REF: 13234.W

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RED COW INN

PERFORMANCE SPECIFICATION FOR ALL PRECAST UNITS AT GROUND, FIRST AND SECOND FLOOR LEVELS

The supplier of the precast prestresed units shall submit full details, layout drawings etc. and calculations.

All roof opes including supporting steelwork if required shall be included. Number and size of opes to be clarified with the Architect.

The Contractor shall allow for concreting in opes in precast units as required by the Architect. Any supporting steelwork to be agreed with the Engineer.

The precast concrete supplier shall be selected from the following list:

1. Messrs Breton Roecrete.
2. Messrs Concast.
3. Messrs Lees Concrete

Design Loading:

	Applied	5.0kN/sq.m
	Dead	75mm screed
	not to be included as structural in the design of the units.	
	Services, finishes & partitions	1.5kN/sq.m
	Self weight units	

See also data sheets for Precast Units setting out design and detailing requirements.

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RED COW INN

SPECIFICATION FOR DRIVEN PILES

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Ref: G6PILE.SPC

DRIVEN PILES

Note: For Sub-Contractor Read Piling Contractor.

1. The work shall comply with "Specification for Piling" prepared by the Institution of Civil Engineers 1988 edition except as amended herunder. In this document for "Contractor" read "Sub-Contractor" and for "Engineer" read "Architect".

2. The work comprises of piles to serve as a foundation for proposed structures at . The working loads are shown on the proposed pile layout Drawing. The Sub-Contractor may submit an alternative pile layout with his tender.

3. This shall be a performance specification. The piling Sub-Contractor shall be responsible for the design construction and installation of the piles. Each pile and each group of piles shall have a minimum ultimate resistance of 2.5 times the working load. The ultimate resistance is hereby defined by the lesser of

   (a) The load that causes a gross settlement of 10% of the least pile width.

   (b) The load that produces plastic yielding or a net settlement of 6mm.

   (c) The load beyond which there is an increase in net settlement disproportionate to the increase in load.

   In determining the ultimate resistance of any pile or pile group, account shall be taken of any inaccuracy in the setting out and any deviation of the pile axis from the vertical.

   The pile and group of piles shall be designed so that settlement shall not exceed 5mm at working load.

4. The Sub-Contractor shall when tendering submit the following information:

   (a) Full details of the piles to be used

   (b) Details of control procedures and recording procedures and proposed staffing arrangements on site

   (c) Details of procedures for calculating and checking the load bearing capacity and anticipated settlement of the piles and group of piles

   (d) Any tests he proposes to carry out on site

(e) Details of proposed concrete mix including proposed source of concrete and quality control arrangements

(f) Details of proposed reinforcement which must comply with B.S. 8004.

(g) A provisional sum for taking samples for concrete cube tests shall be allowed.

(h) The successful Contractor shall be required to submit detailed calculations for the pile design.

(i) Only Normal Portland (Irish) cement shall be used.

Portland cement used in concrete, concrete products and other cement based products shall be certified with IS 1:1963 as amended. in accordance with the Irish Standard Mark Licensing Scheme of the IIRS. (Particular Regulations for Portland Cement: Ref 1/9). Manufacturer's or suppliers' certificates of compliance with the Standard shall be provided by the contractor when requested by the Architect.

5. A list of the relevant drawings and site investigation records are attached as an Appendix to this Specification.

The drawings and site investigation records are being issued as part of the tender information.

6. The attention of the Contractor is drawn to the fact that although the site investigation information is provided in good faith, no guarantee can be given as to its accuracy, and that it is not necessarily representative of the soil strata over the entire site.

It is, however, the responsibility of the Sub-Contractor to satisfy himself as to the suitability of their proposed method of piling to give the required bearing capacity of piles in the soil conditions existing on the site. Should the Sub-Contractor feel that he requires additional information he is at liberty to make further investigation of the sub-soil at his own expense and without involvement on the part of the Client except that the Client's approval should be sought prior to any operations being carried out on site.

It shall be considered that the Sub-Contractor is fully conversant with the nature of the ground conditions on this site and it shall be assumed that he has, before submitting his tender for this work, visited the site and obtained all necessary information which may effect the cost and programme for the work including any overhead or underground services, site access and position and condition of adjacent property.

7. The Sub-Contractors attention is drawn to the fact that he will be a Sub-Contractor to a Main Contractor who may have other works proceeding on the site at the same time. Co-ordination of the Sub-Contractors work with that of the Main Contractor shall be the responsibility of the Main Contractor. The Sub-Contractor shall be responsible for ensuring that he carries out his work in the time and order agreed with the Main Contractor.

8. The Main Contraotor shall set out the main gridlines. Prior to the commencement of construction he shall establish suitable reference points for line and level. These shall not be disturbed by the Sub-Contractor. The Sub-Contractor shall set out any reference points which he may require in addition to the above the Sub-Contractor shall set out the pile positions.

The tolerances in Clauses 1.06 of the Model Specification shall be 25mm in Clause 1.06.2 and 1 in 150 in Clause 1.06.3.

9. 3No. preliminary test piles shall be constructed and tested by the Constant Rate of penetration (C.R.P.) method in agreed locations on site before the piling works starts. These piles shall not be used as working piles. They shall be tested to ultimate resistance as defined above. The preliminary test piles shall be cut off 600mm below general ground beam soffite level.

Working piles shall be proof tested by the maintained load test (M.L.) as the work proceeds. The Architect will determine which piles are to be tested. Allow for 5No. tests.

10. The full driving logs for all piles shall be recorded on form D.P.1 which is included as part of this specification. The blows required for each 600mm penetration shall be recorded over the full depth of driving of each pile except over the last metre when the procedure of Clause 3 116 of the Model Specification shall be used.

11. The Sub-Contractor must provide all necessary temporary lighting and power required in connection with his work and will pay all charges in connection therewith.

12. The Sub-Contractor tendering shall be bound by his offer for a period of three months from the date fixed for lodging the tenders for piling.

+ APPENDIX

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RED COW INN

SPECIFICATION FOR STRUCTURAL TIMBER

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REF: TIMBER.SPC

SPECIFICATION FOR STRUCTURAL TIMBER:

Structural timber shall be imported european whitewood strength class SS or M75 graded to BS 4978 or strength class M SC C to Irish Standard SR11. Unless otherwise specified timber shall conform in all aspects with BS 5268.

All timber shall be ordered on commencement of the Contract and shall as far as possible be selected from the same batch.

The timber shall be well cut and free from warp or other deformation and from signs of rot, work, beetle and other infestations and shall not contain large and loose or dead knot shakes, splits or twisted grain, all to be sawn die square and finished to the sizes specified on the drawings.

Timber which is in the opinion of the Architect or Engineer inferior in character and condition or is not suitable for the requirements of the work because of the blemishes it contains shall not be used.

All timbers shall be to the Architects and Engineers approval and shall be representative of the best selected quality of the species involved.

Arrangements shall be made for an inspection of all timber by the Architect and Engineer before purchase.

Moisture Content: The moisture content of timber at time of fabrication and erection to be as follows:

$$16\% \quad \begin{matrix} + \\ - \end{matrix} \quad 2$$

Preservative: All timbers shall be treated with Protim or similar approved. For treatment of exposed timber see painting specification.

Testing: The Architect and Engineer shall be at liberty to select any samples that he requires for testing.

Storage: All timber shall be properly stacked and covered in the Contractors yard on site until required on site.

Profiles: Do not modify profiles of sections from those shown on drawings without prior approval.

Dimension: All dimensions and levels shall be checked on site before timber lengths are cut.

Joints & Fixings: Faces of joints to be square and driven together to give a close accurate fit.

Joints and fixings shall be as shown on the drawings or where not shown shall be designed and fixed securely in accordance with B.S. 5628 1984 and shall be to the Architects and Engineers approval.

Qualification of Rules of the S MM: Notwithstanding the provisions of S MM Clause N 26 (a) where work is described as fixed with screws, holes in timber shall be deemed to be included.

Pressure Impregnated Preservative: Where timber is specified as being treated it shall be impregnated under vacuum and pressure with the "Protim", "Tanalith" or other approved copper-chrome-arsenate salt, to an average salt retention of 0.33 lbs. per cub.ft. Timber to be treated should be machined as far as possible to its final dimensions but any cuts made subsequently to treating shall be liberally swabbed with "Ensele" or other approved preservative.

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RED COW INN

SPECIFICATION FOR DEMOLITION

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RED COW INN

SPECIFICATION FOR BRICKWORK AND BLOCKWORK

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REF: DEMOL.SPC

SPECIFICATION FOR DEMOLITION

1. **Inspection of Properties:** Contractors are required to visit the site and to ascertain the nature and extent of the work involved and conditions under the Contract will be carried out. Arrangements to do so should be made with the Architect.

2. **Care and Caution:** The Contractor shall be obliged to exercise extreme care in carrying out the various items of demolition. Old materials and debris, arising from the pulling down, shall be watered at frequent intervals so as to prevent the raising of dust. The works shall be done without damage to adjoining structures and should such damage take place, the Contractor shall reinstate and make good the same to the satisfaction of the Architect.

3. **Advertising:** No fences or hoarding may be used for advertising purposes and the Contractor must keep the fences or hoarding clear from advertisments unless otherwise instructed by the Architect.

4. **Unauthorised Entry** The Contractor is to restrict all workmen to the site of the Works and prevent any unauthorised entry upon adjoining owner's properties through the site.

5. **Articles of Agreement** The articles of agreement and schedule of conditions will be the current edition of those issued by the Royal Institute of the Architects of Ireland where quantities do not form part of the Contract.

6. **Codes of Standards:** The work should be carried out in accordance with recommendations of British Standard Codes of Practice C.P. 94 - 1971, BS 5228 1975 - Codes of Practice for noise control on construction and demolition sites and C.P. 97 Parts 1.2 and 3 - Metal Scaffolding and all current amendments to these Codes and Standards.

7. **Fires on Site:** The disposal of materials and rubbish by burning on site will not be permitted under any circumstances whatever and no fires will be permitted on site.

8. **Mud from the Site:** Before leaving the site, all vehicles are to be hosed down and all mud removed from tyres, and the Contractor will be responsible for ensuring that the surfaces of adjoining roads remain clean at all times during the carrying out of the Contract.

9. **Coins, Antiquities, etc.** Any coins or antiquities found on the site are to become the property of the Employer and are to be handed over to the Architect.

10. **Plant:** The Contractor is to provide all requisite plant, scaffolding, gangways, planks, gantries, tarpaulins, hoist, etc.. and any cartage, workmanship and materials which although not specifically mentioned, may be necessary for the proper protection and execution of the work described herein.

11. **Salvaged Materials:** Should the Architect decide that parts of any buildings are of historic interest or of particular use to the Employer, these parts shall be carefully dismantled and stored in a convenient area of the site for retention by the Employer and if the Engineer deems it to be reasonable an allowance will be made for the value thereof.

12. **Variation:** No variation will be permitted within the terms, definition or extent of the Works described except for those sanctioned by the Architect in writing.

13. **Noise Control:** The Contractor is to use his best endeavours to avoid giving grounds for complaints from adjoining owners on the score of excessive noice caused by the use of compressors or demolition equipment. If such complaints should arise the Architect may instruct the Contractor to carry out work, which is giving rise to such complaint, at night time or over the weekend, without extra cost to the Employer.

(a) Keep site noisy tools, plant, engines and equipment as far as possible from the adjoining roads and buildings.

(b) efficient silencing devices should be used on all tools, plant and motors and should be in accordance with BS 5228 "Noise Control on Construction and Demolition Sites"

(c) ensure that no engines or items of machinery are left running for long periods when not required to be used.

(d) ensure that all entrances to sites are at points where the noise from vehicles entering or leaving the site will cause the least nuisance or disturbance.

14. **Overtime & Nightwork:** The Contractor is to allow for the cost of Overtime or Nightwork which may be necessary in order that the Works may be completed within the Contract period

15. **Water for Works:** Provide water for the whole of the Works together with all necessary temporary arrangements for storing and distributing about the site and pay all fees and charges in connection therewith.

16. **Artificial and temporary lighting and power:** The Contractor is to provide all artificial and temporary lighting and power required for the proper execution of the works (including safety lights on any hoardings or gantries projecting on to or over the public road and or footpath) and is to pay all charges in connection therewith.

17. **Explosives:** No explosives are to be used unless approved in writing by the Engineer.

18. **Timber affected by dry rot and other rubbish:** The Contractor shall take all timber out of houses affected by dry rot, or any other infestation, carry it away to a suitable site and burn it.

19. **Welfare and Safety measures:** The Contractor is to maintain welfare and safety measures and amenities up to suitable standard in accordance with Building (Safety Health and Welfare) regulations any and all relevant Acts of the Oireachtas. The Contractor should provide at his own expense for his workmen proper sanitary accommodation of a good standard and should remove it at the completion of the works. If it is not practicable to connect W.C.s to the sewer chemical closets should be provided. Also provide all other site facilities, offices, huts etc. required for workmen

20. **Temporary Roads:** The Contractor shall provide any necessary temporary roads and clear them away at completion of the works.

21. **Protection of Site:** Provide all temporary and permanent hoardings, barriers, fans, gantries, tarpaulins, guard-rails, watching and protective lighting, and the like as may be necessary for protecting the public and adjacent properties for the proper execution of the Works and for meeting the requirements of any local or other authority.

Completely enclose the site with a substantial hoarding as shown on the Arcitects drawings.

22. Give all Notices:

Before commencing the demolition of any part of the structure the Contractor shall conform to the provision of any Acts of the Oireachtas relating to the works and to the Regulations and Bye-Laws and pay all fees in respect thereof. The Contractor shall give all notices to water, gas, lighting and power Authorities and to An Bord Telecom and should they so require allow them facilities for removing any fixtures, fittings or services which may belong to them and shall include for all charges for this work. All such services shall be terminated at their point of entry to the site.

Any existing services servicing adjoining properties which may be connected through the site shall be established by the Contractor protected and maintained as directed by the Engineer.

23. Avoidance of Nuisance and Protection of Members of the Public

The demolition of the property to be carried out in such a manner as to cause as little inconvenience to adjoining property owners and/or the public as possible, and the Contractor will be held responsible for any claims which may arise from disregard of this Clause.

Notices of adequate size and construction are to be placed to warn passers by.

24. Protection of Property:

The Contractor shall take all necessary steps to protect adjoining property, public footpaths, highways etc. and will be held responsible for any damage occuring thereto, however caused and will be charged for their necessary repair.

The Contractor shall provide and erect to the satisfaction of the Architect all necessary protective screens or scaffolds that may be required of a sufficient substantial nature to prevent damage, nuisance or disturbance by debris or dust to adjoining properties, foothpaths, public highways or persons or traffic passing nearby.

During the demolition and works no wall or part of the structure shall be left in a dangerous or insecure condition at any time when a representative of the Contractor is not on site and adequate barriers and (after darkness) lamps shall be provided to warn users of the public highway of any obstruction or danger.

The Contractor must keep all public footpaths adjoining the site available at all times for use by the public unless there is a permanent footway crossing in existence or a temporary footway crossing has been constructed.

One such temporary footway crossing of sufficient width shall normally be permitted. The footway crossing shall be the only point at which mechanical plant or vehicles shall enter the site.

25. <u>Schedule of Rates:</u> The Contractor shall provide a schedule of rates for the works.

26. <u>Damage to Existing Public Road, Footpaths etc:</u>

The Contractor shall be responsible for any damage caused by himself or those under his control to existing roads, footpaths etc. and he is to keep all Public Roadways and Footpaths clear of all obstruction and debris other than that duly permitted by the Garda or Local Authority.

27. **Shoring:** Contractors are required to inspect adjoining buildings to ascertain the nature of the construction. The Contractor shall be responsible for the design and positioning of temporary supports during the various stages of the work. Where in the opinion of the Contractor propping and shoring are required they shall be designed, erected and removed in accordance with recommendations given in B.S. 8004 1986 as the works may warrant. The Contractor shall provide, erect and maintain all necessary needles dead and raking shores to the entire satisfaction of the Architect and Local Authorities. The construction location design and efficiency of the shoring and temporary works for the purpose for which it is erected shall be the entire responsibility of the Contractor. Should any subsidence or any other damage occur due to the inefficiency of the shoring or any other support provided, the damage shall be made good by the Contractor at his own expense. Foundations to temporary work shall be adequate to support all temporary loading.

28. **Tradesmen:** None but fully qualified, competent tradesmen shall be employed by the Contractor.

29. **Sub-Letting:** No part of the work shall be sub-let without the written permission of the Architect. If, with the Architect's approval the Contractor sub-lets any portion of the work the specification shall apply to such sub-contractors.

30. **Site Access:** The location of one site entry point will be agreed with the Architect before the work commences.

31. **Access to Work:** The Architect or any persons authorised by him shall, at all times, have sufficient and convenient access to the Works of the Contractor or other places where work is being prepared for the performance of this contract.

32. **Procedure for Carrying out the Works**

Before entering upon the site the Contractor shall inform the Architect of the procedure he proposes to follow in carrying out the works. The Architect shall have the power to require the execution of any measures he may deem necessary to safeguard life and property. The adequacy of such arrangements shall be the sole responsibility of the Contractor.

33. **Dismissal of Persons:**

The Contractor shall at once discontinue the employment on the site of any person employed by him who shall in the opinion of the Architect, misconduct himself or be incompetent.

34. **Supervision:**

The Contractor shall provide for giving all necessary personell supervision during the execution of the Works and for keeping at least one good competent general foreman, approved by the Architect, who shall be constantly on the Works with power to act in the Contractor's absence and for all purposes as his general agent.

