gap should be created when installing panels around these pipes. All pipes, screw fixings, bolts etc: fixed through the Whiterock panel should have minimum 3mm expansion gaps and be sealed using silicone sealant. Panels are to be fixed to walls using 'AltroFix W139' two-part urethane adhesive to manufacturer's specification. Corner panels are to be thermoformed on site. Proprietary trim pieces to be used on all joints between panels and different materials.

6.1.4 Storage of Materials

All cement and plaster shall be stored in a weatherproof, dry, well ventilated shed, used exclusively for this purpose, with a wooden floor not less than 150 mm clear above the earth.

Different types of plaster shall be kept separate and used in order of delivery. Stocks shall be completely turned over by use in periods under three months. No gypsum plaster shall be used after three months from the date of manufacture unless tested and proved to be in good condition to the Architect's satisfaction.

All sands shall be stored separately, according to type, on clean, hard, dry standings and shall be protected from contamination.

6.1.5 Workmanship

General

Workmanship to comply with BS Code of Practice 5492 (Internal Plastering) and 5262 (External Plastering). If, in the Contractor's opinion, conditions on site indicate that the specification needs adjustment to comply with the above, he shall consult with the Architect before proceeding.

Backgrounds

All backgrounds shall be carefully examined prior to plastering and cognisance taken of the relevant points made in Section 22 and 23 and Table 2 of BS 5492 : 1977 and Section 18 and 19 of BS 5262.

Preparation of Backgrounds

Work generally to comply with recommendations of Section 24 and Table 2 of BS 5492 and Section 20 of BS 5262.

Surfaces to receive plastering shall be dry brushed to remove all loose particles, dust laitance, efflorescence, etc. and any projecting fins on concrete surfaces shall be hacked off. Where reinforced concrete ties or pads are incorporated into the wall all traces of mould oil shall be removed from the concrete surfaces by scrubbing with water detergent and rinsing with fresh water.

Concrete ties and pads to be bridged completely by fixing expanded metal over building paper into the brickwork abutting the concrete.

After stripping off existing plaster the contractor shall examine the exposed brickwork to ascertain the type of background and to decide on a suitable first coat of plaster which will provide an adequate key for all subsequent coats.

Surfaces shall be wetted and re-wetted as required to equalise suction before the first coat of plaster is applied. In particular, dense hard concrete surfaces shall be wetted and re-wetted as required before bonding plaster is applied.

Prices for all plastering on concrete are to include for hacking to form key.

Bonding agents must be used in accordance with manufacturer's instructions.

Mixing of Materials

All materials shall be thoroughly mixed in the proportions described. No mixes of plasters other than those described shall be used.

Bunkers and gauge boxes shall be thoroughly cleaned after each mix and due care and attention shall be given at all times to their cleanliness.

The materials used for plastering shall be cement: lime: sand in the proportions specified by volume in two coats; scud coat, floating coat and a finished coat of Gyplite pre-mixed plaster 2 mm thick.

All undercoats should be scratched with a proper scratching instrument and all coats allowed to dry out thoroughly before applying the following coat. This is particularly relevant for the gypsum finishing coat and the Contractor should allow for this drying time in his programme.

Day Joints

Day joints will not be permitted in plastering. If necessary, overtime will be worked at the Contractors own expense to avoid the introduction of day joints.

Plaster Surfaces

All finished plastering shall exhibit a truly plane surface of uniform colour, hardness and texture, free from blowholes and other imperfections and projections. All shall be fully bonded to the backing surfaces and free from hollow spots and 'bolstering'.

Trueness of plastering shall be in accordance with clause 37 of BS 5492 i.e. the plaster should not show any deviation of more than 3 mm from an 1800 mm straight edge placed against it. Any work exceeding this tolerance will be redone at the

Contractors expense.

Adverse Conditions

Plastering shall not be executed when the air temperature is below 3°C unless adequate protection is given to prevent the work from falling below that temperature until hydration is complete. Completed plasterwork shall be protected from frost and extremes of humidity.

Plastering shall be protected from the frost, extreme drying conditions and continued dampness.

6.1.6 Plasterboard Cladding

Apply continuous beads of Gyproc Sealant to the junction between the partitions and the structure and to all perimeter junctions on both sides, before boarding commences.

Fix Gyproc tapered edge Soundbloc, vertically to studs with Gyproc screws to all framing members at maximum 300mm(200mm on external angles) unless otherwise stated on drawings except under layer boards which do not require centre line fixings. All joints to be lightly butted and staggered on opposite sides of the partition and between multi-layer board cladding. Use maximum practical length plasterboards to minimize horizontal joints and locate all joints in face layer boards on metal sections. All joints to be taped and filled using Gyproc Joint tape and joint filler.

Acoustic infill to all Stud Partitions

Install Rockwood RW3 semi-rigid slabs 50mm thick instu cavity as boarding proceeds to achieve a sound insulation 100-3150Hz,RW'dB of 50 for partition duty to BS5234 Parts 1 and 2, 1992.

All new Walls to be taken to structural ceiling and fire stopped to ensure fire resisting compartment.

Accessories

All external angles of vertical and horizontal wall opes, beams, piers and other areas shall have patent metal (expanded metal) angles fixed thereto, perfectly true and even, and plumb, before plastering is commenced.

Expanded Metal Lathing

Metal lathing shall be non-corrosive and fixed to supports at 100 mm centres with 32 mm non-corrosive staples or 38 mm galvanised nails with joints lapped 50 mm and securely tied together with 1.2 mm galvanised tying wire. The slope of the strands shall all be in one direction. They should be not less than 1.6 kg/sq m for sanded plasters and 1.2 kg/sq m for lightweight plasters and should comply with the requirements of BS 1369.

Stainless steel expamet angle and stop beads as described.

6.2 BEDS AND BACKINGS

6.2.1 Materials

Materials, Storage, Testing, Frosty Weather and Mixing of Materials

Cement, sand, water, etc., storage, protection in frosty weather and mixing of materials shall be as described for 'Plasterworks'.

Cement and Sand - Proportions

Cement and sand shall be in the proportions of 1 :3 and 2:5 volume. Concrete mix shall be 1 :1 Y2:3 with 10 mm maximum aggregate.

6.2.2 Workmanship

General

Workmanship to comply with BS Code of Practice 5262.

Cement and Sand – Proportions

Cement and sand shall be in the proportions of 1 :3 by weight (with the addition of lime, in proportion of 1/4 part of cement by volume) for screeds up to 50 mm in thickness. Screeds of 75 mm and over shall consist of concrete (1 :1 Y2:3) 8 mm maximum aggregate.

Laying

Beds and backings shall be laid in bays of suitable lengths and widths and to falls where so shown with proper screeds and shall be kept wet and protected until set hard. Care shall be taken to ensure that screeds are level at abutments with walls.

Floor Screeds

The screed should be composed 1 part Portland cement to 3 parts concreting sand by weight. The sand should be clean and fairly coarse to comply with requirements of BS 882. The water content of the mixture should be kept as low as possible consistent with obtaining full compaction. Generally free water cement ratio of 45 should not be exceeded.

Wall Screeds

Walls to tiled area shall be backed in cement and sand (1 :3) finishing with a wood float in preparation for wall tiling.

Surface of beds and backings

Screeded beds for in-situ floor finishings or floor finishings bedded in mortar shall be left rough from the screeding board.

Floated beds for inflexible floor finishings bedded in mastic shall be left with a plain untextured surface.

Trowelled beds for flexible finishings shall be finished smooth and free from score marks, grooves or depressions.

Screeded backings for in-situ wall finishings or wall finishings bedded in mortar shall be scratched for key.

Floated backings for inflexible wall finishings fixed with adhesive shall be left with a plain surface. Trowelled backings for flexible wall finishings shall be fixed smooth and free from score marks or depressions.

Beds and backings for finishings by a specialist shall be to the requirements of the specialist and the approval of the Architect.

6.3 FLOORING

6.3.1 Tiling

Refer to provided drawings/room schedule.

Tiles to:

Bathroom Floor: to Client/Architect's Specification

Shower walls: to Client/Architect's Specification

Shower Floors: to Client/Architect's Specification

Pendulum Test Value to be no less than 40. Smooth surface V with R10 anti slip rating. ISO Standard EN14411Bia compliant.

Wall tiles:

Walls: to Client/Architect's Specification

Wall tiles are to exceed the requirements of Standard EN14411 BIII and floor tiles the requirements of Standard EN14411 Bla.

Where wall tiles meet floor a skirting tile is to be used around the full perimeter of the room. Skirting to be Agrob Buchtal Plural Two Cove Skirting Colour white 6007630304H or similar.

All wall and floor tiles to line up and be level. Tiling sub-contractor to prepare 1m² sample of wall to floor tiling for approval of architect prior to work commencing.

Joint Alignment

Where floor tiles and skirting tiles are described, the Contractor shall be deemed to have included in his rates against these items for all additional items necessary to align skirting or wall tile vertical joints with the joints of the floor tiling as directed by the Architect.

Contractor shall be deemed to have included in his rates against these items for setting out, additional cutting, etc., so as to centrally locate all electrical switches, sockets, outlets at intersections between horizontal and vertical joints of full size tiles as directed by the Architect.

Materials

Tiles to comply with the requirements of B.S. 1286, and should be selected to suit the anticipated service conditions.

Portland cement for the bedding mortar and grouting to comply with B.S. 12.

Sand for the bedding mortar to comply with the requirements of C.P. 202. It should be clean, sharp, not too fine, and free from clay, organic and soluble matter; sea or channel sand must not be used.

Similar characteristics are required of the sand specified for grouting, though for this purpose it should be of a finer grade.

Material used for the separating layer should comply with one of the following:-

Bituminous felt -B.S. 747

Building paper -B.S. 1521

Polythene film -1000 gauge

Material for movement joints should be used strictly in accordance with the manufacturer's recommendations.

Design Considerations

For design considerations see Section 3 of C.P. 202. Where skirtings are included in the installation they should be fixed in position after the base has been laid but before tile laying is commenced.

The location of movement joint (see later) to be agreed with Architect.

All exposed 90° edges to tiling to have brushed aluminium edge bead- DSA 100 mm Brushed aluminium square edge stop bead from 'Doral' or equal and approved.

Part M Compliance for all Floor Finishes

The contractor is to ensure full compliance with TGD Part M 2010. This means compliance for access, thresholds, lifts, steps, tactile surfaces, etc.

Generally

In addition to the recommendations of the British Ceramic Tile Council, reference should also be made to the following publication:

British Standard Code of Practice C.P. 212; Part 1 : 1963 'Internal Ceramic Wall Tiling in Normal Conditions'.

Materials

Wall tiles to comply with C.P. 212 : Part 1 : Section 2, paragraph 201.

Adhesives to comply with C.P.. 212: Part 1 : Appendices A or B. Specialist adhesive and grouting agents to be used. In kitchen / food areas grouting must conform to all relevant H. S. A. standards and requirements. Architects approval is required.

Cement for floated coat to comply with C.P. 212 : Part 1 : paragraph 202. Sand for floated coat to comply with C.P. 212 : Part 1 : paragraph 204(a).

Background

The walls should be completed at least 4 weeks before any floated coat is applied, and should receive preparation for the rendering in accordance with C.P. 212 : Part 1 : paragraph 302. A 3 or 4:1 sand/cement mix should be specified, for the rendering and this should be applied in accordance with the procedures described in C.P. 212 : Part 1 : paragraph 303. The surface of the rendering should be left with a wood float finish. This rendering should be completed at least 14 days before tiling begins and, in addition, the surface should be dry to receive the tiles. If it is preferred to fix tiles direct to a dimensionally-stable structural wall, i.e. without prior rendering, this will necessitate the use of thick-bed adhesive. It is essential that the surface to be tiled is free from dust, oil or other forms of contamination.

Fixing

Specialist adhesive and grouting agents in accordance with manufacturer's instructions and H. S. A Standards.

It is sound practice to press the first tile firmly into position and then remove it to check that the correct contact is being made with the adhesive; occasional check should also be made throughout the tiling. The whole of the back of the tile should be in good contact with the adhesive.

If spacer-lug tiles are being used, the lugs will automatically give the correct spacing between tiles. If non-lug tiles are being used, joints of at least 1/16" (1.6 mm) should be left around every tile. Tiles can be adjusted slightly up to 5 minutes after fixing to arrange the joints. Under no circumstances should tiles be fixed with tight joints.

Any surplus adhesive remaining on the face of the tiles and between the tile joints, after fixing, should be removed before it sets. Several days should be allowed between completion of the tiling and grouting.

During this time the tiling must be protected from water penetration etc.

If tiling becomes detached from its backing after the Defects Liability Period it will be deemed to be a latent defect requiring full remedial action. The contractor is urged to ensure that only in-date adhesives and grouts are used.

Grout/Adhesives

Grout Floor Finishes: P.C.I. DuraFug to all wet areas-floors

Colour light Grey

Grout Finish Walls (General): P.C.I. Aquafug to all walls areas (except showers see below)
Colour White (Ral 9016)

Adhesive; P.C.I Nanolight to all wall and floor tiles

6.3.2 Marmoleum Flooring

Marmoleum flooring to be approved by Architect to be supplied and fitted in strict accordance with manufacturers written instructions to meet the requirements of EN548 and EN685, colour to be selected by Architect.

No 'telegraphing; etc, will be permitted. Test results will be used for comparative purposes.