35. **Protection and Watching:**

Provide for all necessary watching and protection during the progress of the demolition and be responsible for any damage occasioned by lack of same. The Contractor shall also be responsible for preventing unauthorised persons from trespassing on the Site.

36. **Watchmen:**

A competent watchman is to be appointed by the Contractor and will be required to be in attendance at weekends and during hours of darkness. The whole of the cost is to be included in the Contractors tender.

37. Carting etc.

Provide for all carting on or in connection with the Works and carting away from day to day all surplus materials as they accumulate. On completion, leave the site clean and tidy and in a condition that is satisfactory to the Architect. Location of any stock piling of demolition material on site shall be agreed with the Engineer. No surcharging of adjoining walls with demolition material shall be permitted.

38. Arrangement with Local Authority:

Make such arrangements with the Local Authority as may be necessary, pay all fees and undertake all responsibility for damage to or interference with the public road and public services.

39. Procedure for Carrying:

Before entering upon the site the Contractor shall inform the Architect in writing of the procedure and exact sequence of operations he proposed to follow in carrying out the works. The Architect shall have the power to require the execution of any measures he may deem necessary to safeguard property. The adequacy of such arrangements shall be the sole responsibility of the Contractor.

40. Transferral of Temporary and Permanent Loads:

The Contractors attention is specifically drawn to the utmost importance and necessity of transferring loads initially to temporary works and subsequently to the permanent supporting structure in such a manner whereby no damage shall be caused to the fabric of the supported structure.

The Contractor shall provide all necessary wedging and whatever is necessary to ensure a preload condition and the taking up of any deflection in temporary and permanent works at all stages.

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RED COW INN

SPECIFICATION FOR PAINTING OF STRUCTURAL STEEL

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REF: PAINT.SPC

PAINTING STRUCTURAL STEELWORK — Construction V

PAINTING — Work Section V.1

MATERIALS

MATERIALS GENERALLY — Va.100

The first quality products of manufacturers shall be used in the painting work. — Va. 101 MANUFACTURERS QUALITY OF MATERIALS

All material shall be the products of one manufacturer unless otherwise specified or approved by the Architect. — Va. 103 SINGLE SOURCE

METAL PRIMERS — Vv.100

Metallic zinc-rich blast priming paint for structural steelwork shall comply with BS 4652 — Vv. 115 ZINC-RICH BLAST PRIMER

Type : two-pack epoxy zinc-rich primer.

Thickness : 20-25 microns dry film thickness.

Zinc phosphate site holding priming paint for structural steelwork shall be two pack epoxy resin medium, high-build zinc phosphate primer to a dry film thickness of 50 microns. — Vv. 118 ZINC PHOSPHATE SITE HOLDING PRIMER

Galvanised pretreatment wash shall be British Rail "T Wash" comprising by weight: — Vv. 120 GALVANISED PRETREATMENT WASH

9% of phosphoric acid (d = 1.70)
16.5% ethyl cellusolve
16.5% methylated spirit
57% water
1% copper carbonate

WORKMANSHIP

TOLERANCES — Va. 100

The average of the dry film thickness readings taken over any sq m of surface shall equal or exceed the specified nominal thickness and in no case shall any reading be less than 75% of the specified nominal thickness.

Va. 101
NOMINAL
DRY-FILM
THICKNESS

QUALITY CONTROL — Va. 102

Paint one complete room having a surface area to be painted not exceeding 10sq.m as directed by the Architect which, after approval, shall be used as a standard of quality for the remaining work.

Va. 104
SAMPLE
ROOM

Provide a minimum dry-film thickness of 25 microns per coat unless otherwise specified

Va. 108
MINIMUM
DRY-FILM
THICKNESS

REQUIREMENTS GENERALLY — Va. 111

Ensure materials are delivered in original containers with labels indentifying manufacturer and grade of produce.

Va. 112
MATERIAL
IDENTIFICATION

Colours shall be selected by the Architect from the range contained in BS 4800 and from the manufacturer's standard ranges.

Va. 113
COLOURS

Unless otherwise specified,,use sealers, priming coats, undercoats and finish coats by the same manufacturer where possible.

Va. 115
SOURCE OF
COATINGS

PAINTING SEQUENCE

1. Preparation - shot blast to Sa. 2.5.

2. Apply blast primer by Airless spray - then fabricate.

3. Preparation and Spot-Priming after Fabrication:
After fabrication carefully remove all weld flux and spatter, rough edges, etc. by scraping, chipping and grinding to a smooth surface. Remove any unsound 'scorched' primer around weld areas: also, remove all dust, dirt, grease etc. (Wash with White Spirit where necessary) then spot-prime all bare metal with 'Blast Primer' A 5214 and allow to dry overnight.

4. Site-Holding Primer:

Apply zinc phosphate site holding primer overnight.

Allow to DRY HARD for 7 days before dispatch to site.

5. Site Procedure before Erection:

i. Steel should be carefully stacked on site to prevent contact with the ground, and angled to reduce water lodgement to a minimum. Protection by covering should be considered.

ii. New welds or further fabrication on site should be left to a minimum. Any such work must be prepared and primed with a site holding primer.

6. Site Treatment:

Preparation and spot priming after erection:

After erection all damaged areas (including bolt heads etc.) must be thoroughly prepared and carefully spot-primed with a site holding Primer. Allow to dry overnight. Thoroughly clean the surface of all primed steelwork removing grease, oil, dirt etc. and lease in good condition.

Finish Surfaces in accordance with the following schedule:

Vc. 230
SCHEDULE OF SURFACES AND PAINT SYSTEMS

Preparation	:	Blast clean to Sc 2.5
Primer	:	1st Coat: Zinc rich, Vv.115 20 -25 microns thick (dry film thickness) - shop applied.
Site-Holding Primer	:	2nd coat: Zinc rich Vv. 118 50 microns thick (dry film thickness) - shop applied.

Total nominal dry film thickness: 70 microns

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RED COW INN

SPECIFICATION FOR STRUCTURAL STEEL

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REF: STEEL.SPC

SECTION WORK — Construction H

STRUCTURAL STEELWORK — Work Section H.0

STRUCTURAL STEELWORK Work Section H.0

MATERIALS

SECTION AND PLATES Hh. 001

The dimensions and tolerances of hot rolled steel sections, including hollow sections, shall comply with BS 4, Parts 1 and 2 and BS 4848. Hh. 002 HOT ROLLED SECTIONS, DIMENSIONS

Hot rolled steel plates and sections including hollow sections, shall comply with BS 4360. Hh. 003 SECTIONS AND PLATES, MATERIAL

Use the following grade of steel unless indicated otherwise on the drawing: Hh. 004 GRADE OF STEEL

BS 4360, Grade 43A

The dimensions and tolerances of cold formed steel sectons shall comply with BS 2994 Hh. 005 COLD FORMED SECTIONS, DIMENSIONS

The materials for cold formed steel sections shall comply with BS 1449, Part 1 Hh. 006 COLD FORMED SECTIONS, MATERIAL

STEEL, SPECIAL REQUIREMENTS Hh. 011

The steel shall be within the limits specified in the following schedule for laminations, edge defects and inclusions: Hh. 012 LAMINATION, EDGE DEFECTS AND INCLUSIONS

Steel	Laminations, Edge Defects, Inclusions
BS 4360	DD 21 1972

Galvanised structural steel, specified for galvanising, in accordance with BS 729 with a minimum coating weight of 610 g/sq.m

Hh. 014
GALVANISING

OTHER STEEL PRODUCTS — Hh. 014

Floor plates shall be non-slip raised pattern steel plate of 6mm thickness, with a minimum weight of 49 kg/sq.m

Hh. 016
FLOOR PLATES

WELDING MATERIALS — Ht. 001

Welding electrodes for manual arc welding shall comply with BS 639

Ht. 002
WELDING ELECTRODES

Electrodes, wires and fluxes for submerged arc welding of carbon steel and medium-tensile steel shall comply with BS 4165.

Ht. 003
ELECTRODES, WIRES AND FLUXES

Filler rods and wires for gas-shielded arc welding shall comply with BS 2901.

Ht. 004
FILLER RODS AND WIRES

FASTNERS — Ht. 005

Black hexagon bolts, screws and nuts shall comply with BS 4190.

Ht. 006
BLACK HEXAGON BOLTS, SCREWS AND NUTS

Precision hexagon bolts, screws and nuts shall comply with BS 3692.

Ht. 007
PRECISION HEXAGON BOLTS, SCREWS AND NUTS

Expanding bolts and nuts shall be of type and manufacture suitable for the application proposed and as approved by the Architect.

Ht. 008
EXPANDING BOLTS AND NUTS

Hexagon bolts, screws and nuts shall be finished by cadium plating to BS 3382 Part 1, or zinc plating to BS 3382 Part 2, or sheraridising to BS 4921.

Ht. 009
HEXAGON BOLTS, SCREWS AND NUTS

Steel washers shall comply with BS 4320.

Ht. 010
STEEL WASHERS

Steel washers shall be finished with the same finish as specified for the bolts they are to be used in conjunction with.

Ht. 011
STEEL WASHERS FINISH

High strength friction grip bolts and associated nuts and washers shall comply with BS 4395, Parts 1 and 2.

Ht. 012
HSFG BOLTS

Rag bolts and nuts shall comply with BS 1494 Part 2.

Ht. 014
RAG BOLTS

Indented bolts and nuts shall comply with BS 1494 Part 2.

Ht. 015
INDENTED BOLTS

WORKMANSHIP

DESIGN AND CONSTRUCTION GENERALLY

Ha. 001

The fabrication and erection of the structural steel shall be carried out by an approved firm or firms.

Ha. 003
FABRICATION AND ERECTION, APPROVED FIRM

The design details incuding calculations shall be in accordance with BS 449 and shall be submitted for approval.

In general reactions shall be provided by the Structural Engineer to the Steelwork Contractor and connections shall be provided to develop these reactions. Where reactions are not given connections shall be provided to develop reactions capable of carrying the maximum uniform load of the structural element in question.

Ha. 004
DESIGN DETAILS

Two copies of shop drawings shall be prepared and submitted for approval by the Structural Engineer and the Architect. Submit shop drawings for approval at least three weeks before commencement of fabrication of work shown on the drawings.

Ha. 005
SHOP DRAWINGS

The value of slip factors used for the design of all HSFG bolted joints shall be submitted for approval by the Structural Engineer. Submit values for approval at least three weeks before commencement of fabrication of bolted joints.

Ha. 006
SLIP FACTOR

Details of the following shall be submitted for approval at least three weeks before the commencement of the steelwork erection:

1. Method of erection

2. Temporary Works.

Ha. 007
ERECTION METHOD

Details of the reaction programme shall be submitted to the Structural Engineer, Architect and the Main Contractor at least three weeks before the commencment of work on site.

Ha. 008
ERECTION PROGRAMME

TOLERANCES — Ha. 009

The permissible dimensional deviations for structural steel elements above foundations shall be as follows:

Ha. 010
ELEMENTS ABOVE FOUNDATIONS

For the nominally horizontal surface measured from the nearest reference level: +/- 10mm.

Notwithstanding the tolerances permitted above, the following shall apply:

Cross sections of built-up members:
The permissible deviation of cross sectional dimensions of built-up members from that shown on the drawings shall be +/- 3mm or +/- 1 in 500 whichever is the smaller unless otherwise indicated on the drawings.

Plumbness: The permissible deviation in plumbness of elements shall be 1 in 500.

Bow: The permissible deviation in bow shall be 1.1000th of the length of the members.

The maximum permissible dimensional deviations for horizontal and vertical dimensions shall not exceed 1/1000th or +/- 10mm whichever is the smaller.

Ha. 011
OVERALL DIMENSIONAL DEVIATIONS, STEELWORK

The camber dimensions shown on the drawings refer to the erected fabricated structural steelwork element before structural loads are applied.

Ha. 012
CAMBER

Architecturally exposed structural steelwork shall meet the following requirements:

Ha. 013
ARCHITECTURALLY EXPOSED STEELWORK

1. All welds shall be ground smooth.

2. All steelwork shall be in accordance with AISC Specification for Architecturaly Exposed Steelwork.

Arrange for the following tests to be carried out by an approved authority in accordance with the Provisional Sum: — Ha. 015 APPROVED TESTING AUTHORITY

1. Tensile test specimens for butt welds and fillet welds.

Arrange that the testing authority shall furnsih copies of the Test results directly to the Architect's office and the Structural Engineer's office. — Ha. 016 REPORTING OF TEST RESULTS

Provide manufacturer's test certificates as requested by the Structural Engineer. — Ha. 017 MANUFACTURER'S TEST CERTIFICATES

Provide the necessary facilities and attendances for specified tests in the workshops and on site. — Ha. 018 TESTING FACILITES

The material tests specified shall be carried out on steelwork sections and plates in accordance with BS 4360. — Ha. 019 TESTS, MATERIALS

The property tests specified for slip factors for treated surfaces shall be carried out in accordance with BS 4604. — Ha. 020 TESTS, SPECIAL PROPERTIES

The weld tests specified shall be carried out in accordance with the following schedule: — Ha. 021 NON-DESTRUCTIVE TESTING

ITEMS TO BE TESTED	TEST	TEST SPECIFICATION
1% of all butt welds	Ultrasonic examination	BS 3923 Part 2
1% of all filled welds	Ultrasonic examination	BS 3923 Parts 1 and 2

PREFABRICATION

Hc. 001

Fabricate all structural steel in accordance with BS 5950 unless specified otherwise.

Hc. 002
GENERAL

Give one weeks notice of commencement of structural steelwork fabrication.

Hc. 003
INSPECTION

Compression members at splices, caps or bases dependent on contact for transmission of compressive stress shall be machined so that the butting faces are in contact except for small areas, which shall not exceed 20% of the total area, where the clearances do not exceed 0.15mm.

Hc. 004
COMPRESSION MEMBERS

Bearing stiffners shall be cut and ground to ensure a tight fit along edges in contact with flanges.

Hc. 005
BEARING STIFFNERS

Cleats shall be fixed to project 2mm beyond the end of simply supported members.

Hc. 006
CLEAT PROJECTIONS

All burrs and sharp arrises shall be removed.

Hc. 007
DE-BURRING

Each piece of steelwork shall be distinctly marked in accordance with an assembly drawing before delivery on site.

Hc. 009
MARKING GENERALLY

Steel which is given special anti-corrosion treatment before delivery to site shall be marked with a contrasting and compatible paint.

Hc. 010
MARKING, PAINTING

SITE ERECTION GENERALLY — Hc. 011

The steelwork sub-contractor shall provide all holding down and fixing bolts, shall deliver same to site, and shall be responsible for the setting out and checking of the holding down bolts, fix same in position, and shall make use of such templates as are supplies by the steelwork sub-contractor, in accordance with the requirements shown on the drawings, for the steelwork sub-contractor.

Hc. 012
HOLDING DOWN AND FIXING BOLTS

All structural steelwork shall be erected in accordance with BS 5950.

Hc. 013
GENERALLY

The limiting stresses specified in BS 5950 shall not be exceeded during erection.

Hc. 014
ERECTION STRESSES

Steel packs under base plates shall not be less than 50mm wide and each pack shall comprise not more than four separate plates.

Hc. 015
STEEL PACKS

FLAME CUTTING AND WELDING — Hc. 016

Flame cutting shall be by machine. Flame-cut edges which are to be subject to substantial stress or which are to have weld metal deposited on them shall be reasonably free from gouges. Occasionally notches and gouges not more than 3mm deep shall be permitted. Gouge marks greater than 3mm that remain from cutting shall be removed by grinding. All re-entrant corners shall be shaped to a radius of at least 15mm.

Hc. 017
FLAME CUTTING

Flame cutting equipment shall not be used on site without the Structural Engineer's approval.

Hc. 018
FLAME CUTTING ON SITE

Hc. 019
WELDING

The welding of Grade 43 to BS 4360, including tack welds to be incorporated in the finished work, shall comply with BS 1856.

Hc. 020
TACK WELDS

The length of tack welds which shall be incorporated in the finished work shall be not less than four times the thickness of the thicker plate or 50mm whichever is the smaller. Approval shall be obtained for methods of tack welding steel which complies with BS 4360.

Hc. 021

The following precautions shall be taken when site welding:

1. The surface to be welded shall be clean and dry.

2. Normal precautions shall be taken in accordance with BS 5135.

Hc. 022
QUALIFICATIONS OF WELDERS

All welders shall hold an approved proficiency certificate, or approved qualification, appropriate to the class of work on which they are engaged. Submit a copy of proficiency certificates on request to the Structural Engineer.

Hc. 023
VISUAL EXAMINATION OF WELDS

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 the 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 joint.
10. Lack of penetration at the root of the weld.
11. Excessive penetration bead.

Test specimens of welded joints as required shall be prepared. Arrange for the delivery of samples to the testing authority.

Hc. 025
WELD TEST SPECIMENS

Weld specimens shall be tested in accordance with BS 709.

Hc. 025
TESTING WELD SPECIMENS

The steelwork Sub-Contractor shall arrange his welding sequence jigging and shop procedures during fabrication so as to eliminate distortion. The steelwork Sub-Contractor shall draw the Structural Engineer's and Architect's attention to any excessive distortion which, despite his precautions, may occur.

Hc. 026
DISTORTION

The transport, handling of storage and erection of steelwork shall be carried out with the utmost care in order to avoid any damage or distortion of steelwork or painted surfaces. Adequate storage and protection facilities as required shall be provided on site. All bearers shall be placed on hard durable ground free of all vegetation.