Contractor to allow time in building programme to ensure that all screeds and concrete floors have dried out to a moisture content that is required by manufacturer. Prior to laying contractor to provide MC readings of all screeds/ concrete for approval of architect. Contractor to allow for the laying of a liquid DPM to ensure that there are no damp/ moisture issues. Linoleum flooring to be laid on Tackifier adhesive as previously specified.

Total thickness	EN 428	5MM
Commercial very heavy	EN 685	Class 34
Industrial Heavy	EN 685	Class 43
Thickness wear layer	EN429	0.7mm
Tile size	EN427	500mm X 500mm
Weight	EN430	8kg/m ²
Packaging per carton		2.5m ² =10pcs
Wear resistance	EN660-1	Group T
Slip resistance	DIN51130	R9
Acoustical impact noise reduction	EN ISO717-2	12dB
Castor chair continuous use	EN425	Good
Indentation residual	EN433	<0.1mm
Light fastness	ISO105-B02	≥7
Resistance to chemicals	EN423	Good
Dimensional Stability	EN434	<0.10%

Flex SL meets the requirements of EN 14041:

Reaction to fire	EN13501-1	Bfl-s1
Slip resistance	EN13893	DS: ≥0.30
Body voltage	EN1815	<2Kv
Thermal conductivity	EN12524	0.25w/M2k

Supplied by: Forbo Ireland Ltd or equivalent approved.

Relevant Publications

In addition to the recommendations of the British Ceramic Tile Council set out below, reference should also be made to the following publications:

British Standard Code of Practice C.P. 202: 'Tile Flooring and Slab Flooring'.

British Standard B.S. 12: 'Portland Cement (Ordinary and Rapid-Hardening)'.

British Standard B.S. 747: 'Classification of Roofing Felts (Bitumen and Fluxed Pitch)'.

British Standard B.S. 1521: 'Waterproof Building Papers'.

EN 548 and EN 685, EN 1081 and DIN 51953.

7.0 PAINTING AND DECORATING

MATERIALS

Paints

Paint shall be the best quality grade manufactured by Dulux, or other equal and approved by the Architect:-

Colour Range

Painting and decorative schemes shall be carried out in tints and shades to be selected and approved by the Architect.

Delivery

All paints, varnishes, distempers and other surface coatings shall be delivered in sound and sealed containers, labelled clearly by the Manufacturer. The label or container shall indicate:-

- (a) The type of produce
- (b) The brand name, if any
- (c) The use for which it is intended
- (c) The manufacturer's batch number

The label shall be a printed label, typewritten labels will not be accepted.

The batch deliveries shall be dated and used strictly in order of delivery.

No paints other than water based paints, and bituminous paint shall be delivered in containers exceeding litres (1 gallon) capacity.

Storage

All materials shall be kept in a dry, clean store, protected from frost.

Samples

Samples shall be submitted to the Architect and sample work painted for his approval.

Remedying defects due to defective materials

All unsatisfactory materials shall be immediately removed from the site, and any work executed with such defective materials shall be made good by the Contractor at his own expense to the satisfaction of the Architect.

Knotting

Knotting shall comply with BS 1336.

Stopping

Stopping for: -

- (a) Plasterwork shall be plaster based filler.
- (b) Concrete, rendering or brickwork shall be of similar material to the background and shall be finished with a similar texture.
- (c) Internal woodwork, hardboard, fibreboard and plywood shall be putty complying with BS 544 and shall be tinted to match colour of the undercoat.
- (d) Clear finished woodwork No fillers or stopping allowed to wood finished with

transparent coating. Joinery sub-contractors and site operatives should be informed of this strict requirement. Wood with fillers will be rejected.

Note: Proprietary water-based fillers may only be used with the Architect's permission.

Linseed Oil

Refined linseed oil shall comply with BS 242

Raw linseed oil shall comply with BS 243

Boiled linseed oil shall comply with BS 259

White Spirit

White spirit shall comply with BS 245

Turpentine

Turpentine shall comply with BS 244 and 290, either Type 1 or Type 2, as recommended in the BS.

Size

Size shall comply with BS 3357.

Emulsion Paint

Emulsion paint shall comply with IS 129 and shall be of a brand approved by the Architect. Thinning, where required, shall be in accordance with the Manufacturer's instruction.

Note: Pure Acrylic Wall and Ceiling paint, 'Colourtrend' from General Paints to be used to plaster surfaces. Partial acrylic paints from other suppliers are not permitted. Alternative paints must be of similar percentage acrylic to be considered.

Black Bituminous Paint

Black bituminous paint shall comply with BS 3416 Type 1 or Type 11 as recommended in the BS.

Epoxy Resin Paints

(a) 'One-pack' epoxy resin paint shall be an approved product based on epoxy ester resin pigmented with titanium dioxide.

(b) 'Two-pack' epoxy resin paint shall consist of an approved product based on epoxy resin pigment with titanium dioxide and modified with polyamide accelerator.

Epoxy resin paints shall not be applied directly to surfaces containing gypsum or its derivatives.

Primers

Primers shall comply with IS 18, Band 110 and shall be as follows:-

For alkaline surfaces, a specially formulated product obtained from the maker of the subsequent coats.

For woodwork an approved aluminium based or other leadless primer.

For iron and steel, see surface preparation and priming of steelwork

In all cases primers shall be compatible with subsequent coats.

Undercoats and Finishing Coats

Unless otherwise specified, undercoats and finishing coats shall be alkyd-based leadless paints from an approved manufacturer.

Timber Preservative and Stain

Timber preservative and stain shall be approved organic solvent water repellent decorative wood preservative of selected colour.

Lacquer

Specially formulated pre-catalysed lacquer applied in two/three coats giving a semi-matt finish to IS 10' 103 and 104.

Chlorinated Rubber Paints

Chlorinated rubber paints shall be approved products pigmented with titanium dioxide, dispersed in a suitably plasticised chlorinated rubber medium. Special advise as to use and application shall be obtained from the manufacturer .

Intumescent Paint

Intumescent paint -shall be 'Nullifire' as supplied by Champion Fire Defence Ltd., and 'Albiguard' and 'Albiclear' as manufactured by Rentokil Ltd. 'Brosteel' intumescent paint on steel surfaces. "Envirograph" may be used in lieu of "Nullifire" with Architects agreement.

Note: 'Dricon' impregnated timber to Class 1 and Class O is required for internal timber ceilings and walls.

SURFACE PREPARATION AND PRIMING

All steel surfaces shall be prepared by blast cleaning, to give a preparation grade of surface quality of SA 2Y2 in accordance with 515 05:5900 or BS 7079 equivalent standard.

Within two hours of shot blasting, one coat of 2-pack Epoxy Zinc Rich Primer shall be applied to all surfaces by airless spray, to an average dry film thickness of 25 microns. After fabrication, carefully remove all weld spatter, rough edges, other damaged areas and damaged primer, and touch up with the same primer. Finally, one coat of 2-pack Epoxy High Build Zinc Phosphate Primer shall be applied to all surfaces by airless spray, to a dry film thickness of 25 microns. Painted steel shall be allowed to dry hard before despatch to site.

After erection, all damaged areas shall be repaired by careful wire brushing, cleaning, and spot priming with the Epoxy High Build Zinc Phosphate Primer .

Mating surfaces of HSFG bolted joints shall not be painted.

WORKMANSHIP

General

Workmanship to comply with BS Code of Practice 6150.

Application and Use of Materials

All materials shall be used strictly in accordance with the instructions issued by the Manufacturer concerned.

Approval

The preparation of surfaces and all painting and decoration shall be carried out to the approval of the Architect who shall select the various colours and decorative schemes.

Preparation of Surfaces

All preparation of surfaces and priming coats shall be deemed to be included in the description of painting items contained in this Bill of Quantities:

(a) **Blockwork**, plastered and concrete surfaces: All plaster and mortar splashes shall be removed, all loose material brushed off and holes and cracks stopped. All traces of mould oil shall be removed from concrete surfaces by scrubbing with water and detergent fully rinsed off with clean water. Efflorescence shall be removed as it accumulates and painting shall be deferred until the incidence and causes of efflorescence have been eliminated to the Architect's satisfaction.

(b) **Woodwork** and wood derivatives: All surfaces shall have resinous knots and resin pockets cleared of resin and coated with knotting. After priming, all imperfections shall be stopped and filled as necessary and the whole rubbed down with abrasive paper and brushed off to leave a perfectly smooth surface free of loose material and dust.

(c) **Woodwork** to receive clear lacquer: Surfaces shall be sanded down and cleaned with white spirit applied with clean rags and allowed to dry. After priming with timber preservative primer, the surfaces shall be lightly sanded again. No stopping or fillers permitted.

Double vacuum treated timber, as described, shall be treated only after all foreseen rebating, joining, notching, etc. has been carried out. Unforeseen cutting, drilling and notching must be liberally swabbed with "Vacsile" or other equal and approved end grain preservative. Rip-sawing, ploughing, planning and heavy sanding are not permitted unless the timber is returned for re-treatment.

(d) **Steelwork**: All internal steel work shall be delivered to site ready primed with rust resisting primer and touched up on site as necessary. On site steel to be scraped, chipped and wire brushed and degreased and primed with rust inhibiting primer. Paint two undercoats and one finish coat of gloss paint.

(e) **Plywood**: Surfaces of plywood to be painted shall be filled as required with a plaster based filler for internal work and a filler as previously described for external work and then rubbed down and all dust and loose materials brushed off.

Application of Coatings

All materials, unless specifically indicated otherwise (e.g. in the case of thixotropic paints)

shall be thoroughly stirred and blended before and during use and shall be suitably strained as required to eliminate foreign particles and partly-dried paint film formed in the container.

Normally all coatings shall be applied by brush and unless expressly specified, the permission of the Architect shall be obtained for the use of sprays and rollers.

All coatings shall be allowed to dry thoroughly before succeeding coats are applied. In the case of the polyurethane finishes drying time shall not exceed the 're-coating period' recommended by the Manufacturer (usually overnight drying).

All undercoats for alkyd based paints shall be rubbed down to a smooth surface with abrasive paper and brushed free of loose material before the succeeding coat is applied.

Each successive coat shall be sufficiently different in colour as to be readily distinguishable, and the final undercoat shall be of appropriate colour to suit the finishing coat.

After priming, all imperfections shall be stopped, rubbed down and brushed off.

Stirring of Materials

The contents of all cans and containers of all materials must be properly and thoroughly stirred before and during use and shall be suitably strained as and when necessary.

Manufacturer's Instructions

All materials shall be used strictly in accordance with the instructions issued by the Manufacturer's concerned.

Painting in Unsuitable Conditions

No coatings shall be applied to surfaces affected by wet, damp, foggy or frosty weather or other unsuitable conditions, or to any surface damp with moisture. If it is desired to proceed with painting when the temperature is below 4 Celsius, the permission of the Architect must be obtained.

Protection of Wet Surfaces

Adequate care must be taken to protect surfaces while still wet, by the use of screens and 'wet paint' signs where necessary.

Cleanliness

All brushes, tools and equipment shall be kept in a clean condition and surfaces shall be clean and free from dust during painting. Painting shall not be carried out in the vicinity of other operations which might cause dust. The Contractor shall provide a suitable moveable receptacle into which are to be placed all the liquids, slop washings, etc., which are on no account to be thrown down any of the gullies, manholes, sinks, lavatories, w.c.'s or any other sanitary fittings. All solid refuse or inflammable residues must be removed from the site in accordance with environmental waste and disposal regulations.

8 PAVING ROADS & FOOTPATHS

8.1 Brick Paving

Surface Course

The selected concrete block paving units for the surface course of the pavement

Laying Course

The layer of material on which the block paving units are bedded. It is essential that this material complies with BS 7533-9 Tables D.1, D.2 & D.3 and is appropriate to the end use of the pavement. Cement or lime is not to be added to the laying course material to act as a binder. In heavily trafficked areas the nominal depth of the wearing course is to be reduced and the allowable fines content is also to be reduced to minimise the potential for settlement and deterioration.

Road Base

This layer is only required for pavements that will be required to accommodate medium to heavy duty commercial traffic loads or where the subgrade ground conditions are poor and require improvement. This layer may be a cement bound granular material or a bituminous macadam material. Lean mix or mass concrete are not to be used where the pavements will not receive a vehicular loading.

Sub-Base

All pavements will require a sub-base layer layer of 150mm to 250mm dependant on CBR result of 3-5%. For CBR results outside this range refer to BS 7533-1. Sub base layers are to be clause 803/804 and compacted in layers of 200mm in depth by a 10 tonne vibrating roller.

Paving block Thickness

Pavement Type/End Use	Min. Thickness of paving
Domestic & Pedestrian Footpaths	40mm
Domestic driveways & Pedestrian footpaths	50mm
Medium duty trafficked areas, car parking, public areas with low volume commercial traffic	60mm
Service roads, commercial & public civic areas. Public roadways and heavily trafficked areas	80mm

Table reference BS 7533 Part 1 & 2

8.2 Tarmacadam

Permanent road

The Road Authority should be satisfied as to the competence and financial standing of any Contractor allowed to carry out trench reinstatements.