Hc. 027
STORAGE ON SITE

FABRICATION, BOLTING

Hc. 029

All bolted connections shall be made in accordance with BS 5950 unless otherwise specified.

Hc. 030
GENERAL

Do not use drifts in holes which are one-third diameter or more off centre.

Hc. 031
ALIGNMENT OF HOLES

Use HSFG bolts in accordance with BS 4604, Parts 1, 2 and 3.

Hc. 032
FRICTION GRIP BOLTS

Tighten HSFG bolts using the part-turn method of the torque-control method.

Hc. 034
FRICTION GRIP BOLTS TIGHTENING

Place washers under black bolts and under heads and nuts of all bolts connecting metal coated steelwork.

Hc. 036
WASHERS

SURFACE PREPARATION

Hc. 037

Loose rust and loose scale, welding slag and spatter shall be removed from steel surfaces by chipping, scraping and wire brushing as directed by the Structural Engineer prior to blast cleaning. Clean out crevises and remove all oil, grease and dirt.

Hc. 038
SCRAPING AND WIRE BRUSHING

All steel surfaces shall be prepared by blast cleaning to give Sa 2 1/2 preparation grade of surface quality in accordance with Swedish Standard SIS 05 09 00. All traces of loose rust and loose scale, welding slag and spatter, dirt, dust and grit shall be removed by compressed air hose. Blast primer shall be applied as specified at Work Section V.1 PAINTING of this Specification within two hours of blast cleaning.

Hc. 040
BLAST CLEANING

Defective primer, loose rust and loose scale shall be removed back to base metal of pre-primed surfaces and surfaces shall be re-primed as specified. Dirt and grease shall be removed from satisfactorily primed surfaces.

Hc. 041
PRE-PRIMED SURFACES

Oil, grease, dirt, rust and mill scale shall be removed by an approved chemical process. Rinse off cleaning chemicals.

Hc. 042
CHEMICAL CLEANING

Remove loose scale, loose rust and grease from contact surfaces and surfaces inaccessible after assembly prior to applying primer which shall be as specified for adjacent surfaces. Apply two coats of primer to surfaces inaccessible after shop assembly. Bring the surfaces together while the paint is still wet.

Hc. 043
CONTACT SURFACES AND SURFACES INACCESSIBLE AFTER ASSEMBLY

Do not paint the mating surfaces of HSFG bolted joints.

Hc. 044
MATING SURFACES

PRIMING AND PAINTING

Hc. 045

The priming and painting of structural steelwork should be in accordance with the Painting Specification.

Hc. 046
PRIMING AND PAINTING

FEARON O'NEILL ROONEY
CONSULTING ENGINEERS

17 Fitzwilliam Square, Dublin 2. Tel: (01) 766167,
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RED COW INN

SPECIFICATION FOR EXCAVATION AND LOOSE FILL

Terence O'Neill BE CEng MICE MIEI John Rooney BE CEng MIEI
Members of the Association of Consulting Engineers of Ireland (ACEI)

REF: EXCAVATE.SPC

EXCAVATION AND LOOSE FILL WORK — Construction C

EXCAVATING WORK — Work Section C.1

FILLING WORK — Work Section C.2

EXCAVATING WORK Work Section C.1

EXCAVATING WORK Work Section C.1

MATERIALS

DEFINITIONS Ca. 100

The definition of soils and rocks shall be as described in BS 5930 Ca. 101 SOILS AND ROCKS

" Solid Rock" shall mean any rock met with in excavation which is of such size or position that it can be removed only by means of wedges, compresses air or other special plant or explosives. Ca. 103 SOLID ROCK

"Thinly Bedded Rock" shall mean stratified rock with bedding planes at not more than 150mm intervals. Ca. 104 THINLY BEDDED ROCK

"Topsoil" shall mean soil capable of supporting plant growth. Ca. 105 TOPSOIL

WORKMANSHIP

SITE CONDITIONS Ca. 106

Make all necessary enquiries about the nature of the ground. Ca. 107 NATURE OF THE GROUND

The Contractor, before submitting his tender, will be permitted to dig trial holes subject to approval. Ca. 108 SERVICES

A site investigation report has been prepared for the Architect and may be consulted by the Contractor. Ca. 110 SITE INVESTIGATION

TOPSOIL EXCAVATION	Cc. 100
Excavate topsoil from the non-paved areas indicated to be developed for a depth of 200mm and preserve for re-use.	Cc. 101 SURFACE EXCAVATION
Stockpile excavated topsoil in temporary spoil heaps where directed. Keep separate from other materials. The maximum haul distance shall not exceed 200 m.	Cc. 102 TOPSOIL STOCKPILE
Spread and level topsoil in open spaces, surfaces of slopes, verges, margins, central reservations as on the drawings to a minimum depth of 150mm.	Cc. 104 TOPSOIL SPREAD AND LEVEL

GENERAL EXCAVATION	Cc. 105
The sloping sides of all cuttings shall be cleared of all rock fragments liable to cause injury or damage through falling.	Cc. 105/1 SIDES OF CUTTINGS
The side slopes of cuttings and embankments shall be trimmed to such inclinations as are shown on the drawings of as directed by the Architect. All slopes shall be trimmed and boulders and large stones removed and shall be soiled and sown as specified.	Cc. 105/2 TRIMMING OF SIDE SLOPES
To avoid deterioration of the subgrade the final 150mm of excavation to formation level shall not be effected until the Contractor is ready to place the sub-base material on the prepared formation. The method used to effect the final excavation to formation level shall be approved by the Architect and the Contractor shall not carry out this work in weather which would cause serious deterioration of the formation. The sub-base material should be placed and compacted immediately following final stripping. The formation shall be finally shaped and regulated to the prescribed level parallel to the finished surface level of the road and thereafter it shall not be subjected to any constructional or other traffic.	Cc. 105/3 PROTECTION OF FORMATION

The formation shall, where directed by the Architect, be rolled. It shall be maintained clean and free from mud and slurry. Where any damage is caused to the final formation in strength or level, the damaged area shall be excavated for an area and depth which shall be determined by the Architect and this area shall be filled to the required levels with a broken stone of 50mm maximum size. The degree of compaction for this area shall be the same as that specified for the remainder of the formation. All this excavation and making good of damaged area shall be carried out at the expense of the Contractor. The Architect shall determine the areas of formation exposed at any time.

Areas below formation level softened by the excavation of trial pits shall be backfilled in granular material, Type B in accordance with Clause 804 of the Department of Environment Specification for Road Works.

Cc. 105/4
REFILLING OF TRIAL PITS

When earth formations are finally prepared 1000 g fibre filter material shall be laid with 500mm minimum laps all in accordance with manufacturers specification.

Cc. 105/5
FIBRE FILTER MEMBRANE

The drain shall consist of a proprietary material consisting of a double layer of 1000 g filter fabric membrane separated by a free draining central core, all to the approval of the Architect.

Cc. 105/6
VERTICAL DRAINAGE MEMBRANE

To avoid deterioration of the foundation material concrete blinding grade 15N 20 shall be laid and compacted immediately on excavating to formation level.

Cc. 105/7
PROTECTION OF EXCAVATION FOR FOUNDATIONS

Excavate to dimensions, levels, lines and profiles shown on the drawings, or as directed.

cc. 106
FOUNDATION EXCAVATION

If, in the Contractor's opinion a bearing stratum is obtained at a lesser depth than that shown on drawings, he shall inform the Architect.

Cc. 107
BEARING STRATUM

Level and consolidate the bottoms of excavations in earth as directed.

Cc. 108
EXCAVATION BOTTOMS EARTH

Trim bottoms of excavation in rock

Cc. 109
EXCAVATION BOTTOMS, ROCK

Excavate the last 75mm of earth above formation level immediately before construction is commenced

Cc. 111
TIERING

Reinstate to formation level with approved filling surfaces of excavations which have been rendered unsuitable during the progress of the works.

Cc. 112
REINSTATEMENT OF EXCAVATIONS

Any additional excavation required to accommodate the temporary support of sides of excavations shall be provided and backfilled at the Contractor's expense

Cc. 113
ADDITIONAL EXCAVATION

Backfill unauthorised or excess excavations with approved filling at no expense to the Employer.

Cc. 114
UNAUTHORISED EXCAVATION

The use of explosives is not permitted.

Cc. 115
BLASTING

Support sides of excavations as necessary and in accordance with statutory requirements.

Cc. 121
PLANKING AND STRUTTING

DISPOSAL OF WATER

Cc. 122

Keep excavations free from surface water.

Cc. 123
WATER

Keep excavations below ground water level free from ground water in accordance with the Provisional Sum

Cc. 124
EXCAVATIONS BELOW GROUND WATER LEVEL

Do not pump water from excavations into permanent drainage system.

Cc. 125
PUMPING

Where continuous pumping is proposed notify the Architect.

Cc. 126
CONTINUOUS PUMPING

Prevent silt from entering the permanent drainage system when disposing of water from excavation

Cc. 126
SILT

Where temporary sumps are required construct them clear of excavations for permanent work and fill them with suitable filling when no longer required.

Cc. 127
TEMPORARY SUMPS

All land drains disturbed during the course of the excavation shall be properly restored or divered before construction work commences

Cc. 128
LAND DRAINS

Existing Drains and Sewers in Use

The Contractor is to locate position and runs of all existing drains and sewers in use, which occur on or near areas to be excavated before start of excavation. These are to be protected, retained and diverted or otherwise dealt with as directed by the Architect before the work proceeds

Cc. 129
EXISTING DRAINS & SEWERS

DISPOSAL OF MATERIALS

Cy. 100

Remove surplus excavated materials and excavated materials unsuitable for filling from the site.

Cy. 101
SURPLUS MATERIALS, REMOVAL FROM SITE

The owner of materials, sand, gravel or archaeological objects discovered in the course of the work shall be deemed to be the Employers.

Cy. 102
OWNERSHIP OF MATERIALS DISCOVERED

When archaeological objects are discovered during the course of the work, stop work in the immediate vicinity of the find and inform the Architect at once.

Cy. 103
ARCHAEOLOGICAL OBJECTS

Divert all surface water channels and field drains, as shown on the drawings.	Cy. 104 WATERWAYS
Notify the Architect and obtain instructions when drains and underground waterways are encountered during excavation work.	Cy. 105 DRAINS, WATERWAYS
Notify the Architect and the responsible authority and obtain instructions when underground services other than those shown on the drawings are encountered.	Cy. 110 UNDERGROUND SERVICES
Remove disused drains encountered during excavation work.	Cy. 111 DISUSED DRAINS
Remove disused underground structures encountered during excavation work to 250mm below formation level.	Cy. 112 DISUSED UNDERGROUND STRUCTURES
Remove foundations encountered during excavation work.	Cy. 113 FOUNDATIONS
Notify the Architect when the excavations are ready for inspection and obtain his approval before proceeding with construction. No claims for delay arising from this requirement will be entertained provided that approval is given within 2 working days of receipt of notice.	Cy.114 NOTICE

DEFINITIONS Ca. 200

"Granular material Type 100" shall mean 100mm single size crushed rock.

Ca. 201 GRANULAR MATERIAL TYPE 100

"Granular material Type B" shall be in accordance with Clause 804 Department of Environment Specification for Road Works. The materials shall be well graded, and lie within the grading limits of Table Ca. 202 (8/3).

Ca. 202 GRANULAR MATERIAL TYPE B

TABLE Ca. 202 (8/3) GRANULAR MATERIAL TYPE B

RANGE OF GRADING

BS Sieve Size	Percentage by mass passing
75 mm	95 - 100
37.5 mm	70 - 85
10 mm	40 - 70
5 mm	25 - 45
600 mm	8 - 22
75 mm	0 - 10

The material passing the 425 mm sieve shall be non-plastic. The practical size shall be tested in accordance with Test 7A of BS 1377. Material used shall be frost resistant.

The material shall have a ten per cent fines value of 50 kN or more when tested in accordance with BS 812.

"Suitable Earth Filling" shall mean material either arising from excavation or imported which is capable of being compacted as specified.

Ca. 203 SUITABLE EARTH FILLING

"Unsuitable Filling Material" shall mean any of the following:

Ca. 204 UNSUITABLE FILLING

Perishable material.
Material from marshes or bogs
Logs, stumps, slurry and mud.
Material susceptible to spontaneous combusion.
Material in a frozen condition.
Clay or liquid limit exceeding 55 as determined in accordance with BS 1377.
Materials with a water soluble sulphate content (as SO4) in excess of 0.10%.

Materials having a moisture content greater than the maximum permitted.

For cohesive soils the permitted moisture content shall be not greater than the soils plastic limit multiplied by 1.1

WORKMANSHIP

FILLING WORK — Cc. 200

Spread and level earth filling in 25mm loose layers

Cc. 201 PLACE EARTH FILL

Place fill so that water may drain freely from exposed surfaces.

Cc. 202 PLACING EARTH FILL DRAINAGE

Reinstate compacted fill where damaged during the progress of the Works.

Cc. 203 PROTECTION OF FILL

Spread and level granular material Type B and Type 100 Fill in layers of not more than 150mm loose depth.

Cc. 204 GRANULAR FILL

Backfill foundation trenches and isolated footings with Granular Material Type B and compact in 150mm layers.

Cc. 205 BACKFILLING TRENCHES AND FOOTINGS

Backfill excavations wider than required with granular material Type B in accordance with Clause 804 of the Department of Environment Specification for Road Works without expense to the Employer.

Cc. 206
BACKFILLING

Backfill excavations deeper than required with concrete grade 15N 20 without expense to the Employer.

Cc. 207
BACKFILLING EXCESSIVE DEPTH

Backfill working space behind retaining walls with granular material type 100. Compact in 200mm layers.

Cc. 208
BACKFILLING RETAINING WALLS

COMPACTION WORK Cc. 209

Compact and consolidate each layer of fill thoroughly.

Cc. 210
COMPACTION

Adjust the moisture content of the fill as instructed. Provide all necessary water sprinkling equipment.

Cc. 216
MOISTURE CONTROL

Granular fill shall be compacted in layers not exceeding 150mm thick with mechanically propelled vibrating roller and in accordance with Table 8/1 of the Department of Environment Specification for Road Works. Compact and fill by not less than twelve passes of a towed vibratory roller with a static load of at least 150kg per 25mm of roll or a grid roller with a load of at least 225kg per 25mm width of roll.

Cc. 219
GRANULAR MATERIAL TYPE B & 100

The rolling shall continue until the hardcore is thoroughly compacted and no visible movement of hardcore occurs on the passage of the roller.

The hardcore surface shall be finally blinded with limestone dust all to the satisfaction of the Architect.

The compaction and hardcore filling over the land drainage system differs from the general hardcore to formation levels and all care should be taken to avoid damage to ground pipe work.

The Contractor shall check all final hardcore levels and make good any pot hoes, ruts, undulations, irregularities, depressions, subsidences, loose material, standing water and other defects.

Cc. 220
EXISTING HARDCORED SURFACES

Levels of existing hardcore shall be adjusted where necessary to suit finished levels. Any making up of levels shall be carried out in material type 'B'. The surface shall be compacted and fully blinded to the required levels in accordance with Clause Cc. 219.

REF: BLOCK.SPC

BLOCKWORK AND BRICKWORK	Construction F
BLOCKWORK AND BRICKWORK GENERALLY	Work Section F.0
MORTAR	Work Section F.1
MOVEMENT AND CONTROL JOINTS	Work Section F.3
BLOCKWORK	Work Section F.5
BRICKWORK	Work Section F.6

BLOCKWORK AND BRICKWORK GENERALLY Work Section F.0

MATERIALS

ASBESTOS CEMENT PRODUCTS Ff. 001

Asbestos cement cavity closers shall be slates complying with BS 690 and IS 7. Ff. 002 SLATES

STEEL PRODUCTS Fh. 001

Hot rolled mild steel, plain or deformed bars shall comply with BS 4449. Fh. 002 MILD STEEL BARS

Steel fabric shall comply with BS 4483 Fh. 004 STEEL FABRIC

Expanded metal shall comply with BS 405 Fh. 005 EXPANDED METAL

Masonry reinforcement shall comply with BS 405 or of approved manufacture, shall have a galvanised finish to BS 2989 and shall satisfy the requirements of BSCP 111. The minimum galvanising coating weight shall be 940 g/sq.m. Fh. 006 MASONRY REINFORCEMENT GALVANISED

Masonry reinforcement for use in external leafs of cavity walls shall comply with BS 405 or be of approved manufacture, shall be tram track type in grade 304 S15 stainless steel and shall satisfy the requirements of BSCP 111. Fh. 007 MASONRY REINFORCEMENT STAINLESS STEEL

CAVITY INSULATION - FIBRE Fm. 100

Glass fibre batts for cavity wall insulation shall be as specified at Clause Km. 102 of Work Section K.1 of this Specification. Fm. 101 GLASS FIBRE BATTS

CONCRETE FILL Fq. 100

The concrete used as fill to reinforced hollow concrete blockwork lintels, columns, bands and the like shall be Type 40N10 and Type 30N10 as specified at Clause Eq. 413 of this Specification. Fq. 102 CONCRETE FILL REINFORCED HOLLOW BLOCKWORK

FASTNERS AND IRONMONGERY — **Ft. 100**

Metal wall ties for cavity wall construction shall comply with BS 1243 and shall be as follows:

Ft. 101
WALL TIES, METAL

Type	:	Vertical twist type
Grade	:	Stainless Steel 304 S15
Length	:	225mm
Cavity Width	:	100mm
Insulation Thickness	:	50mm
Insulation Retainer Type	:	Approved circular plastic clip.