Investigation of Services

Prior to carrying out any excavation for a trench, particularly in a public road, the Engineer/Contractor in charge of the work, Statutory Undertaker, Contractor or private individual should ensure that checks have been carried out to locate any existing pipes

and/or apparatus in the ground. In particular, the following should be consulted:

1. Electricity Supply Board or other licenced undertakers in the Electricity Sector in the area.
2. Eircom or other licenced undertakers in the Telecommunication Sector.
3. Bord Gais Eireann or other licensed undertakers in the Gas Sector.
4. Local Authority
 - (a) Water Supply
 - (b) Sewerage
 - (c) Surface Water Drainage.
5. Local Piped Television Company.
6. O.P.W. - Archaeological Site.
7. CIE / Iarnrod Eireann - at or adjacent to level crossings and other properties of CIE / Iarnrod Eireann – way-leaves, licences, agreements may be required.
8. Adjacent Property Owners likely to be affected.

Survey

Prior to any excavation in a road or footway, the area to be excavated should be surveyed by the Road Authority to establish the condition of the road/footway.

All defects in the general area of the proposed excavation should be recorded. This should afford an opportunity to establish the need for repairs to areas immediately outside the proposed excavation at time of final reinstatement and also will help to avoid contention when permanent reinstatement is carried out.

This survey offers an opportunity to examine the proposed works in detail and will allow adjustments to the line of excavation as may be considered necessary. It is desirable, where practicable, to have road crossings at right angles across the carriageway and to ensure that any service boxes are located away from road junctions.

Construction Requirements

General

1. The precise line of the pipeline shall be agreed between the Contractor and the Road Authority before the commencement of construction.
2. The Contractor will cause to make good, damage to other services caused by the execution of the works at the Contractors own expense to the satisfaction of the appropriate Authority, Statutory Undertaker or Individual Owner.
3. Where necessary for protection purposes, existing vulnerable services in trenches shall be wrapped in 12mm neoprene rubber, or similar, before backfilling takes place.
4. It is the responsibility of the Contractor to locate all existing services, and to safeguard same during construction. The Contractor shall be liable for any damages arising and consequential damage to existing services.
5. Statutory Undertakers and service providers shall submit an "as constructed drawing/map" to the Local Authority Roads Department detailing the line and depth of the installed apparatus when work has been completed. Details of dates of excavation/temporary reinstatement and final reinstatement shall also be provided including confirmation in writing by a competent person acceptable to the Road Authority that the trench reinstatement complies in full with this Specification.
6. Streets and public roadways shall be cleaned and swept both during and after the installation work.
7. Any silting of downstream drainage facilities, whether ditches or pipe or catch pits/sumps which results from the works shall be cleaned out as part of the site clean up.
8. Any damage to storm drainage facilities and roadside features and furniture, which may be disturbed or blocked due to the works undertaken by the Licencee/Utility shall be

replaced with new materials by the Licencee/Utility.

9. In the event of any interference with road markings, the Licensee/Utility shall arrange for immediate replacement with temporary markings and arrange with the Road Authority to have permanent markings restored in conjunction with final trench reinstatement. The cost of any replacement road markings shall be borne by the Licensee/Utility.

10. At the discretion of the Road Authority, if requested, prior to commencing any trench in a public road, a set of colour photographs 5" x 7" will be required every 20 metres along the roadway (or other spacing and location as may be specified). Such set of photographs shall be provided in albums which are catalogued and cross referenced.

11. Street surfaces shall be cleaned at the end of each days work with a power brush or other approved means.

12. Any pipes or other materials stored along the public roadway must be placed at a safe distance from the carriageway and hard shoulder and in such a manner as to avoid falling/rolling on to the roadway.

13. No excess material shall be disposed of along the public roadway.

14. All crushed rock backfill material shall be compacted to 95% of maximum density (Modified Proctor).

15. Longitudinal installations and trenches should be laid out parallel to the centre line of the road in so far as practicable.

16. In carriageways where excavations occur within 1 metre of a kerbline or construction joint, then, permanent (or immediate permanent) reinstatement must be undertaken to that kerbline or construction joint. In footpath where excavations occur, permanent (or immediate permanent) reinstatement shall extend for the full width of the footpath, be properly squared off and taken to the nearest original transverse joint. In all circumstances the permanent (or immediate permanent) reinstated surface finish must match the original.

3.2 Surface Water Drainage

In the case of any road opening, whether by Private Individual, Contractor, Statutory Undertaker or Local Authority, any surface water drainage system disturbed during excavation must be notified to the Road Department of the Local Authority and reinstated to the satisfaction of that Authority.

3.3 Special Case – Porous Asphalt/Macadam Surfaces

In the case of trench formation where there is a bituminous surface layer/wearing course of porous asphalt, porous macadam or other permeable material designed to act as a conduit for surface water and discharge it to the side or to an edge drain special reinstatement requirements will be necessary. In such circumstances it will be necessary to remove and reinstate the full width of such porous material draining to and across the trench from the crown or high point to the discharge point unless otherwise specified or agreed with the Road Authority in writing in advance.

Identification Markers

Marker tapes

Distinctive marker tapes are to be provided over all underground services including those for which the Local Authority is itself responsible viz. water, surface water and sewerage.

The following colour codes on marker tapes are to be incorporated in all trenches in public roads at the depths shown in attached Drawings.

Service Duct / Pipe Colour Marker Tape Colour *

Electricity - Red

Telecommunications - Green or Grey Green

Gas - Yellow

Water Supply - Blue / Black Blue

Sewerage - Brown

Surface Water - Black

Cable T.V. Chevron of Red/Blue/Green

Other Services Chevron of Black/White

*Marker Tapes should be a minimum 125mm wide.

Metal Plates

Metal plates should be included with all non-metallic ducting/services e.g. concrete or PVC ducts, watermains, gas mains etc. in order to assist in subsequent location of the service by means of metal detector. This will be of particular benefit in effecting emergency repairs. The recommended spacing for such plates is at 25 metre intervals and over each connection point not characterised by a junction box/manhole or other visible feature, the plates should be a minimum 125mm x 125mm - preferably galvanised. Depth of installation should usually be 300mm. The option of placing a continuous metal strip or wire to enable subsequent location as an alternative to metal plates is also acceptable.

Rubber Tyred Excavators/Tracked Excavators

The use of rubber tyred excavators is obligatory for trenches in public roads. The road surface shall be protected from the jacks of such machines by means of suitable rubber or timber pads or by other such approved means. Where in exceptional circumstances, with the prior written consent of the Road Authority for reasons of depth or difficult digging, it is necessary to utilise tracked machinery, the Engineer in the case of direct Local Authority works, or Licensee in other cases should ensure and agree with the Local Authority that the project includes adequate funds to enable subsequent repair of areas outside of the reinstatement width of the trench itself which will be damaged due to the movement of the tracks on the road surface and by machine slewing actions, etc.