Galvanised cast iron wall gratings for ventilation shall comply with BS 493 and shall be as follows:

Ft. 102
GRATINGS FOR VENTILATION

Type	:	Class 2
Sizes	:	225mm x 75mm 225mm x 150mm 225mm x 225mm

WORKMANSHIP

QUALITY CONTROL — **Fa. 001**

Provide samples of materials in accordance with the following schedule:

Fa. 002
SAMPLES

Material	Size	Colour	Quantity	Location
Concrete Block (solid)	440 x 215 x 100	Natural	4	Site
Concrete Block (solid)	440 x 215 x 65	Natural	4	Site
Concrete Block (hollow)	440 x 215 x 215	Natural	4	Site
Concrete Brick	215 x 100 x 65	Natural	4	Site
Masonry Reinforcement	2 M length		1	Site
Wall tie metal, Ft.002			1	Architects Office

Grating cast iron, Ft. 003	225mm x 75mm	1	Architects Office
Angle tie metal, Ft. 004		1	Architects Office
Dovetail slot, metal, Ft. 007		1	Architects Office

Remove samples when instructed.

Select samples of the following materials for testing — Fa. 102 SAMPLES SELECTION

Concrete blocks, solid in accordance with IS 20
Concrete blocks, hollow in accordance with IS 20
Concrete bricks, solid in accordance with IS 189
Clay bricks in accordance with IS 91

Arrange in accordance with the Provisional Sum for the following tests: — Fa. 103 TESTING SAMPLES, APPROVED AUTHORITY

1. Measurement of work dimensions of blocks

2. Determination of density.

3. Determination of compressive strength (blocks to be tested on edge).

4. Determination of dry shrinkage and wetting expansion.

Arrange for test to be carried out by an approved testing authority. The Provisional Sum for tests shall be used to meet the testing authorities charges for testing samples which comply with the requirements of this Specification. All other costs in connection with the tests including the cost of tests that fail shall be borne by the Contractor. Include for delivery of the samples to the testing authority.

Arrange that the testing authority shall forward copies of the test results to the Architect's office and Structural Engineer's office. — Fa. 104 REPORTING OF TEST RESULTS

PREPARATIONS — Fc. 100

Provide a free circulation of air around concrete blocks and concrete bricks when stacked before use. Stack concrete blocks and bricks and clay bricks on dry self-draining surfaces and protect from damage and staining. Stack blocks and bricks for facing work on a raised clean platform and protect from damage and staining.

Fc. 101 STACKING CONCRETE BLOCKS AND CONCRETE BRICKS & CLAY BRICKS

Mild steel for angle ties for connection of blockwork leafs to reinforced concrete beams at tops of walls shall comply with BS 1449, Part 1 with galvanised finish to BS 729 and shall be of shape and size as shown on the Structural Engineers drawings

Ft. 004 ANGLE TIES TO TOP OF WALLS

Stainless steel for expanding bolts, nuts and washers shall comply with BS 970, Part 4 and shall be as follows:

Ft. 005 STAINLESS STEEL EXPANDING BOLTS

Grade 304 S15

Type As detailed on the contract drawings.

Grade 304 S15

Mild steel for expanding bolts, nuts and washers shall comply with BS 4449 and BS 1449, Part 1 and shall have cadmium or zinc electroplated coated finish to BS 1706.

Ft. 006 STEEL EXPANDING BOLTS

Stainless steel sheet for slot and dovetail ties for concrete to blockwork connections shall comply with BS 1449, Part 2 and shall be as follows:

Ft. 007 STAINLESS STEEL DOVETAIL SLOT FIXING

Grade : 304 S15

MORTAR — Work Section F.1

MIXING — Fc. 109

The proportions of constituents of mortar mixed shall be in accordance with the following schedule. Measure constituents by volume using clean guage boxes of an appropriate size. The proportions of sand are based on the use of dry sand. Adjust the proportion of sand for bulk due to moisture content.

Fc. 110 SCHEDULE OF MIXES

Mortar Type	Designation	Cement Type	Proportions of Constituents Cement	Lime	Sand
CLS1	Cement-lime-sand	NPC	1	1/4	3
CLS2	Cement-lime-sand	NPC	1	1	6

Mortar shall be sufficiently mixed to incorporate all the constituents of the mix. Where machine mixing is used, the mixer shall be cleaned before starting to mix and before changing the mix or mortar type. Where mortar is mixed by hand it shall be mixed on a hard clean platform.

Fc. 111 MIXING GENERALLY

For coarse stuff (lime-sand mix), hydrated lime and sand shall be mixed dry. Water shall be added to achieve a workable consistency. Coarse stuff shall be stored on a clean impermeable surface. Course stuff shall not be used for sixteen hours after adding water.

Fc. 114 COARSE STUFF LIME-SAND MIX

For cement-sand mortar, mix cement and coarse stuff (lime-sand mix). Add water and mix to a workable consistency.

Fc. 118 CEMENT-LIME-SAND MORTAR

Admixtures shall not be used without the Architect's approval in writing.

Fc. 119 ADMIXTURES

COMPONENTS

Fx. 001

Structural steel lintels shall be fabricated from steel plate which shall comply with BS 4360 and shall be as follows:

Fx. 002 LINTELS STRUCTURAL STEEL

Grade : 43A
Thickness : As shown on the contract drawings.
Shape, Size: As detailed on the contract drawings.

Structural steel lintels shall be hot-dip galvanized to comply with BS 729 after fabrication and shall be as follows:

Fx. 003
LINTELS
STRUCTURAL
STEEL,
PROTECTION

Preparation shot blast to Swedish Standard Sa 2.5.

Minimum Coating Weight: 920 g/sq.m

Bond beam/lintel concrete blocks shall comply with IS 20 and shall be as follows:

Fx. 004
BOND BEAM
LINTELS
BLOCKS

Type : H (5)
Sizes : 440 mml x 215 mmh x 215 mmt
215 mml x 215 mmh x 215 mmt

Concrete fill to bond beam lintels shall comply with the relevant clauses of Work Section E.4 of this Specification and shall be as follows: 30N10

Stainless steel sheet for lintels shall comply with BS 1449, part 2 and shall be as follows:

Fx. 005
LINTELS
STAINLESS
STEEL

Grade : 305 S15

Precast concrete sills shall comply with BS 5642 and shall be of profile and dimensions as detailed on the Architectural drawings.

Fx. 006
SILLS,
PRECAST
CONCRETE

Steel sills shall comply with BS 1422 and shall be of profile and dimensions as detailed on the Architectural drawings.

Fx. 007
SILLS,
STEEL

Steel sills shall be hot dip galvanised to comply with BS 729 after fabrication and shall be as follows:

Fx. 008
SILLS, STEEL,
PROTECTION

Preparation Shot Blast to Swedish Standard Sa 2.5
Minimum Coating Weight : 460 g/sq.m

Aluminium sills shall be as specified at Work Section X.1 of this Specification.

Fx. 009
SILLS
ALUMINIUM

Keep dry during delivery and before use all concrete facing blocks and bricks. All concrete blocks shall be steam cured by the manufacturer and allowed to mature for at least 28 days before being used and shall be carefully unloaded, handled and stored and under no circumstances shall tipping of blocks be permitted.

Fc. 004
PROTECTION BLOCKS AND BRICKS

LAYING BLOCKS AND BRICKS GENERALLY — Fc. 005

Ensure the stability of blockwork and brickwork during erection. All blockwork shall be adequately braced and stayed during construction.

Fc. 006
STABILITY

Do not lay blocks or bricks while the air temperature is below 2 degrees C on a rising thermometer or below 5 degrees C on a falling thermometer. Blockwork and brickwork construction shall not be carried out with or upon frozen materials. 48 hours after being laid when freezing is likely to occur. Any blockwork or brickwork walls damaged by frost during the course of construction shall be pulled down and made good to the Contractor's expense as directed by the Architect in writing.

Build walls in level lifts. Where walling is racked back no part shall rise more than 1.35 m above the general level. In facing work complete the lift in one operation and leave no work racked back at the end of each day.

Fc. 008
UNIFORMITY IN WALLING

Cut and fit blockwork and brickwork neatly to the line and profile of parts of the structure which the walling abuts or surrounds. Where wall lengths do not conform to the blockwork module, or where the units require to be cut, including cutting required to accommodate the work of others, this shall be carried out using a mechanical masonry saw. The units shall be cut wet, nosed to remove slurry and then allowed to dry before being built into the wall. The bolstering of masonry shall not be permitted.

Fc. 009
CUTTING AND FITTING

Lay solid blocks and bricks on a full bed of mortar and with bed and vertical joints fully filled to a consistent thickness. Lay hollow blocks on a bed of mortar over the webs of the blocks and with bed and vertical joints fully filled to a consistent thickness.	Fc. 010 MORTAR BEDS
Lay blocks and bricks for fair-faced work with the fair-face in line.	Fc. 011 FAIR-FACED WORK
Lay blocks and bricks with cross joints in any course not less than one quarter of the length of the unit from those in the course below. Quarter, half and three quarter bats shall be used only where required to obtain bond.	Fc. 012 BONDING GENERALLY
Leave toothing to provide for the bonding of future work. Weather tops of projections with mortar. Clean off weathering mortar to toothed blockwork prior to recommencement of blockwork.	Fc. 013 BONDING, PROVISION FOR FUTURE WORK
Form toothing in existing work to provide adequate bond for new work.	Fc. 014 BONDING AND EXISTING WORK
Special category construction control in accordance with Clause 27, BS 5628 Part 1 1978 shall apply.	Fc. 015 CONSTRUCITON CONTROL
Form ducts, channels and openings in walling as the work proceeds.	Fc. 016 DUCT, CHANNELS AND OPENINGS
Keep dry each lift of facing blockwork and facing brickwork including the top surfaces until the commencement of the next lift or other superimposed work.	Fc. 017 PROTECTION BLOCKWORK AND BRICKWORK
CAVITY WALLS	**Fc. 018**
Keep cavities and ties free from mortar and debris.	Fc. 019 CAVITY GENERALLY

Close tops of cavities with two courses of asbestos cement slates laid brake joint where the cavity is spanned by in-situ concrete or where the construction over required grouting. At top of cavity wall close the cavity with two course of asbestos cement slates laid brake joint or one course of standard solid concrete blocks laid on flat as shown on the Architectural drawings.

Fc. 020
CAVITY BRIDGES

Form mortar fillets in cavity over solid rising walls with slope of fillet to outside leaf.

Fc. 021
CAVITY FILLETS BELOW DPC

Form weep holes using approved 10mm wide, 75m high and 125mm deep rectangular hollow section, PVC liners stuck to rendered face in accordance with manufacturer's instructions to the outer leaf of the base of all cavity walls at 900mm horizontal centres maximum in vertical joints.

Fc. 022
WEEP HOLES

Set wall ties in mortar joints to a depth of not less than 50mm in each leaf.

Fc. 023
WALL TIES, SETTING

Space wall ties in cavity walls at 750mm horizontally and 450mm vertically.

Fc. 024
WALL TIES, SPACING

Provide wall ties at movement joints at centres not exceeding 225 mm.

Fc. 025
WALL TIES AT MOVEMENT JOINTS

Provide wall ties at openings at centres not exceeding 225mm vertically.

Fc. 026
WALL TIES AT OPENINGS

Form solid jambs to openings using cavity closer blocks built in as the opening is formed and having cast-on nibs equal to the width of the cavity. Cross refer to Clause Fc. 208 of Work Section F.2 of this Specification for details of damp proof courses to jambs of openings in cavity walls.

Fc. 027
JAMBS WITH CAST-ON NIBS

Wall ties shall be carefully laid to a nominal fall towards the outer leaf.

Fc. 028
WALL TIES TO NOMINAL FALL

The cavity and the wall ties shall be kept clear of mortar and other materials during the course of the work by means of a close fitting lath with a felt strip attached, drawn along and up the cavity as work proceeds. Suitable openings shall be left at the base to enable the cavity to be cleaned on completion and such openings shall be subsequently built up uniformly with the surrounding work.

Fc. 029
KEEP CAVITIES CLEAN

Build in cavity insulation as the wall is in accordance with the manufacturer's written instructions and as provided at Work Section R.3 of this Specification.

Fc. 030
INSULATION BUILDING IN

Carefully cut out slots for wall ties in insulation to provide minimum 12mm cover all around the circular retainer on the tie. Fix insulation tight against inner leaf and limit divergence to a maximum 2mm from the blockwork face.

Fc. 031
INSULATION SLOTS FOR WALL TIES

REINFORCEMENT AND BUILT IN COMPONENTS

Fc. 032

Reinforcement shall have a minimum of 20mm cover of mortar in the plane of the joint from any exposed external face.

Fc. 033
COVER FOR REINFORCEMENT

Build in sills, lintels, copings, padstones and other components in mortar similar to that in the adjacent walls.

Fc. 034
BUILD IN COMPONENTS

Reinforced hollow blockwork piers shall be provided as shown on the drawings and shall be bonded to adjoining blockwork with expanded metal ties. Keep hollow sections for filling free from mortar droppings prior to filling. Concrete fill in reinforced hollow blockwork shall be poured in vertical increments of not more than 900mm. Hollow concrete blockwork lintels shall be filled with grade 30N10 concrete tamped and reinforced to schedule, supported adequately during construction, with a minimum of 215mm bearing at ends and a joint finish to match adjacent blockwork.

Fc. 035
REINFORCED HOLLOW BLOCKWORK PIERS, HOLLOW BLOCK LINTELS

FINISHING OF BLOCKWORK AND BRICKWORK JOINTS	**Fc. 036**
Strike off surplus mortar and leave neat joints. Type of joint shall be in accordance with the Architect's detail.	Fc. 037 JOINTS, GENERAL
Finish joints flush with wall face while the mortar is still green.	Fc. 038 FLUSH JOINTS
Rake out joints which are to be pointed with sealant at control joints and other locations as indicated on the drawings. Such joints shall be raked and tooled smooth to a uniform depth of 20mm.	Fc. 040 SEALED JOINTS
Rake out joints to a depth of 13mm after the mortar has set to form a key for plaster where the walling is to be plastered.	Fc. 041 RAKING OUT JOINTS
Overhead work will not be permitted on external walls and all tooling pointing and/or raking out shall be carried out at eye vision levels.	Fc. 042 OVERHEAD WORK
MORTAR	**Fq. 107**
Ready mixed sand-lime mortar shall comply with BS 4721.	Fq. 108 READY MIXED MORTAR
WATER	**Fw. 100**
The water to be used in the mix shall be clean and free from harmful matter.	Fw. 101
If the water supply is not obtained from a public mains supply the Contractor shall obtain the Architect's approval in writing prior to use.	Fw. 102 WATER, APPROVAL OF SOURCE
Test water in accordance with BS 3148 if directed by the Architect.	Fw. 103 WATER TESTING
WORKMANSHIP	
QUALITY CONTROL	**Fa. 100**
The minimum 28 day compressive strength of mortar shall be in accordance with the following schedule:	Fa. 101 MINIMUM COMPRESSIVE STRENGTH

Location	Mortar Type	Minimum 28 day compressive strength	
		Site Test	Laboratory Test
Rising Walls	CLS1	11 N/sq.mm	16 N/sq.mm
All other Walling	CLS2	2.5 N/sq.mm	3.6 N/sq.mm

Where compressive strength does not comply with minimum specified strength obtain approval in writing from the Architect for adjusting the proportions of the mix.

Determine the compressive strength of mortar speciments in accordance with BS 4551 and with the following table:

Fa. 102 COMPRESSIVE STRENGTH TESTS

Mortar Designation	Number of specimens to be tested from each sample	
	Age of test	
	7 days	28 days
CLS1	2	2
CLS2	2	2

Obtain fresh mortar samples for testing in accordance with BS 4551

Fa. 103 SAMPLES GENERALLY

Take samples of fresh mortar for testing as directed by the Architect.

Fa. 104 TAKING OF SAMPLES

PREPARATIONS

Fc. 100

Cement shall be delivered in unbroken bags as dispatched by the manufacturer or in approved bulk cement delivery vehicles.

Fc. 101 CEMENT DELIVERY

Sand shall be stored on a hard self-drained area.

Fc. 102 SAND STORAGE

Hydrated lime shall be stored under weatherproof conditions on a raised floor or in suitable silos.

Fc. 103 HYDRATED LIME STORAGE

Cement shall be stored under weather-proof conditions on a raised floor, or in suitable silos. Air set cement shall not be used.

Fc. 104
CEMENT STORAGE

Dry premixed mortar shall be stored under weatherproof conditions on a raised floor.

Fc. 105
DRY PREMIXED MORTAR STORAGE

Ready mixed sand-lime shall be stored on a clean impermeable surface under weatherproof conditions. Prolonged storage before use shall be avoided.

Fc. 106
READY MIXED SAND-LIME STORAGE

Mortar containing cement shall be used within two hours of adding water to the cement.

Fc. 108
USE OF MORTAR

MORTAR — Work Section F.2

MATERIALS

AGGREGATES — Fp. 200

Sand for general purpose mortars shall comply with BS 1200.

Fp. 201
SAND

Crushed stone sand for mortar shall comply with BS 1200.

Fp. 202
CRUSHED STONE SAND

The sand used in all fairfaced brickwork and blockwork mortars shall be clean (washed) and shall be from the same source and shall be uniform in colour and texture.

Fp. 203
SAND SOURCE FOR FAIR-FACED WORK

LIME — Fq. 200

Hydrated lime shall comply with IS 8.

Fq. 201
HYDRATED LIME

CEMENT — Fq. 202

Do not use unapproved cement.

Fq. 203
CEMENT

Test Certification to Irish Standard Specification for Portland Cement.