Cutting the Road Surface

In bituminous and concrete road surfaces and footways, the trench lines shall initially be cut utilising a concrete saw or equivalent mechanical means to the full depth of the bituminous or concrete material prior to any excavation work. This helps to reduce the overbreak at the excavation stage and to keep the upper road pavement layers adjacent to the trench intact. It is important to reduce the factors, which contribute to adjacent road damage to a minimum. Where a trench is opened in a public road, the continuum of the unbound material in compression which provides strength to adjacent areas is removed and its sides are subjected to stresses from various sources, such as:

1. Wedge shaped break from surface.
2. Earth slip circle.
3. Traffic wheel load too close to the edge of the trench.
4. Construction traffic wheel/track loads.

The duration for which the trench is open is an important factor in the subsequent behaviour of the trench. For this reason, the time should be kept to a minimum in order to reduce the risk of failure and consequent damage both within the trench and on the adjacent road surface. The use of trench boxes also helps to reduce subsequent damage. The use of bulk-head wheel stops for safety reasons will also prevent damage by construction traffic.

Backfilling

Following the excavation of a new road trench, and laying or repair of utility apparatus, trench reinstatements commence with a backfilling operation. The ultimate performance of the restored trench will be greatly influenced by the manner in which this backfilling

operation is carried out. It is vital therefore that the correct backfill materials are utilised and that the compaction methods employed are in accordance with the best engineering practices. Supports must be progressively withdrawn as backfilling and compaction progresses and any voids carefully filled. The use of conveyor belt side fillers is desirable.

Compaction

The material shall be compacted in layers by mechanical means in accordance with the National Roads Authority's Specification for Road Works, using either Vibratory Rollers with mass per unit width not exceeding 2300kg, or Vibro Tamper or Vibrating Plate compactors. No mechanical compaction is permitted within 400 millimetres vertically of the crown of pipes and this material should be placed and compacted utilising manual means. Material below and adjacent and around the sides of pipe installation however should be mechanically compacted. Proper compaction of the material is vital. Compaction plant should be selected carefully to give the best results on the material used. Specialised equipment can sometimes be required for narrow trenching or restricted sites but the following plant is likely to be the most commonly used means of compaction for the majority of reinstatement.

HAND RAMMER used for the compaction of all material where access is severely restricted, e.g. around underground services or street furniture. Should not be used as a substitute for mechanical compaction equipment.

VIBRO TAMPER easily transported and handled and especially suitable for narrow trench-work. delivers between 450 and 650 blows per minute through a small plate to effect compaction. is not recommended for the compaction of base or wearing course materials.

VIBRATING ROLLER the preferred method of compaction of bituminous materials. may be single or twin drum. not suitable in small and/or narrow excavations with restricted access.

VIBRATING PLATE available in a range of weights and sizes of plate. Suitable for compaction in trenches. Can be used for bituminous materials but will not give a good surface finish.

It is not acceptable to place the backfill material and compact at a later stage when other layers have been placed, or compact excessive depths from the surface of the trench. Such a practice generally gives rise to excessive post-construction settlements and should not be permitted. Compaction of trench backfill materials shall be carried out in accordance with the following clauses of the N.R.A. Specification for Road Works:-

Clause 802 for granular materials, and Clause 1035 for cement bound materials, and Clause 1043 for foamed concrete for backfilling excavations.

Intervention Criteria/Tolerances

Notwithstanding the minimum general recipe type specifications relating to materials and methods, the following paragraphs set out performance standards to which road surface profiles should comply in order to be deemed acceptable. These criteria apply to temporary and permanent reinstatements in order to determine acceptability. Exceedance of any of these parameters during the period of temporary reinstatement requires corrective intervention on the part of the responsible road opening Licencee. Exceedance of such parameters in the specified period subsequent to the permanent reinstatement where such has been carried out by the Statutory Undertaker or other Licensee under guarantee also requires corrective action on the part of the road opening Licensee prior to any take-over of responsibility by the Road Authority. Furthermore any defects such as crocodile cracking or potholes as outlined in An Foras Forbatha

Publication RC 337 require corrective intervention. Where intervention is required and carried out, the specified period for temporary and/or permanent reinstatement shall recommence. The tolerances as set out below are recommended having regard to safety and achievement of best engineering standards and having regard to practical working limitations. It is important to note that intervention limits are only an indication of the performance of the reinstatement and are not a statement of hazard existence. Furthermore Local Authorities may devise and apply more stringent criteria than those outlined below having regard to their own experience.

Recommended Criteria:**Edge Depression**

Corrective intervention shall be required where the depth of any edge depression exceeds the limits shown in Tables 1, 2, and 3 below.

Surface Depression

A surface depression is a depressed area within the reinstatement having generally smooth edges and gently sloping sides forming a shallow dish. Corrective intervention is required where the depth of any area of surface depression exceeds the limits shown in Tables 1, 2 and 3.

Surface Crowning

The upstand of the reinstatement above the level of the existing adjacent surfaces spanning more than 100mm in any plan dimension shall not exceed the limits shown in Tables 1, 2 and 3.

Fixed Features

The maximum allowable tolerance between the levels of fixed features including concrete products and ironware shall not exceed $\pm 6\text{mm}$.

Table 1 Concrete Footpaths

Intervention Reinstatement Width (mm)									
	Up to 400	nom 450	nom 550	nom 650	nom 750	nom 850	nom 950	nom 1000	>1000
Edge Depression	5	5	5	5	5	5	5	5	5
Surface Depression	4	4	5	6	7	8	9	10	10
Surface Crowning	4	4	5	6	7	8	9	10	10

Table 2 Concrete Roads

Intervention Reinstatement Width (mm)									
	Up to 400	nom 450	nom 550	nom 650	nom 750	nom 850	nom 950	nom 1000	>1000
Edge Depression	6	6	6	6	6	6	6	6	6
Surface Depression	8	8	10	10	10	10	10	10	10
Surface Crowning	8	9	10	10	10	10	10	10	10

Table 3 Flexible/Composite Roads and Footpaths

Intervention Reinstatement Width (mm)									
	Up to 400	nom 450	nom 550	nom 650	nom 750	nom 850	nom 950	nom 1000	>1000
Edge Depression	5	5	5	5	5	5	5	5	5
Surface Depression	8	9	11	13	15	15	15	15	15
Surface Crowning	8	9	11	13	15	15	15	15	15

Safety/Signposting of Works

The arrangement of signs and other safety aspects at trench reinstatement works should be in accordance with the latest editions of "The Traffic Signs Manual: Chapter 8 – Temporary Traffic Measures and Signs for Road works " and with the Dept. of Transport document "The Guidance Document for the Control & Management of Traffic at Road Works. " The full range of signs shall be maintained in place until such time as the temporary reinstatement has been completed and also during the permanent reinstatement works. Before temporary traffic lights are permitted timings, which should normally not exceed 3 minute whole cycle duration, should be agreed with the Road Authority in advance of commencement of the work. Whole cycle duration's in excess of 5 minutes shall not be permitted. Each site must display a minimum of two Roadwork Identification Signs, positioned to be clearly visible to approaching traffic and pedestrians from either direction. Each sign must indicate the Utility Company name, the Utility Company telephone number and the Contractors name and telephone number if applicable.

Excavations must be adequately lit and protected at night.

Quality Control

All materials should be in accordance with the most recent version of the National Roads Authority's 'Specification for Road Works' and the relevant Irish Standards, British Standards and European Standards. As the quantities of materials used in trench reinstatement will generally be quite small, special care will be required to ensure compliance with specification. Additional testing of materials will often be required. Ongoing measurements to establish compliance with the performance criteria should also be carried out.

On jobs involving quantities less than 200 tonnes the commencement samples and minimum rate should apply, except where the Engineer is satisfied from experience of the source of the material and the consistency of quality from the particular supplier.

General Road Build up

60mm thick, 28mm Nominal Sized Dense Bitumen Macadam Roadbase in accordance with Clause 906 "Specification for Roadworks" by the National Roads Authority.

Sub-base: 150mm thickness granular material Type B in accordance with Clause 804 "Specification for Road Works" by the NRA.

Capping Layer: 150mm minimum thickness (compacted) rock (Hardcore) material. The material should have a maximum size of 100mm and the maximum allowable passing the 75micron sieve should be 10%. The material should be well graded throughout the sizes. Exact thickness to be based on CBR results.

Tarmac surfacing Specification

Sweep total area clean removing all loose materials and growth and treat total area with weed killer. Power wash the proposed area to be resurfaced as this will remove all relevant silt and grime from the surface. A suitable strength weed killer must be used to ensure against re-growth and one which will kill through to the roots.

Adjust all iron works to required levels, Iron work relates to any manhole chambers, water/gas stop tap boxes etc. The iron works shall be adjusted in height to the required finish surface level suiting the relevant falls and cross falls to assist water escape, the work will involve adjusting the height by means of hiring /lowering where required on a sand and cement mix with suitable spacing materials/ packing pieces as required.

Create required tie ins. Tie ins are required to run a new surface flush with any surrounding surface levels, the work involves taking a required amount of the existing surface away or cutting back reducing an existing surface level with the ultimate aim of running the new surface flush with any surrounding surfaces, dished kerbs, surrounding footpaths/ patio areas etc.

Apply the finishing layer of tarmacadam overlaying the complete area with a surface course tarmacadam to the required depth. A standard surface course tarmacadam with 10mm sized aggregate at a depth of 40mm is sufficient

Tar all joints to seal where new surface meets surrounding surfaces with hot pored bitumen to prevent any deterioration of the joint and also to protect against ingress of water and or any other adverse weather conditions. The sealing process is achieved by over banding the joint with a bitumous material and can be applied both hot or cold.

The above specification can be used to resurface in tarmacadam drives, footpaths roads

and play areas;

8.3 Concrete Footpaths

Footpaths to have a sub-base of minimum 100mm thickness clause 804 material compacted as per section 8.2 above. A separating layer of impermeable plastic sheeting (polythene sheet 125 microns thick) is to be laid on compacted sub-base without creases and overlapping on joints by 300mm. Footpaths are to be 100mm deep cast in-situ concrete increasing to 150mm where there is to be vehicular traffic as per table below. Minimum footpath width is 2m, where obstructions occur on footpath minimum width is to be 1.2m. Footpaths are to be laid with a cross flow gradient of 2.5% towards the roadway. Joints are to be formed in footpath in straight lines perpendicular to the direction of the path at max. 3m centres. Footpaths are to have a brush finish generally with rounded trowel finish to edges and joints.

Constituents of paving quality concrete

Minimum cement content	325 kg/m ³
Maximum free water/cement ratio	0.55
Maximum aggregate size	20mm
Minimum fine aggregate content	30%
Air content	3.5% – 6.5%
Slump	50mm

9 PARTITIONS

GYPROC METAL STUD PARTITION (where applicable)

Boarding

Number of layers each side: 2.

Comprises: 1 no. Layer 13.5mm Duraline Board,
1 no. Layer Gyproc tapered edge soundbloc board.

Framing

Gyproc metal stud references: 92 S 50 'C', 92 S 10 twin frame gypframe 'C' studs, 48 48 twin frame, 70 S 50 'C' and 146 S 50 'C' stud

Gyproc channel reference 72 C 50 92 C 50 , 48 48 twin frame, 72 C 50 and 148 C 50

Screws: Gyproc Drywall screws length (s): 25 & 36mm

Stud centres: 400mm

All studs to have Gyproc GA 4 angles fixed both sides of stud at 400 centres. Angles to provide fixing points for 12mm thick marine plywood.

Acoustical sealant: Gyproc Sealant to both sides of partition

Acoustical insulation to cavity Rockwool RW3 50mm thick.

All partitions to have acoustic insulation as noted below.

Partitions which are not full height, and for some partitions as described on the drawings to have 62x 62mm RHS to be used to add reinforcement.

Where specified on drawings partitions to be cross braced with gypframe GAB3 Acoustic braces at 3300mm centers

Finishing: Gyproc jointing system: 2mm Pinnacle Skimcoat Plaster.

Qualifications

All materials unless otherwise indicated shall be supplied by Gypsum Industries and shall be installed in accordance with their current published instructions and generally in accordance with BS 8212.

Handling and Storage

Materials shall be handled with care and stored in a clean, dry location, protected from accidental damage and inclement weather. Damaged or deteriorated materials shall be removed from the premises.

INSTALLATION

Framework

Fix Gyproc floor and ceiling channels to horizontal structural elements and studs to abutments, with suitable fasteners located 50mm from each end spaced at 600mm maximum centres. See drawings for details

Accurately cut Gyproc metal studs to fit into floor and ceiling channel and position vertically.

To extend studs splice and lock together with a minimum 600mm nested lap.

Door and window openings

Position additional studs either side of openings to accommodate 38mm thick timber ground and secure to channels. Form head and cill from channel sections and fit 38mm timber ground or better to satisfy BS 5234 requirements for strength and robustness 'door slam' test, moderate to severe.

Provide cut to length studs for panel framework above and below openings, and fit into floor and ceiling channel at maximum 600mm centres to accommodate board edges.

Plasterboard Cladding

Apply continuous beads of Gyproc Sealant to the junction between the partitions and the structure and to all perimeter junctions on both sides, before boarding commences.

Fix Gyproc tapered edge Soundbloc, vertically to studs with Gyproc screws to all framing members at maximum 300mm centres (200mm on external angles) except under layer boards which do not require centre line fixings. All joints to be lightly butted and staggered on opposite sides of the partition and between multi-layer board cladding. Use maximum practical length plasterboards to minimise horizontal joints and locate all joints in face layer boards on metal sections. All joints to be taped and filled using Gyproc Joint tape and joint filler.