Fq. 204
CEMENT MANUFACTURER'S TEST CERTIFICATES

Portland cement used in mortar to be certified as complying with IS 1 in accordance with the Irish Standard Mark Licesning Scheme of the IIRS (Particular Regulations for Portland Cement: Ref. 1/9). Manufacturer's or suppliers' certificates of compliance with the Standard shall be provided by the Contractor when requested by the Architect.

Normal Portland cement (NPC) shall comply with IS 1.

Fq. 205 NORMAL PORTLAND CEMENT

MOVEMENT AND CONTROL JOINTS — Work Section F.3

MATERIALS

JOINT FILLERS — Ft. 300

Joint filler for movement joints shall be compressible non-extruding board impregnated with high grade bitumen compound to comply with Clause 1727 of the Department of Environment Specification for Road Works and shall be as specified at Clause Ri. 019 of this Specification.

Ft. 301 JOINT FILLERS

Two-part polysulphide sealing compounds shall comply with BS 4254.

Ft. 303 TWO-PART POLYSULPHIDE SEALING COMPOUND

Movement joint cover strips shall be extruded aluminium and elastomeric type of manufacture as approved by the Architect in writing. The contract drawings show the desired arrangement for movement joint cover strips and the Contractor shall submit samples and full details of the type proposed for use for approval prior to ordering.

Ft. 304 MOVEMENT JOINT COVER STRIPS

WORKMANSHIP

CONSTRUCTION MOVEMENT JOINTS — Fc. 400

Movement joints in walls shall be vertical and shall be constructed in accordance with the relevant details on the Contract Drawings.

Fc. 401 FORMATION OF VERTICAL JOINTS

Build in joint fillers as the work proceeds.

Fc. 402 JOINT FILLERS

Movement joints shall be filled with bitumen impregnated softboard to the widths and thicknessses as detailed on the drawings.

Fc. 403 FILLING JOINTS

Movement joints shall be sealed on the inner face and outer face of external walls with two-part polysulphide compound in accordance with the manufacturer's written instructions.

Fc. 404 SEALING JOINTS

Cover strips to inner faces of external walls and internal walls at movement joints shall be fixed in accordance with the manufacturer's written instructions.

Fc. 405 FIXING COVER STRIPS

CONSTRUCTION CONTROL JOINTS — Fc. 406

Control joints shall be filled with mortar type CLS2 for the full thickness of the adjacent walling. Strike off surplus mortar and leave neat joints. Finish joints flush with wall face while the mortar is still green.

Fc. 407 FILLING JOINTS

Where control joints occur on external walls for finishing with rendering the joints shall be sealed with two part polysulphide compound applied in accordance with the detail drawing. Sealing compound shall be applied in accordance with the manufacturer's written instructions.

Fc. 408 SEALING JOINTS

BLOCKWORK — Work Section F.5

MATERIALS

CONCRETE PRODUCTS — Ff. 500

Concrete blocks shall comply with IS 20 and shall be as called up on the drawings

Ff. 501 CONCRETE BLOCKS

Type and Designation:
Solid Blocks : S5
Hollow Blocks : H5

Types shall include standard, standard half, standard three quarter and standard quarter closers, cavity closer, quoins and bond beam lintel blocks.

Concrete blocks for facing work shall comply with IS 20 and shall be similar to an approved sample.

Ff. 504 CONCRETE BLOCKS FOR FACING WORK

WORKMANSHIP

TOLERANCES

Fa. 500

The permissible deviation for blockwork shall be as follows:

Fa. 501
LEVEL, POSITION AND PLUMBNESS

Level: For any nominally horizontal surface when measured from the nearest reference line: +/- 10mm.

Position on Plan: For the position of any nominally vertical surface at the lower edge when measured horizontally from the nearest reference line: +/- 10mm.

Plumbness: The permissible deviation from plumb of the upper and lower edges of any nominaly vertical surface shall be : 5mm in any 1M but not more than 10mm in any storey height.

Provide sample panels in accordance with the following schedule:

Fc. 502
SAMPLE PANELS

Number	Material	Size of Panel	Bond	Joint Finish
1	100 solid concrete facing blockwork	3600 x 1800mm	Stretcher	Bucket Handle 10mm
1	215 solid concrete blockwork	3600 x 1800mm	Fc. 507	Recessed 10mm
1	215 mm hollow concrete blockwork	3600 x 1800mm	Fc. 507	Recessed 10mm

LAYING OF BLOCKS

Fc. 503

Lay hollow concrete blocks on a bed of mortar spread to receive the full bearing area of the shells and webs of the blocks and completely fill all vertical joints with mortar.

Fc. 504
HOLLOW CONCRETE BLOCKS

Lay blockwork and brickwork in stretcher bond, i.e. with stretchers only in each course and with one half block lap.

Fc. 505
STRETCHER BOND

Lay special paving edging bricks in accordance with the drawings in stack bond.

Fc. 506
PAVING BOND

Lay bricks in English garden wall bond, i.e. with three courses of stretchers with half brick lay and one course of headers.

Fc. 507
ENGLISH GARDEN WALL BOND

Distribute evenly througout the facing work bricks of varying shades of the same colour. Mix deliveries which may vary in colour to avoid contrast between adjoining lifts.

Fc. 508
CONSISTENCY OF COLOUR

MATERIALS

CONCRETE PRODUCTS

Concrete bricks shall comply with IS 189 and shall be as follows:

Ff. 604 CONCRETE BRICKS

Type and Designation: A(7), facing bricks
Solid : 10N/sq.mm

CLAY PRODUCTS

Fg. 600

Clay facing and common bricks shall comply with IS 91 1983 and BS 3921

Fg. 601 CLAY FACING AND COMMON BRICKS

Brick Type : Exact shade shall be to the Architects detailed selection and approval

Fg. 602 CLAY FACING BRICK

Manufacturers: To Architects detail

Strength : Minimum strength 20N/sq.mm

Efforvescence: The bricks shall register Nil on the efforvencence scale.

Dryer Scum : The bricks shall be free from dryer scum

The shape and dimensions of special bricks shall comply with BS 4729.

Fg. 609 SPECIAL BRICK

The permissible deviation for the thickness of blockwork measured from the nominally vertical surface where the blockwork is more than one block thick shall be : +/- 5mm.

Fa. 602 THICKNESS

The permissible deviation from straightness measured horizontally shall be : +/- 10mm.

Fa. 603 STRAIGHTNESS

The permissible deviation for abrupt change in a nominally continuous surface shall be +/- 3mm. The permissible deviation from the specified relationship of any two surfaces at a junction shall be +/- 3mm.

Fa. 604 ABRUPT CHANGES

The permissible deviation in joint thickness shall be as follows:

Fa. 605 JOINT THICKNESS

1. Horizontal Joints:
   Single Joint thickness: +/- 3mm

   Combined thickness of
   joints in any 1M height: +/- 10mm.

2. Vertical Joints:
   Single Joint thickness: +/- 3mm

   Combined thickness of
   joints in any 3 M length: +/- 10mm

The permissible deviation for bed joints from the nearest nominally horizontal reference line shall be +/- 10mm.

Fa. 606
LEVEL OF BED JOINTS

WORKMANSHIP

TOLERANCES — Fa. 600

The permissible deviation for brickwork shall be as follows:

Level: For any nominally horizontal surface when measured from the nearest reference line: +/- 10mm.

POSITION AND PLUMBNESS

Position on Plan: For the position of any nominally vertical surface at the lower edge when measured horizontally from the nearest reference line: +/- 10mm.

Plumbness: The permissible deviation from plumb of the upper and lower edges of any nominally vertical surface shall be: 5mm in any 1M but not more than 10mm in any storey height.

PREPARATIONS — Fc. 600

Construct brickwork in accordance with the following schedule:

Fc. 601
SCHEDULE OF BRICKWORK

Wall Type	Brick Type	Bond	Mortar Type	Joint Finish & Thickness
All Brickwork	Fg. 601	Stretcher	CLS2	Bucket Handle

Provide sample panels in accordance with the following schedule:

Fc. 602
SAMPLE PANELS

Number	Material	Size of Panel	Bond	Joint Finish & Thickness
1	100 solid concrete brickwork	3600 x 900mm	Stretcher	Bucket Handle

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RED COW INN

SPECIFICATION FOR CONCRETE

Terence O'Neill BE CEng MICE MIEI John Rooney BE CEng MIEI
Members of the Association of Consulting Engineers of Ireland (ACEI)

REF: CONCRETE.SPC

CAST IN-SITU WORK - CONCRETE	CONSTRUCTION E
TOLERANCES FOR FINISHED WORK	WORK SECTION E.0
FORMWORK	WORK SECTION E.1
REINFORCING	WORK SECTION E.2
CONCRETING	WORK SECTION E.4
FINISHES	WORK SECTION E.5
WATER RETAINING WORK	WORK SECTION E.6
SLABS AND PAVING AREAS	WORK SECTION E.7
PERMANENT JOINTS	WORK SECTION E.8

WORKMANSHIP

The permissible deviation for concrete foundations shall be:

Ea. 002
PAD
FOUNDATIONS,
STRIP FOOTINGS

Plan dimensions : + 75mm - 25mm
Vertical dimensions: +/- 15mm

Where formwork is not used a larger positive deviation for plan dimensions may be approved.

The permissible dimensional deviations for structural concrete elements above foundations shall be as follows:

Ea. 004
ELEMENTS
ABOVE
FOUNDATIONS

Level: For any nominally horizontal surface when measured from the nearest reference level:

1. In opes to receive components: +/- 4mm
2. Elsewhere : +/- 10mm

Position on Plan: For the position of any nominally vertical surface at the lower edge when measured horizontally from the nearest reference line:

1. In opes to receive components: +/-4mm
2. Elsewhere : +/-10mm

Notwithstanding the tolerances stated above. The permissible deviation for the surface finish of paving areas shall not in any 3m length exceed +/- 3mm from the nominal surface profile. Measurements of paving areas shall be taken at intervals as directed by the Architect.

Ea. 005
SURFACE
IRREGULARITIES

The permissible deviation from plumb of the upper and lower edges of any nominally vertical surface shall be as follows:

Ea. 006
PLUMBNESS

1. In opes to receive components: +/- 5mm
2. Elsewhere : +/- 5mm over 2m but not more than 20mm in any storey height.

The permissible deviation of cross sectional dimensions of elements from those shown on the drawings shall be as follows, unless otherwise indicated on the drawings.

Ea. 006
CROSS SECTION OF ELEMENTS

1. Superstructure : + 10mm - 5mm
2. Substructure : + 15mm - 5mm

The permissible deviation for abrupt canges in a nominally continuous surface at the junction of two concrete elements shall be as follows:

Ea. 007
DEVIATIONS AT JUNCTIONS

Superstructure and Substructures : +/-5mm

The permissible deviation due to bow in the surfaces of columns, walls and beams shall be as follows:

Ea. 008
BOW

Superstructure and Substructure: 5mm over 2m but not more than 20mm

The permissible deviation for bulging and local irregularities in the surfaces of concrete elements shall be as follows:

Ea. 009
BULGING AND LOCAL IRREGULARITIES

Superstructure and Substructure: +/-3mm

FORMWORK

MATERIALS

ORGANIC FIBRE AND CORK PRODUCTS — Ej. 100

Building paper shall comply with BS 1521 and shall be as follows:

Ej. 103
BUILDING PAPER

Type : Class A Grade A2

PLASTIC PRODUCTS — En. 100

Polyethylene sheet shall comply with BS 3012 and shall be as follows:

Gauge : 1200g
Colour : Natural

Waterproof, vapourproof membrane shall be rubber bitumen/PVC membrane cold applied and self-adhesive.

En. 103
WATERPROOF MEMBRANE

The membrane shall be a strong impervious laminate comprising a 3mm PVC sheet facted on one side with 1.5mm of flexible self-adhesive compound.

The protection and laying of materials shall be in accordance with the manufacturers instructions.

Expanded polystyrene sheeting from permanent forms shall comply with BS 3837 and shall be as follows:

En. 105
EXPANDED POLYSTYRENE

Type	:	A
Grade	:	HD (Heavy duty)
Density	:	15kg/cu.m
Structure	:	Cut board
Thickness	:	As required

JOINT FILLERS

Et. 100

Movement joint fillers shall comply with the requirement of Clause 1727 of the Department of Environment Specification for Road Works and shall be:

Et. 101
MOVEMENT JOINT FILLERS

Type : Cork bound in bitumen and encased between two layers of asphalt paper. The filler shall be waterproof and rotproof.

RELEASE AGENTS

Eu. 100

Use a release agent, marketed as such, compatible with the formwork, the concrete being used and with the finish specified.

Eu. 101
RELEASE AGENTS

WORKMANSHIP

DESIGN AND CONSTRUCTION GENERALLY

Ea. 100

The design, erection and removal of formwork shall be the responsibility of the Contractor.

Ea. 101
FORMWORK

Design and construct the formwork to produce hardened concrete to the tolerances, levels and finishes specified and to withstand the worst combination of:

Ea. 102
FORMWORK DESIGN

1. Total weight of formwork, reinforcement and concrete.
2. Hydrostatic pressure of plastic concrete.
3. Construction loads, including static and dynamic effects of placing, compacting and construction traffic.
4. Wind and snow loads.

Provide formwork details for fairfaced concrete work for approval by the Architects prior to fabrication of the formwork.

Ea. 103
FORMWORK DETAILS

No metal parts of any device for locating reinforcement shall remain within concrete.

Ea. 104
METAL PARTS

Do not use removable through fixings other than those shown on the drawings.

Ea. 105
REMOVABLE THROUGH FIXINGS

Do not use twisted wire ties as through fixings.

Ea. 106
TWISTED WIRE TIES

Carry down formwork to a foundation or such other construction that is sufficiently strong to provide effective support without causing excessive stress or movement in that foundation or construction.

Ea. 107
FORMWORK SUPPORT

Design and construct the formwork so that striking will not subject the structure to shock, overloading or damage.

Ea. 108
FORMWORK STRIKING

Kicker construction generally should not be adopted where kickers are used, cast monolithically with the lower construction.

Ea. 109
KICKERS

Kickers shall not be less than 70mm in height.

Ea. 110
KICKER HEIGHT

As a guide beam and slab soffits shall be erected with an upward camber of 3mm for each 3m of span. The exact camber shall be agreed on site. Where cambers are used the finished sectional dimensions of the concrete elements shall be that specified on the drawings.

Ea. 111
CAMBER

Design, seal and construct the formwork joints and joints between the formwork and completed work to prevent any grout leak and to achieve the specified finish.

Ea. 113
JOINTS

Provide formwork for concrete below ground level in the following locations:

1. Where ground conditions are otherwise unsuitable.
2. Where considered necessary by the Architect.
3. To all concrete walls.

Ea. 114
EXTERNAL WALL FACES

QUALITY CONTROL

Ea. 115

Give 2 working days notice of availability for inspection of completed formwork.

Ea. 116
FORMWORK INSPECTION

PREPARATION

Ec. 100

Store and use release agents in accordance with the manufacturer's written instructions. Use the same release agent throughout the entire area of any one finish.

Ec. 101
RELEASE AGENTS

JOINTS, INSERTS, HOLES AND CHASES

Ec. 102

Form construction or day joints in the following positions, unless otherwise shown on the drawings.

Ec. 103
CONSTRUCTION JOINTS

Beams: Middle of the span.

Suspended Slabs: Middle of the span, parallel to or at right angles to the main reinforcement.

Columns & Walls: 50mm below the junction of the vertical member and the soffit of beam, haunch or slab and at positions defined by kickers where used.

Ribbed Floors: Parallel to any midway between ribs in the slab.

Obtain approval for the position and design of construction or day joints, not described in the Contract Documents.

Ec. 104
CONSTRUCTION JOINTS, APPROVAL

Form construction or day joints in accordance with the following criteria:

1. Maximum area 320sq.m
2. Maximum length 20m

Ec. 105 CONSTRUCTION JOINTS, SIZE OF SINGLE OPERATION

Form construction or day joints with rigid stop boards.

Ec. 106 CONSTRUCTION JOINTS

Fix or box out for inserts in accordance with the drawings or as instructed, prior to placing the concrete.

Ec. 107 INSERTS

Form holes and chases in accordance with the drawings or as instructed, prior to placing the concrete.

Ec. 108 HOLES AND CHASES

Do not cut cast concrete without instructions, from the Architect.

Ec. 109 HOLES AND CHASES, CUTTING OUT

PLACING PERMANENT FORMS — Ec. 110

Where hollow blocks and slip tiles are used, the alignments shall be straight and through. Seal the open ends of hollow blocks prior to placing concrete.

Ec. 111 HOLLOW BLOCKS

Butt joints rigid insulation sheets tightly and stagger alternate courses.

Ec. 114 RIGID INSULATION SHEETS

Lay expanded metal sheets in accordance with the manufacturer's written instructions.

Ec. 115 EXPANDED METAL

Fix movement joint fillers rigidly to resist deformation during placing of the concrete. The joint filler shall provide complete separation between adjacent members.

Ec. 119 MOVEMENT JOINT FILLERS

STRIKING — Ec. 118

Strike all formwork other than permanent forms without disturbing damaging or overloading the concrete structure.

Ec. 119 STRIKING

The stability of the structure and the protection of the concrete after striking shall remain the responsibility of the Contractor.