Acoustic Infill to Stud Partitions

Install Rockwool RW3 semi-rigid slabs 50mm thick in stud cavity as boarding proceeds to achieve a sound insulation 100-3150Hz. RW'dB of 50 for partition duty to BS5234 Parts 1 and 2, 1992.

Acoustic & Fire Barrier to Ceiling Void

Rockwall Fire Barrier where specified to extend to the concrete slab or Roof. It shall be wire stitched and faced with 25mm galvanised wire mesh and foil facings. All fixings to be as per Rockwool's written instructions and tested in accordance with BS476: Part 8:1972. The Fire & Acoustic barrier shall be made up of 2 x 50mm thick barriers, both faced with aluminium foil for a RWdB performance of 50.

Penetration of Fire & Acoustic Barrier

Where it is necessary to penetrate with services all opens are to be cut neatly and re-stitched. All services to be then sleeved each side of barrier to a minimum length of 300mm using the same barrier material.

The sleeve should be wired to the main barrier to prevent it becoming detached from the barrier all in accordance with the Building Regulations.

Note:

The fixing of the fire blanket / acoustic blanket to the Metsec at the top and to the hardwood packer at the bottom to be in accordance with details and specification of 'Rockwool Fire Barrier Systems' most recent publication.

Deflection Head to Metal Stud Partitions

Provide deflection heads to the head of all metal stud partitions where partitions abut the underside of slabs, beams, or structural soffits, to accommodate vertical structural movement and deflection without transferring load to the partition.

Deflection heads shall:

Allow for anticipated vertical movement of the structure (minimum movement allowance to be confirmed by the Structural Engineer)

Be formed using proprietary deflection head track or approved equivalent

Ensure no rigid fixing of studs to the structure at the head

Maintain the required fire resistance, acoustic performance, and smoke integrity of the partition

Be installed strictly in accordance with the manufacturer's recommendations and relevant standards

All fire stopping, acoustic seals, and finishes at deflection heads shall be continuous and compatible with the partition system.

10 DRAINAGE

Unplasticised PVC Pipes and Fittings

Unplasticised PVC pressure pipes shall comply with the relevant requirements of I.S. 123.

Joints and fittings for pressure pipes in accordance with B.S. 3505 shall comply with the relevant requirements of B.S. 4346: Parts 1 and 2 for solvent welded and mechanical joints respectively.

Unplasticised PVC pipes, joints and fittings for drains shall comply with the relevant requirements of B.S. 5481.

Solvent cements for solvent welded joints to unplasticised PVC pipes shall comply with the requirements of B.S. 4346: Part 3.

PVC Pipes

The pipes shall be manufactured from unplasticised Polyvinyl Chloride by Wavin (Ireland) or equal and approved and shall comply in all respect with the Irish Standard Specification No.123: (1964) - "Unplasticised PVC pipes for cold water supply" and BS 4660: 1973 - "Specification for Unplasticised PVC underground drain pipe and fittings" and BS 5481: .977- Specification for Unplasticised PVC pipe and fittings for gravity sewers".

The pipes shall be jointed strictly in accordance with the manufacturers instructions. All bends and flanged ends in PVC pipes shall be formed by the manufacturer and delivered to the site ready for use.

The pipes shall be smooth and clean and free from surface defects and the ends shall be cut off smoothly and square to the pipes axis. The cross section of the materials shall not have blisters, hollows or bubbles. The pipes shall be straight and free from kinks and bends.

All pipes shall be delivered in standard lengths of 6 metres and short pipes shall not be used without the permission of the Engineer. Pipes should be carefully moulded, especially in cold weather.

All pipes shall be manufactured in accordance with local Government Approval 1977 .

Fittings

All fittings, including Armstrong junctions, gully traps, bends, branches and connections shall be manufactured in accordance with local Government Approval 1977 and shall comply with BS 4660 -1973.

Armstrong Junctions and gully traps may be fitted with proprietary risers (waving/harmer or equal and approved) only where appropriate and subject to Engineer's approval.

Covers and Grilles

AJ's to be fitted with Black PVG sealed covers (strength 3.5 kn) and all sealed covers to be fixed at 4 corners.

All gully traps to be fitted with cast aluminium grilles (pvc not permitted).

Lubricants

Only manufacturers lubricants should be used in strict accordance with Manufacturer's instructions.

11 FIRE STOPPING

Approved Fire Stopping is to be carried out in full compliance with the relevant Fire Certificate and current Building Regulations.

STANDARDS:

IS EN 1366-3: Penetration seals

&

IS EN 1366-4: Linear joint seals

Independent certification of Fire Stopping is required.

Secure fixing and in-line fire line location is essential. Allow for on-site relative humidity and interior / exterior temperature differentials. The acoustic performance shall be not less than 100 – 3150 Hz RW (db) 45. All cutting or damage to wall, floor or ceiling surfaces or materials to be made good to Architects satisfaction.

Notes:

1. Where reference is made to a 60-minute stopping and / or fire barrier, this is to be taken to mean a fire stopping and / or fire barrier construction which achieves the following fire resistance performance by reference to **IS EN 1366-3 & IS EN 1366-4**.

Integrity Performance: EI60	1 hour (60 minutes)
Insulation Performance: EI60	1 hour (60 minutes)

2. Where reference is made to a 30-minute fire stopping and / or fire barrier, this is to be taken to mean a fire stopping and / or fire barrier construction which achieves the following fire resistance performance by reference to **IS EN 1366-3 & IS EN 1366-4**. Details are to be provided at time of tender. Failure to comply with all aspects of the specification shall disqualify.

Integrity Performance: EI30	1/2 hour (30 minutes)
Insulation Performance: EI30	1/2 hour (30 minutes)

Fire-stopping shall be provided as detailed throughout the fire safety certificate application and shall be either

i) proprietary sealing systems, e.g. Nullifire FB750 firebatt, or similar approved system which has been shown by test to maintain the fire resistance of element of construction installed in accordance with manufacturer's instructions

or

ii) other suitable fire-stopping material including cement or lime mortar, gypsum based plaster, cement or gypsum based vermiculite/perlite mixes, glass fibre, mineral wool or intumescent mastics. Larger openings (up to 100mm) shall generally be fire-stopped with mineral wool insulation (suitably supported) with smaller openings generally fire-stopped with intumescent mastic.

12 RECORDS OF CONCEALED WORKS

- Contractor to provide a photographic record of all concealed works prior to covering up, including but not limited to: structural reinforcement, waterproofing, below-ground drainage, insulation, fire-stopping, and service installations.
- Photographs to be date-stamped, clearly referenced to their location, and submitted to the Architect/Client for review and record purposes.
- Concealed works should not be covered until inspected and approved where required.