Ec. 120
STABILITY AND PROTECTION AFTER STRIKING

The minimum period for retaining formwork in position before striking shall not be less than indicated in the following table:

Ec. 121
MINIMUM PERIODS

Type of Formwork	Cement Type Normal Portland Cement (NPC) Mean Air Shade Temperature 7 degress C	16 degrees C
Vertical facing to columns walls and beams	12 hrs	12 hrs
Soffite facing to slabs	5 days	3 days
Support to slabs	12 days	10 days
Soffit facing beams	5 days	3 days
Supports to beams	18 days	15 days

Periods during which the air shade temperature remain below 3 degrees C shall not be taken into account. Provided always that the minimum periods before striking are as in the above table, the actual times of striking shall remain the responsibility of the Contractor.

Where the Contractor can submit evidence that the performance of the structure will not be adversely affected by reducing the specified periods before striking, reduced striking times may be approved.

Ec. 122
EARLY STRIKING

Re-propping shall not be permitted unless approval is obtained from the Architect in writing. Re-propping following the minimum periods noted in Ec. 121 shall be carried out at mid-spans of slabs and beams for a minimum period of 28 days.

Ec. 123
PROPPING

MATERIALS

STEEL PRODUCTS — Eh. 200

Hot rolled mild steel plain or deformed bars shall comply with BS 4449.	Eh. 201 MILD STEEL BARS
Hot rolled high yield steel bars shall be deformed and shall comply with BS 4449.	Eh. 202 HIGH YIELD HOT ROLLED DEFORMED BARS
Cold worked high yield steel bars shall be deformed and shall comply with BS 4449.	Eh. 203 HIGH YIELD COLD WORKED DEFORMED BARS
Steel fabric shall comply with BS 4483.	Eh. 204 STEEL FABRIC
Use annealed iron tying wire of not less than 1.14mm diameter.	Eh. 206 IRON TYING WIRE
Provide manufacturer's test certificates for each type and strength of all reinforcement specified.	Eh. 209 CERTIFICATES

FASTNERS — Et. 200

Use ordinary spacers as necessary to support reinforcement in position. Use special spacers to support reinforcement where such are shown on the drawings and schedules.	Et. 201 SPACERS GENERALY
Use 1:2 cement-sand mortar cover spacers complete with fixing wire for ground floor slabs and foundations.	Et. 202 MORTAR COVER SPACERS
Use approved plastics cover spacers for beams and lintols.	Et. 203 PLASTIC COVER SPACERS
Obtain approval for the use of proprietary fixings for reinforcement.	Et. 205 PROPRIETARY COUPLERS
The Contractor shall provide at his own expense all "chairs" etc. and any other reinforcement supports not shown on the drawings.	Et. 206 "CHAIR" SUPPORTS TO REINFORCEMENT

WORKMANSHIP

TOLERANCES — Ea. 200

The permissible deviation for cover to reinforcement shall be 3mm from that specified. The permissible deviation for the location of reinforcement shall be 10mm provided the permissible deviation for cover is not exceeded.

Ea. 201 TOLERANCES

QUALITY CONTROL — Ea. 202

The Architect may direct samples of all reinforcing bars and fabric specified to be tested and may reject reinforcement which does not comply with the relevant standard specification. The full cost of testing materials which do not comply with specification shall be borne by the Main Contractor.

Ea. 203 BAR AND FABRIC SAMPLES

Arrange in accordance with the Provisional Sum for tests as directed by the Architect to be carried out by an approved testing authority including the delivery of the samples to the testing authority.

Ea. 206 TESTING SAMPLES APPROVED AUTHORITY

Arrange that the testing authority shall furnish copies of the test results directly to the Structural Engineer's office and the Architect's office.

Ea. 207 REPORTING OF TEST RESULTS

PREPARATION — Ec. 200

Handle reinforcement so as not to impair its qualities or cause permanent deformation. Store reinforcement clear of the ground on a clean site and with adequate protection to preent deterioration.

Ec. 201 HANDLING AND STORING

Store reinforcement which has been cut and bent for each portion of the works in clearly identified and separate bundles.

Ec. 202 IDENTIFIED STORAGE

All reinforcment shall be free of loose mill scale, loose rust, oil grease, release agents and other deleterious materials at the time of placing order.

Ec. 203 CLEANLINESS

Prevent projection reinforcement from causing rust staining of exposed concrete surfaces.

Ec. 204 RUST STAINING

Do not use alternative reinforcement in members without approval. — Ec. 205 ALTERNATIVE REINFORCEMENT

CUTTING AND BENDING — Ec. 206.

Cut and bend reinforcement in accordance with BS 4466 and the schedules provided. — Ec. 207 GENERALLY

Do not cold bend high yield reinforcement when the air shade temperature is below 5 degrees C unless approval is obtained. Do not cold bend mile steel reinforcement when the air shade temperature is below 0 degrees C unless approval is obtained. — Ec. 208 COLD WEATHER BENDING

Do not heat cold worked steel reinforcement. — Ec. 209 COLD WORKED STEEL

Do not rebend or remove bends from bars without approval. — Ec. 210 REBENDING

FIXING — Ec. 211

Place and fix securely all reinforcement in the positions indicated on the drawings. Support top reinforcement in slabs at not more than 1 metre centres. Fix cover spacers to maintain the specified concrete cover except where other methods are required. — Ec. 212 GENERALLY

Do not without approval, form laps in reinforcement other than those shown on the drawings. — Ec. 213 LAPS

Fix reinforcement adequately with tying wire or proprietary fixings. — Ec. 214 FIXING

No metal part of any device for fixing reinforcement shall remain within the concrete provided for cover to reinforcement. — Ec. 217 FIXING RESTRICTION METAL PARTS

MATERIALS

AGGREGATES

Ep. 400

Provide details of proposed aggregates for approval. Do not use unapproved aggregates.

Ep. 401 AGGREGATES

Coarse and fine aggregates from natural sources for concrete shall comply with IS 5. Aggregates of which only the grading does not comply with IS 5 may be approved.

Ep. 402 COARSE AND FINE AGGREGATES

Coarse aggregates from natural sources for no fines concrete shall comply with IS 5 as modified by the following grading requirements:

Ep. 409 AGGREGATES NO FINES CONCRETE

Sieve Size	% Passing
20mm	90 - 100
10mm	not more than 15

The sodium chloride content of aggregates shall not exceed 1% by weight of the cement used in the concrete mix. Determine the sodium chloride content in an approved manner.

Ep. 411 AGGREGATES, SODIUM CHLORIDE CONTENT

The drying shrinkage of concrete made with natural aggregate shall not exceed 0.05% determined in accordance with BS 1881 Part 2.

Ep. 413 NATURAL AGREGATES SHRINKAGE

CEMENT — Eq. 400

Do not use unapproved cement. — Eq. 401 CEMENT

Test certification to Irish Standard Specification for Portland Cement. — Eq. 401 CEMENT MANUFACTURER'S TEST CERTIFICATES

Portland Cement used in concrete, concrete products and other cement based products shall be certified as complying with IS 1 in accordance with the Irish Standard Mark Licensing Scheme of the IIRS (Particular Regulations for Portland Cement: Ref 1/9). Manufacturer's or suppliers certificates of compliance with the standard shall be provided by the Contractor when requested by the Architect.

Do not use air-set cement or high alumina cement. — Eq. 403 AIR-SET CEMENT, HIGH ALUMINA CEMENT

Normal Portland Cement (NPC) shall comply with IS 1. — Eq. 404 NORMAL PORTLAND CEMENT

Designed Mixes shall be in accordance with the following schedules. — Eq. 413 DESIGNED MIXES

Mix Designation	40N20	40N10	35N20	30N20	30N10	35N20 water-proofing	25N20	20N20	15N20
Characteristic cube strength at 28 days (MPa)	40	40	35	30	30	35	25	20	15
Cement Type	NPC	NPC	NPC	NPC	NPC	NPC	NPC	NPC	NPC
Aggregates	IS5	IS5	IS5	IS5	IS5	IS5	IS5	IS5	IS5
Nominal Max. Aggregate Size (mm)	20	10	20	20	10	20	20	20	20

Minimum Cement Content (kg/cu.m)	350	350	300	275	275	360	275	275	250
Maximum Cement Content	550	550	550	550	550	550	550	550	550
Rate of Sampling (cu. m per sample)	20	20	20	20	20	20	20	20	20
Workability slump	50	50	50	50	50	50	50	50	50
Maximum free water/ cement ratio	0.55	0.55	0.60	0.65	0.65	0.50	0.65	0.65	0.65

Concrete may be supplied ready mixed provided the Architect's written approval is obtained.

Eq. 415 READY MIXED CONCRETE APPROVAL OF USE

The ratio of aggregate to cement for no fines concrete shall be 8 to 1.

Eq. 400/1 NO FINES CONCRETE

ADMIXTURES — Eu. 400

Do not use admixtures without the written approval of the Architect.

Eu. 401 ADMIXTURES

WATER — Ew. 400

The water to be used in the mix shall be clean and free from harmful matter. Obtain approval of source of supply if not obtained from mains. Test to BS 3148 if required.

Ew. 401 WATER

WORKMANSHIP

GENERALLY — Ea. 400

Record and time and date of all concrete cast and retain on site for inspection.

Ea. 401 RECORDS

Install a maximum/minimum thermometer in an approved position on site to record air shade temperatures. Record:

Ea. 402 TEMPERATURE RECORDS

1. The maximum and minimum overnight air temperatures each night.
2. The air shade temperature of three approved times each day.

Retain records of temperature on site for inspection.

Do not cast concrete while the air shade temperature is below 2 degrees C on a rising thermometer or below degrees C on a falling thermometer.

Ea. 403 MINIMUM CASTING TEMPERATURE

Do not place concrete against frozen or frost covered surfaces.

Ea. 405 FROZEN SURFACES

Do not place concrete which has a temperature in excess of 30 degrees C without approval.

Ea. 406 MAXIMUM CONCRETE TEMPERATURE

TOLERANCE, ACCEPTANCE CRITERIA

Ea. 407

Compliance with the specified characteristic cube strength shall be assumed if:

Ea. 408 COMPRESSIVE STRENGTH

1. The average strength determined from any group of four consecutive test results exceeds the specified characteristic strength by:

   3 MPa for concretes 20 MPa and above.

   2 MPa for concretes 15 MPa and below.

2. The strength determined from any test result is not less than the specified characteristic strength minus:

   3 MPa for concrete 20 MPa and above.

   2 MPa for concretes 15 MPa and below.

Modified acceptance criteria may be approved for trial mixes.

The permissible deviation for slump for designed mixes shall be +/- 25mm to +/- one-third of the specified value, whichever is the greater.

Ea. 412 WORKABILITY OF DESIGNED MIXES, SLUMP

The permissible deviation for the compacting factor shall be:

+/- 0.03 where the specified value is greater than or equal to 0.9.
+/- 0.4 where the specified value is less than 0.9 but more than 0.8.
+/- 0.05 where the specified value is 0.8 or less.

Ea. 413
WORKABILITY OF DESIGNED MIXES, COMPACTING FACTOR

The permissible deviation for the VB consistometer test shall be +/- 3 seconds or +/- one-fifth of the specified value, whichever is the greater.

Ea. 414
WORKABILITY OF DESIGN MIXES, VB

The permissible deviation for the air content determined from individual samples shall be +/- 1.5% of the specified value. The permissible deviation for the average air content from any four consecutive determination from separate batches shall be +/- 1% of the specified value.

Ea. 415
AIR CONTENT OF DESIGNED MIXES

QUALITY CONTROL

Ea. 416

Take one sample per 20 cu.m of aggregates delivered to the works and carry out the following tests in accordance with IS 5:

Ea. 417
AGGREGATE TESTING

1. Grading
2. Strength
3. Drying shrinkage

Carry out all tests indicated below:

Ea. 418
WORK TEST
SCHEDULE

Test & Test Designation Procedure	Concrete Mix								
	40N20	35N20	30N20	30N10	40N10	35N20 Water Proof	25N20	20N20	15N20
Workability BS 1881	Test	Test	Test	Test	Test	Test	Test	Test	Test
Compressive Strength - Cubes BS 1881	Test	Test	Test	Test	Test	Test	Test	Test	Test
Cement Content BS 1881	Test	Test	Test	Test	Test	Test	Test	Test	Test

Determine, where specified, the workability of one specimen from each sample of fresh concrete.

Ea. 419
WORKABILITY
TESTS

The test results shall be the average of the strengths of two specimens from each sample, cured in a similar manner and tested at the same age.

Ea. 421
TEST
RESULTS

Determine the strenght at 28 days of two concrete specimens from each sample in accordance with the following schedule:

Ea. 422
STRENGTH TEST
FOR COMPLIANCE
MOULDED
SPECIMENS

Mix Designation	Specimen	Test
40N20 & 40N10	Cube	Crushing
35N20	Cube	Crushing
30N20	Cube	Crushing
30N10	Cube	Crushing
35N20 W.P.	Cube	Crushing
25N20	Cube	Crushing
20N20	Cube	Crushing
15N20	Cube	Crushing

Early age tests or accelerated curing methods which are capable of predicting the 28 day strength may be approved.

Obtain concrete samples and prepare test specimens in accordance with BS 1881.

Ea. 423 SAMPLES, GENERAL

Take samples of fresh concrete at the point of discharge from the mixer or ready mixed concrete delivery vehicle.

Ea. 424 TAKING OF SAMPLES

Provide suitable equipment and competent personnel to take samples and prepare test specimens for the following tests:

1. Strength tests
2. Workability tests
3. Aggregate grading
4. Cement content

Ea. 425 PREPARATION OF TEST SAMPLE

Provide suitable equipement and competent personnel to carry out the following tests:

1. Strength tests
2. Workability tests
3. Aggregate grading
4. Cement content

Ea. 426 PREPARATION OF TEST RESULTS

Arrange in accordance with the Provisional Sum for the following tests to be carried out by an approved testing authority:

1. Strength tests
2. Aggregate grading
3. Cement content

Include for the delivery of the specimens to the testing authority.

Ea. 427
TESTING SPECIMENS APPROVED AUTHORITY

Arrange that copies of the test results be sent directly to the Architect's office and the Structural Engineer's office within an approved period.

Ea. 429
REPORTING OF TEST RESULTS

BATCHING PLANT — Eb. 400

The tolerance of the measuring device used for batching, cement, water or aggregate shall be +/- 3% and for batching admixtures shall be +/- 5%.

Eb. 401
MEASURING DEVICES TOLERANCE

Check the accuracy of the measuring equipement used for batching whenever required during the progress of the work.

Eb. 402
MEASURING DEVICES ACCURACY

Maintain all batching plant in a clean serviceable and accurate condition.

Eb. 403
BATCHING PLANT

PREPARATION — Ec. 400

Store different aggregates separately on hard self-draining areas or in suitable hoppers or containers.

Ec. 401
AGGREGATE STORAGE

Cement shall be delivered in unbroken bags as dispatched by the manufacturer or in approved bulk cement delivery vehicles.

Ec. 402
CEMENT DELIVERY

Store cement under waterproof conditions, on a raised floor, or in suitable silos.

Ec. 403
CEMENT STORAGE

Store admixtures in accordance with the manufacturer's written instructions.

Ec. 404
ADMIXTURE STORAGE

Use concrete mix types as follows:

Ec. 405
CONCRETE LOCATION OF MIX TYPES

Mix Designation	Location
40N10	Infill concrete to all external reinforced blockwork elements.
40N20	All external reinforced concrete elements - external R.C. walls, columns, beams with exposed Corbels, cills, copings, stairs, ramps etc.
35N20	All reinforced concrete below ground level unless otherwise noted - pad and strip foundations, rising columns, ground beams and retaining walls.
30N20	General structure as specified unless noted otherwise on the drawings.
30N10	Infill concrete to internal reinforced blockwork. Structural screeds.
35N20 W.P.	Underground structures and water retaining structures i.e. Lift Pit etc.
25N20	Ground Floor floating slabs
20N20	Underpinning concrete
15N20	Making up levels under foundations and concrete blinding.

BATCH AND MIXING

Ec. 406

Measure quantities of fine and coarse aggregates by weight.

Ec. 407
BATCHING OF AGGREGATES

Measure quantities of cement by weight. If using bagged cement adjust quantities to use whole number of bags. Where cement is weighted, use a separate weighing device from that used for weighing aggregates.

Ec. 410
CEMENT BATCHING

Use admixtures as directed by the Architect in writing.

Ec. 411
ADMIXTURES

Mix concrete to a uniform consistency and colour in a mixer of an approved type. The minimum time of mixing after the addition of water shall be two minutes, unless otherwise approved. Discharge each concrete batch completely before recharging the mixer. Do not charge the mixer over the capacity stated by the manufacturer.

Ec. 413
CONCRETE MIXING

Do not use frozen aggregates or aggregates containing ice or frozen snow.

Ec. 414
FROZEN AGGREGATES

Make trial mixes under full scale production conditions for the following mix designations with the materials proposed for use in the works, unless the mix is approved from details submitted:

Ec. 415
TRIAL MIXES

Mix Designations: 40N20, 35N20, 30N20,
30N10, 40N10, 35N20W.P.
25N20, 20N20, 15N20

Trial mixes shall not be made until approval is obtained. Make further trial mixes as required and obtain further approval when there is a change in the materials or in the proportions of materials used.

Carry out tests on trial mixes as indicated below.

Ec. 416
TESTS ON TRIAL

Test and Test Procedure (No. of tests per mix)	Concrete Mix Designation								
	40N20	35N20	30N20	30N10 W.P.	35N20	25N20	20N20	15N20	40N10
Workability BS 1881 (1)	Test	Test	Test	Test	Test	Test	Test	Test	Test
Compressive Strength Cubes at 28 days BS 1881 (4)	Test	Test	Test	Test	Test	Test	Test	Test	Test

TRANSPORTING AND DISCHARGING

Ec. 417

All equipment used for transporting and discharging concrete shall be free from contamination and accumulation of hardened concrete.

Ec. 418
CLEAN EQUIPMENT

Transport and deliver concrete in such a manner as to avoid segregation contamination or loss of ingredients.

Ec. 419
TRANSPORTING CONCRETE

Obtain approval for the method of transporting and discharging concrete throughout the Works.

Ec. 420
APPROVAL OF METHOD

The discharge of ready mixed concrete transported in a truck shall be completed within two hours from the first introduction of the mixing water to the cement and aggregate or the introduction of cement to the aggregates, unless otherwise approved. The discharge of ready mixed concrete transported in non-agitating equipment shall be completed within one hour from the first introduction of the mixing water to the cement and aggregates, unless otherwise approved.

Ec. 421
READY MIXED CONCRETE COMPLETION OF DISCHARGE

PLACING AND COMPACTING

Ec. 422

Formwork and excavations shall be clean and free from water at the time of placing concrete.

Ec. 423
CLEANING FORMWORK AND EXCAVATIONS

Complete each unit of construction or each section of work between construction joints in one operation. Discharge concrete into formwork and excavations or loss of ingredients. Discharge all concrete as close as possible to its final position. Partially hardened concrete or concrete adversely affected by delay or weather shall not be used.

Ec. 424
PLACING

Thoroughly compact all concrete using a method appropriate to the workability of the concrete and the nature of the work. Concrete shall be compacted as soon as practicable after placing. Do not damage adjacent partially hardened concrete.

Ec. 425
COMPACTING

Mechanical compaction shall be carried out with approved vibration equipment.

Ec. 426
MECHANICAL COMPACTION

Manual compaction shall be carried out with approved tools and may be used in all unreinforced work and elsewhere with approval. No fines concrete shall be compacted by hand only.

Ec. 427
MANUAL COMPACTION

CURING

Ec. 428

Maintain the temperature of the concrete at not less than 5 degrees C for at least forty-eight hours after casting, unless otherwise approved. Obtain approval of proosed methods of maintaining concrete temperature.

Ec. 429
MAINTENANCE OF CONCRETE TEMPERATURE

Protect the concrete from loss of moisture and from the harmful effects of weather and from traffic for periods after placing not less than those indicated in the following table:

Ec. 431 NOMINATED CURING PERIODS

Conditions under which concrete is maturing	Minimum periods of protection	
	Where the average temperaure of the concrete exceeds 10 degrees C during the period	Equivalent maturity (degrees C hours). The age of the concrete in hours times the number of degrees Celcius by which the average temperature of the concrete exceeds - 10 degrees C.
	Number of days	Degrees C x Hours
Hot weather or drying winds	7	2,000
Conditions other than above	7	1,000

Obtain approval for curing methods proposed for vertical and horizontal surfaces.

Ec. 432 CURING METHOD

Remove all laitance and loose material as soon as practical to expose, but not disturb, the coarse aggregate.

Ec. 434 SURFACE PREPARATION OF CAST CONCRETE

The face of the cast concrete shall be clean and damp when placing new concrete against it.

Ec. 435 CASTING AGAINST PREPARED SURFACES

WORKMANSHIP

FINISHES

Ec. 500

Formed surfaces of concrete shall be smooth with true clean arrises and shall be free for voids, lipping and honeycombing. Where surfaces are provided as an exposed finish only very minor surface blemishes should occur and there should be no staining or discolouration from the release agent.

Ec. 501
SURFACES GENERALLY

Provide a tamped finish to all top surfaces unless otherwise specifed.

Ec. 502
TAMPED FINISH

Provide a fair-faced finish to surfaces to be provided as an exposed finish similar in quality to a sample as approved by the Architect.

Ec. 503
FAIR-FACED FINISH

Cross refer to Work Section E.7 of this Specification for clauses relating to the finish to floor slabs.

Ec. 504
FLOOR SLABS

Provide a fairfaced finish from a plywood mould face to exposed concrete. Formed surfaces of concrete shall be smooth with true clean arrises and shall be free from voids, liping and honeycombing. Only very minor surface blemishes should occur and there should be no staining or discolouration from the release agent. Cross refer to Clause EI 101 Plywood. Cast concrete to the B(1) face of the plywood moulds. Workmanship and materials for all exposed concrete should be in accordance with the following publications: "Recommendations for the Production of High Quality Concrete Surfaces" by L.S. Blake and "Guide to Exposed Concrete Finishes" by Michael Gage.

Ec. 505
FAIRFACED FINISHED SURFACES

FORMWORK TIES — Eh. 600

Use formwork ties of a type and quality suitable for use in water retaining work. — Eh. 601 FORMWORK TIES

WATERBARS — En. 600

Waterbars shall be external heavy duty type as shown on drawings and as approved by the Architect. Minimum width 225mm. — En. 601 WATERBARS

AGGREGATES — Ep. 600

The absorption of aggregates for concrete of mix type 35N20 WP shall not exceed 3% determined in accordance with IS 5, Method B. — Ep. 601 ABSORPTION

Aggregates shall be uniformly well graded. — Ep. 602 AGGREGATE GRADING

CEMENT — Eq. 600

The cement content of waterproof concrete of mix type 35N20 W.P. shall be 360 Kg/cu.m. — Eq. 601 CEMENT CONTENT

The maximum free water/cement ratio shall be 0.5. — Eq. 602 WATER/CEMENT RATIO

ADMIXTURES — Eu. 600

Plasticisers shall be allowed with written approval of the Architect to reduce the water/cement ratio of the waterproof concrete mix. — Eu. 601 PLASTICISERS

WORKMANSHIP

TOLERANCES, ACCEPTANCE CRITERIA — Ea. 600

Faces of waterproof concrete elements shall show no signs of leakage when the structure is tested for watertightness.

Ea. 601 WATERTIGHTNESS, FACES OF ELEMENTS

Where the description of the concrete mix is qualified by the letters W.P. (waterproof) the Contractor shall give special care and attention to the work at all stages to ensure a watertight structure. Should the work fail in this respect it shall be made watertight at the Contractor's expense.

Ea. 602 WATERPROOF CONSTRUCTION

QUALITY CONTROL — Ea. 604

Waterproof concrete work shall be carried out in acordance with BSCP 5337.

Ea. 605 QUALITY CONTROL GENERALLY

Upon completion of waterproof work and before backfilling commences the construction shall be prepared for inspection by the Architect. All surface water shall be removed and all surfaces shall be dried off. Any areas of water penetration shall be located by the Contractor and the defects shall be rectified by high pressure grouting or other approved methods at the Contractors expense.

Ea. 606 INSPECTION WATERPROOF CONSTRUCTION

No rubbing up of concrete surfaces shall be carried out after the formwork is removed and all concrete surfaces both inside and outside shall be left untouched.

Ea. 607 CONCRETE SURFACES

Ec. 601 EMBEDDED COMPONENTS

Notwithstanding the other provisions for inserts, fix in the positions indicated on the drawings, prior to placing the concrete, components that are required to penetrate water retaining elements fully or partially.

Ec. 602 WATERBARS

Waterbars shall be fixed and held in position in accordance with the manufacturer's written instructions.

Ec. 603 CONSTRUCTION JOINTS

Construction joints shall be constructed so as to achieve complete watertightness. The Contractor shall obtain approval for joint positions before concreting commences. Kicker construction generally should not be adopted. Where kickers are used between floor slab and vertical walls they shall be poured at the same time. The minimum height of kickers shall be 150mm and the Contractor shall cast the slab adjacent to the wall against a tip shutter in order to achieve a fully compacted kicker. The Contractor shall arrange the formwork so that no leakage of grout occurs at joints.

All vertical construction joints shall be formed with well braced timber stop ends held or slotted where necessary to allow the reinforcement to pass through the joints. The concrete shall be compacted against the stop end for the full height of the lift. The vertical joints shall be stopped and staggered in approved positions and such corners. Before concreting against any temporarily stopped work or construction joints, the surface of the concrete shall be free from laitance and should be roughened to the extent that the largest aggregate is exposed but not disturbed. The procedure shall be as follows:

(a) Bonding to concrete 2 to 4 hours old:
The surfaces of the hardening work shall be wetted with fine soft spray. At the same time the surface shall be gently brushed with a soft brush to remove the cement film from the coarse aggregate without disturbing the hardening concrete. The prepared surface shall be lightly coated with neat cement grout immediately before any subsequent concrete is cast and care should be taken that the first or second batch out of a clean mixer is not used against existing work. To avoid hacking of hardened surfaces the joint should be prepared in this period.

(b) Bonding to concrete over 3 days old:
The hardened surface shall be chipped away and thoroughly brushed and washed with clean water to remove all loose particles. A neat cement slurry of thick creamy consistency shall be brushed over the surface and worked well in. The surface shall be covered with a layer of cement-sand water and the fresh concrete shall be poured and thoroughly worked towards the mortar. In structures subject to water pressure the joints shall be constructed as detailed on the drawings. Particular attention must be paid to the preparation of concrete surfaces. This should be carried out when the concrete is 2 - 4 hours old and if this is not possible the hardened surface shall be chipped away mechanically using a needlehammer and must be carried out before the concrete is 2 days old. A prepared sample surface should be made available and agreed before work commences. Expansion joints, construction joints and sliding joints in concrete shall be formed as detailed on the drawings.

WORKMANSHIP

TOLERANCES - GROUND SLABS AND PAVING Ea. 700

The permissible deviation for the edges of concrete ground slabs and paving areas as constructed and for all prescribed alignment shall not exceed +/- 10mm from the reference indicated on the drawings. Ea. 701 HORIZONTAL ALIGNMENTS

The permissible deviation from the nominal surfaces of concrete ground slabs for level shall be as specified at Clause Ea. 004 or Work Section E.0 of this Specification. Ea. 702 SURFACE PROFILE GROUND SLABS

The permissible deviation from the nominal surface of concrete paving area in the vertical direction shall not exceed +/- 10mm. The nominal surface shall be calculated from the paving area vertical profile and crossfalls. Ea. 703 SURFACE PROFILE PAVING

Notwithstanding the tolerances stated above, the permissible deviation for the surface finish of paving areas shall not in any 3M length exceed +/- 3mm from the nominal surface profile. Measurements of paving areas shall be taken at intervals as directed by the Architect. Ea. 704 SURFACE IRREGULARITIES

TOLERANCES - SCREEDS Ea. 705

The permissible dimensional deviation for concrete screeds shall be as follows: Ea. 706 SURFACE PROFILE SCREEDS

Level: For any nominally horizontal surface or surface laid to a specified gradient to the horizontal measured from the nearest reference level or markers: +/- 3mm measured under a 3M straightedge.

SURFACE FINISH — Ec. 700

The finish to ground floor slabs shall be roughened to ensure composite action and full bonding for the screeds. — Ec. 701 FINISH TO GROUND FLOOR SLABS

Concrete paving areas shall be power floated or steel hand trowelled with a star rolled finish applied with a suitable expanded metal mesh roller. Paving bays shall be finished with a steel hand trowelled border strip to edges and at junctions with adjoining paving bays. — Ec. 702 POWER FLOAT AND STAR ROLLED FINISH CONCRETE PAVING

Screed shall be finished in a suitable manner to receive the applied finish to follow. The surface shall be finished with steel hand trowelling or power floating as appropriate. — Ec. 703 SURFACE FINISH SCREEDS

SURFACE GRADIENT — Ec. 709

Slabs, paving areas and screed shall be laid to the surface gradients shown on the drawings. — Ec. 710 SURFACE PROFILE GRADIENT

BAY SIZES — Ec. 711

Slabs for concrete ground slabs and concrete paving areas shall be poured in strips as shown on the drawings. The bean screed shall be designed to suit the bay width. The maximum length of bay shall be 15M. Workmanship shall be in accordance with the Department of Environment Specification for Roads and Bridge works and with the Cement and Concrete Associations booklets on "Concrete Ground Floors" except where otherwise directed by the Architect. — Ec. 712 BAY SIZES, GROUND SLABS AND PAVING AREAS

Concrete screeds shall be laid in bays of not more than 4sq.m in chequerboard pattern. Allow a minimum of 24 hours to elapse before placing adjoining bays. Screed shall be laid in one thickness and shall be fully bonded to the base concrete. The base concrete surface shall be suitable to provide a full bonded screed. Where formed joints are provided in the base concrete, the joint shall also be provided in the screed.

Ec. 713
BAY SIZES
SCREEDS

CONSTRUCTION JOINTS

Ec. 715

Construction and edge joints to concrete ground floor slabs and paving areas shall be cased and straight. Square edged side forms shall be pre-drilled to receive dowel bars. Arris treatment shall be in accordance with the drawings. All construction joints must be straight. Side forms shall be designed and fixed to maintain line and level during the construction of the slab. Formwork shall be kept in position for a minimum of 48 hours.

Ec. 716
CONSTRUCTION JOINTS, FLOOR SLABS AND PAVING

Joints in concrete paving shall be at not greater than 3m centres. The joints shall be formed by inserting a double layer of bitumenous felt which complies with IS 36. The felt shall be vertically at right angles to the kerbing and shall extend the full depth of the concrete. The felt shall be neatly cut off at the surface and the concrete shall be finished to the same level each side of the joint.

CURING

Ec. 718

Concrete ground floor slabs and paving areas shall be cured for a minimum period of 7 days.

Ec. 719
CURING, GROUND FLOOR SLABS AND PAVING

Screed shall be cured for a minimum of 5 days and approval of the curing method proposed shall be obtained from the Architect. In the 4-5 weeks after floor screeds have been laid they shall not be exposed to heating and when the central heating is commissioned temperatures shall be raised gradually.

Ec. 720
CURING SCREEDS

PAVING - CONCRETE — Ec. 721

Concrete footpaths and paving areas shall be laid in two courses to a total thickness of 100mm in accordance with Clause 1104 of the Department of Environment Specification for Road Works. The bottom course shall be 65 mm thick grade 20N20 concrete and the top course shall be a 35mm thick sand: cement mix containing 370 kg/cu.m of concrete of grade 20N20. Concrete foothpaths and paving areas shall be laid with crossfalls of 1 in 40 in the direction of the road channels. The finished surface shall be star rolled.

PERMANENT JOINTS — WORK SECTION E.8

MATERIALS

JOINT FILLERS — Et. 800

Fibre board joint fillers shall be in accordance with Clause Ri. 109 of Work Section R.0 of this Specification.

Et. 800
FIBRE BOARD

The pemissible deviation for the thickness of joint fillers shall not exceed +/- 2mm. The permissible deviation for the depth of joint fillers shall not exceed +/- 3mm.

Et. 805
JOINT FILLERS TOLERANCES

JOINT PRIMERS — Et. 806

Use a primer as recommended by the manufacturer of the associated joint sealant.

Et. 807
PRIMERS

JOINT SEALANTS — Et. 808

Two part polysulphide-based sealants shall comply with BS 4254 and shall be as follows: — Et. 809 TWO PART POLUSULPHIDE SEALANTS

Grade : Gun grade

JOINT ACCESSORIES — Et. 814

Water stops shall be external heavy duty PVC type, as approved by the Architect. — Et. 815 WATER STOPS

Hot rolled mild steel plain dowel bars shall comply with BS 4449. — Et. 817 MILD STEEL DOWEL BARS

Tie bars shall be cold rolled mild steel and shall comply with BS 4449. — Et. 819 TIE BARS

Bond breaking coating by dowel bars shall be in accordance with Clause 1705 of the Department of Environment Specification for Road Works. — Et. 822 BOND BREAKING COATING FOR DOWEL BARS

WORKMANSHIP

TOLERANCES — Ea. 800

The exposed surface of the Joint sealant shall be level with the plan defined by the edges of the joint and the permissible deviation shall be +/- 3mm. — Ea. 801 JOINT SEALANT

The permisible deviation for dowel bars and tie bars shall be as follows: — Ea. 804 DOWEL BARS, TIE BARS

	Permissible Deviation for dowel bars	Permissible Deviation for tie bars
Length	+/- 25mm	+/- 75mm
Bonded Length	+/- 15mm	-------
Spacing	+/- 15mm	+/- 15mm

Alignment with respect to an axis normal, to the plane of the joint	1 in 100	-------
Position in slab depth	+/- 10mm	-------

Water stops shall be embedded equally on either side of the central plane of the joint. The permissible deviation in this respect shall be +/- 10mm

Ea. 805
WATER STOPS

PREPARATION — Ec. 800

Handle and store materials with adequate protection to protect deterioration.

Ec. 801
STORAGE

JOINTS — Ec. 802

Form all joints in the positions, and in accordance with the details shown on the drawings.

Ec. 803
JOINT FORMATION

All insertion and adjustment of jointing materials and accessories shall be completed prior to final compaction of the concrete.

Ec. 805
JOINTING MATERIALS, LOCATION

Joint fillers shall be 20mm less in depth than the depth of the joint.

Ec. 806
JOINT FILLERS

Prepare and maintain the surfaces of concrete joint faces, prior to sealing, in accordance with the manufacturer's written instructions.

Ec. 807
SURFACE DRYING

Prime the surfaces of the concrete joint faces in accordance with the manufacturer's written instructions.

Ec. 808
PRIMING

Apply sealants in accordance with the manufacturer's written instructions.

Ec. 809
SEALANTS

Water stop joints shall be formed in accordance with BS 5337 and as shown on the drawings.

Ec. 810
WATER STOPS JOINTS

Holes in joint fillers to accommodate jointing accessories shall not permit the leakage of grout.

Ec. 813
JOINT FILLERS, HOLES

Dowel bars shall be free from loose mill scale, loose rust and other deleterious material prior to coating.

Ec. 814
DOWEL BARS CLEANLINESS

Tie bars and the bonded length of dowel bars shall be free from loose mill scale, loose rust and other delererious material at the time of placing concrete.

Ec. 815
DOWEL BARS AND TIE BARS CLEANLINESS

Coat dowel bars with de-bonding agent for half length plus 50mm.

Ec. 816
BOND BREAKING COATING FOR DOWEL BARS

GROVES

Ec. 817

Groves in the surface of the concrete over joints shall be formed in the plastic concrete They shall be as shown on the drawings.

Ec. 818
GROOVES AT JOINTS, FORMED

Groves in the surface of the concrete over joints shall be sawn after the concrete has set. They shall be as shown on the drawings.

Ec. 819
GROOVES AT JOINTS, SAWN

SITE INVESTIGATIONS LTD.

SOIL MECHANICS SPECIALISTS

Telephone No: 589944/589093/589776 Fax No. 589418

MAIN STREET,
NEWCASTLE,
CO. DUBLIN.

We are transmitting 10 page/s (~~excluding~~/including this cover note). If you do not receive all the pages please telephone or telefax immediately.

Date: 3rd May '91 Time: _____

From: SITE INVESTIGATIONS LIMITED.

To: John Rooney

Company: Fearon O'Neill Rooney

Number: 611073

Message re: Red Cow Inn. Wagon Drill Hole Records.

SITE INVESTIGATIONS LIMITED

BOREHOLE RECORD

CONTRACT Red Cow Inn
CLIENT Fearon O'Neill Rooney
Site Address Co. Dublin
Boring Commenced 30/4/91
Type of Boring Wagon Drill

Borehole No. 1
Sheet 1 of 1

Boring Completed 30/4/91
Diameter of Borehole 50 mm

Description of Strata	Reduced Level	Depth	Legend	Samples/Tests				Date	Water Depth
				Type	Depth	Ref. No.	Casing Depth		
Ground Level	m	m			m				m
Tarmac and hardcore		0.50							
Gravelly clay		2.20							
Soft clay		4.60							
Stiff clay		5.10							
Rock		6.50						20/4	Nil
Final Level									

Remarks:

KEY - EXPLANATION
+ - Water Strike
D - Disturbed Sample
B - Bulk Disturbed Sample
W - Water Sample
U - Undisturbed Sample
P - Piston Sample
C(N) - Cone Penetration Test
S(N) - Standard Penetration Test
N - Blows /300mm
V - Vane Test

SITE INVESTIGATIONS LIMITED

BOREHOLE RECORD

CONTRACT Red Cow Inn
CLIENT Pearon O'Neill Rooney
Site Address Co. Dublin
Boring Commenced 30/4/91
Type of Boring Wagon Drill

Borehole No. 2
Sheet 1 of 1
Boring Completed 30/4/91
Diameter of Borehole 50 mm

Description of Strata	Reduced Level	Depth	Legend	Samples/Tests				Date	Water Depth
				Type	Depth m	Ref. No.	Casing Depth		
Ground Level	m	m							m
Tarmac and fill		0.40							
Soft clay		4.50							
Stiff clay		5.00							
Rock		8.00						30/4	Nil
Final Level									

Remarks:

KEY - EXPLANATION
+ - Water Strike
D - Disturbed Sample
B - Bulk Disturbed Sample
W - Water Sample
U - Undisturbed Sample
P - Piston Sample
C(N) - Cone Penetration Test
S(N) - Standard Penetration Test
N - Blows /300mm
V - Vane Test

SITE INVESTIGATIONS LIMITED

BOREHOLE RECORD

CONTRACT Red Cow Inn
CLIENT Fearon O'Neill Rooney
Site Address Co. Dublin
Boring Commenced 30/4/91
Type of Boring Wagon Drill

Borehole No. 3
Sheet 1 of 1
Boring Completed 30/4/91
Diameter of Borehole 50 mm

Description of Strata	Reduced Level	Depth	Legend	Samples/Tests				Date	Water Depth
				Type	Depth m	Ref. No.	Casing Depth		
Ground Level	m	m							m
Tarmac and fill		0.55							
Boulder		1.20							
Clay		1.45							
Broken rock		1.70							
Rock		4.70						30/4	Nil
Final Level									

Remarks:

KEY - EXPLANATION
+ - Water Strike
D - Disturbed Sample
B - Bulk Disturbed Sample
W - Water Sample
U - Undisturbed Sample
P - Piston Sample
C(N) - Cone Penetration Test
S(N) - Standard Penetration Test
N - Blows /300mm
V - Vane Test

SITE INVESTIGATIONS LIMITED

BOREHOLE RECORD

CONTRACT Red Cow Inn
CLIENT Fearon O'Neill Rooney
Site Address Co. Dublin
Boring Commenced 30/4/91
Type of Boring Wagon Drill

Borehole No. 4
Sheet 1 of 1

Boring Completed 30/4/91
Diameter of Borehole 50 mm

Description of Strata	Reduced Level	Depth	Legend	Samples/Tests				Date	Water Depth
				Type	Depth	Ref. No.	Casing Depth		
Ground Level	m	m			m				m
Tarmac and stone fill		0.40							
Clay		0.30							
Rock		3.00						30/4	Nil
Final Level									

Remarks:

KEY - EXPLANATION
+ - Water Strike
D - Disturbed Sample
B - Bulk Disturbed Sample
W - Water Sample
U - Undisturbed Sample
P - Piston Sample
↓C(N) - Cone Penetration Test
↓S(N) - Standard Penetration Test
N - Blows /300mm
V - Vane Test

SITE INVESTIGATIONS LIMITED

BOREHOLE RECORD

CONTRACT Red Cow Inn
CLIENT Fearon O'Neill Rooney
Site Address Co. Dublin
Boring Commenced 30/4/91
Type of Boring Wagon Drill

Borehole No. 5
Sheet 1 of 1
Boring Completed 30/4/91
Diameter of Borehole 50 mm

Description of Strata	Reduced Level	Depth	Legend	Samples/Tests				Date	Water Depth
				Type	Depth	Ref. No.	Casing Depth		
Ground Level	m	m			m				m
Tarmac and fill		0.40							
Sandy clay		1.50							
Boulder		1.65							
Soft clay		3.00							
Broken rock		3.50							
Rock		7.00						30/4	Nil
Final Level									

Remarks:

KEY - EXPLANATION
+ - Water Strike
D - Disturbed Sample
B - Bulk Disturbed Sample
W - Water Sample
U - Undisturbed Sample
P - Piston Sample
C(N) - Cone Penetration Test
S(N) - Standard Penetration Test
N - Blows /300mm
V - Vane Test

SITE INVESTIGATIONS LIMITED

BOREHOLE RECORD

CONTRACT Red Cow Inn
CLIENT Fearon O'Neill Rooney
Site Address Co. Dublin
Boring Commenced 30/4/91
Type of Boring Wagon Drill

Borehole No. 6
Sheet 1 of 1

Boring Completed 30/4/91
Diameter of Borehole 50 mm

Description of Strata	Reduced Level	Depth	Legend	Samples/Tests				Date	Water Depth
				Type	Depth	Ref. No.	Casing Depth		
Ground Level	m	m			m				m
Tarmac and fill		0.30							
Soft clay		3.00							
Stiff clay		3.75							
Rock		6.50						30/4	Nil
Final Level									

Remarks:

KEY - EXPLANATION
+ - Water Strike
D - Disturbed Sample
B - Bulk Disturbed Sample
W - Water Sample
U - Undisturbed Sample
P - Piston Sample
C(N) - Cone Penetration Test
S(N) - Standard Penetration Test
N - Blows /300mm
V - Vane Test

SITE INVESTIGATIONS LIMITED

BOREHOLE RECORD

CONTRACT Red Cow Inn
CLIENT Fearon O'Neill Rooney
Site Address Co. Dublin
Boring Commenced 30/4/91
Type of Boring Wagon Drill

Borehole No. 7
Sheet 1 of 1
Boring Completed 30/4/91
Diameter of Borehole 50 mm

Description of Strata	Reduced Level	Depth	Legend	Samples/Tests				Date	Water Depth
				Type	Depth m	Ref. No.	Casing Depth		
Ground Level	m	m							m
Tarmac and fill		1.10							
Broken rock		1.40							
Clay		1.90							
Broken rock		2.60							
Rock		3.20							
Broken rock		3.25							
Rock		6.00						30/4	Nil
Final Level									

Remarks:

KEY - EXPLANATION
+ - Water Strike
D - Disturbed Sample
B - Bulk Disturbed Sample
W - Water Sample
U - Undisturbed Sample
P - Piston Sample
C(N) - Cone Penetration Test
S(N) - Standard Penetration Test
N - Blows /300mm
V - Vane Test

SITE INVESTIGATIONS LIMITED

BOREHOLE RECORD

CONTRACT Red Cow Inn
CLIENT Fearon O'Neill Roonay
Site Address Co. Dublin
Boring Commenced 30/4/91
Type of Boring Wagon Drill

Borehole No. 8
Sheet 1 of 1
Boring Completed 30/4/91
Diameter of Borehole 50 mm

Description of Strata	Reduced Level	Depth	Legend	Samples/Tests				Date	Water Depth
				Type	Depth	Ref. No.	Casing Depth		
Ground Level	m	m			m				m
Tarmac and fill		0.50							
Soft clay		2.50							
Stiff clay		3.10							
Rock		6.00						30/4	Nil
Final Level									

Remarks:

KEY - EXPLANATION
+ - Water Strike
D - Disturbed Sample
B - Bulk Disturbed Sample
W - Water Sample
U - Undisturbed Sample
P - Piston Sample
↓C(N) - Cone Penetration Test
↓S(N) - Standard Penetration Test
N - Blows /300mm
V - Vane Test

SITE INVESTIGATIONS LIMITED

BOREHOLE RECORD

CONTRACT Red Cow Inn
CLIENT Fearon O'Neill Rooney
Site Address Co. Dublin
Boring Commenced 30/4/91
Type of Boring Wagon Drill

Borehole No. 9
Sheet 1 of 1
Boring Completed 30/4/91
Diameter of Borehole 50 mm

Description of Strata	Reduced Level	Depth	Legend	Samples/Tests				Date	Water Depth
				Type	Depth m	Ref. No.	Casing Depth		
Ground Level	m	m							m
Fill		0.50							
Clay		2.40							
Broken rock		2.80							
Rock									
Final Level		5.80						30/4	Nil

Remarks:

KEY - EXPLANATION
+ - Water Strike
D - Disturbed Sample
B - Bulk Disturbed Sample
W - Water Sample
U - Undisturbed Sample
P - Piston Sample
C(N) - Cone Penetration Test
S(N) - Standard Penetration Test
N - Blows /300mm
V - Vane Test

REF: PU.WPS

DATA SHEET FOR PRECAST UNITS

1. The ends of all cores to be filled with polystyrene for a minimum length of 100mm to prevent entry of concrete during screeding operations. The outer surface of the polystyrene should be set back 100mm from the end of the unit.

2. Holes are to be drilled in the soffit of all cores at both ends of each slab to drain off any water which may enter the cores.

3. A minimum bearing of 100mm is to be provided for all precast units.

4. The Manufacturer should visit the site prior to supplying units in order to clarify the method of erection etc. that will be involved.

5. All dimensions should be confirmed by the Manufacturer by measurement on site.

6. All units must comply with B.S. 8110 and structural calculations will be required from the supplier.

7. If a structural screed is required the following information must be provided by the suplier:

   (a) Min. Thickness

   (b) Mesh type

   (c) 28 day concrete crushing strength

8. The tops of the precast units are to be roughened to our satisfaction to ensure composite action between the units and the screed.

9. In addition to the self weight of the units the suppliers design should allow:

   Floors:

   Dead Load: 75mm Insitu concrete non structural screed.

   Applied Load: 5.0kN/sq.m
   Partitions: 1.0kN/sq.m
   Finishes etc. : 1.5kN/sq.m

10. Quotations should show separately Builders Discount, V.A.T. and any other taxes.

11. Completion time should be stated from date of order.

12. The fire resistance of all precast units must comply with Part N of the "Draft Building Regulations" (as amended) and with the requirements of BS 8110.

13. All tenders should include a statement accepting the above conditions as such acceptance is a pre-condition for the above validity of any tender.

14. Top and bottom fire requirements must be set out and checked with the Architect.

15. Allow for breaking out 2No. cores to each end of every unit to facilitate tie steel positioning to edge beams and bands.

16. The Manufacturer shall inform the Contractor as to the method of storage and handling of the units prior to and during erection.

17. Submit details of ope trimmers if any.

McCARTHY AND PATTERSON
ARCHITECTS AND INTERIOR DESIGNERS
Consulting Engineer
Joe Hennessy B.E.

Associates
FULLERS FOLLY,
NEWCASTLE WEST,
CO. LIMERICK.

Ref:- Planning Bye Laws
For "The Red Cow Inn"
Naas Road,
Clondalkin
Co. Dublin.

91A/138
1.4.2.2
A1 for BBL

Reg: Ref. 91A/138.
Your Ref PC/CO'B

11-5-'91

Dear Sir/Madam,

Please find enclosed as requested information for Planning Bye laws,

The Kitchen drawings will be forwarded as soon as we receive some.

Hoping this information meets with your approval.

If there is anything else you require please let us know.

Thanking you for your help in this matter.

Yours Faithfully
Damien Patterson

PHONE: 069 - 62292 FAX: 061 - 62336

McCARTHY AND PATTERSON
ARCHITECTS AND INTERIOR DESIGNERS
Consulting Engineer
Joe Hennessy B.E.

Associates
FULLERS FOLLY,
NEWCASTLE WEST,
CO. LIMERICK.

RED COW INN.

Health Officers Requirments.

All the health officers requirements are to be adhered to. The highest level of finishes in the workspace to provide the utmost level of health and hygiene.

ie. All wall and floor finishes where food is prepared and presented are in ceramic glazed tiles of the highest quality.
All stores and utility areas are to be tiled floor to ceiling and tiled on floors.

(1) The basic kitchen layout is shown on the layout plans, but this is only to show the overall area. We have submitted our basic layout to the top catering equipment Companies in order to provide us with their own proposals. We will then in turn choose the most modern proposal. We feel this is the proper approach as they are the experts and we can benefit from their expertise advise.

If the health officer in turn wishes to see our chosen proposal to comment upon we shall submit same.

(2) Ground Floor Lounge.

We intend to provide a hot lunch to patrons on the property from 12am to 3pm. To provide snacks at all times ie Teas, Coffee, Soup and Sandwiches.

Extended Function Room (GF)

We intend to conduct our present function trade with a higher level of food presentation. Normal sitting 4pm to 8pm.

Proposed Restaurant First Floor.

This area is to operate as a formal Restaurant with A Le Carte meals to operate from 12.30 am to 2.30 pm and from 7 pm to 9 pm.

Existing Function Rooms First Floor

To operate as existing Function Rooms. To provide hot food as normal function trade. Normal sitting 4 pm to 8 pm.

(3) Number of Patrons
Proposal lounge Ground Floor.

Patrons 250	5 Male Wc's 4 Whb.
	8 Female Wc's 6 Whb
Staff 15	1 Male Wc's 1 Whb
	1 Female Wc's 1 Whb.

PHONE: 069 - 62292 FAX: 061 - 62336

McCARTHY AND PATTERSON
ARCHITECTS AND INTERIOR DESIGNERS
Consulting Engineer
Joe Hennessy B.E.

Associates
FULLERS FOLLY,
NEWCASTLE WEST,
CO. LIMERICK.

Extended Function Room (Ground Floor)

Patrons 100	2 Male Wc's 3 Whb
	2 Female Wc's 3Whb
Staff 4	1 Male Wc 1 Whb
	1 Female Wc's 1 Whb.

Proposed Restaurant First Floor.

Patrons 50	1 Male Wc 2 Whb
	2 Female Wc's 2Whb
Staff 5	1 Male Wc 1 Whb
	1 Female Wc 1 Whb

Function Room First Fleor.

Patrons 200	4 Male Wc's 5 Whb
	5 Female Wc's 5 Whb.
Staff 5	1 Male Wc 5 Whb
	1 Female Wc 1 Whb.

All toilets to be provided with hot and cold running water, hand dryers,bacterierdal Soap or cream.

(4) The Building is to be serviced with the most modern ventilation system.
Hot air heating system.
Air Conditioning
Min air charges 1 hour 10. We have submitted a brief to 5 specialist companies for them to submit their proposals and quotations. We then in turn will examine each proposal and choose the best and most efficient.

Brief. We require a heating and ventilation system to control each area seperately. Seperation is of the utmost importance (consider heat pumps). We require air conditioning in each area. Ducting to be provided between ceiling and floor void.
Where ducting passes through floors fire dampers to be provided.
Each area to be theremostatealy controlled, Minimum number of Air changes 1 hour 10.
All Wc lobbies to be air pressured and ventilated to the exterior of Building.

Air supply from extention of Building and all units concealed. Extractions to exterior located at higher level at agreed distance from supply.

PHONE: 069 - 62292 FAX: 061 - 62336

McCARTHY AND PATTERSON
ARCHITECTS AND INTERIOR DESIGNERS
Consulting Engineer
Joe Hennessy B.E.

Associates
FULLERS FOLLY,
NEWCASTLE WEST,
CO. LIMERICK.

(5) Refuse Storage.

All Refuse to be enclosed in covered bins during business hours at rear of Building.
These bins are then to be transferred to the exesting holding compound in the car park. This compound consists of a concrete surface by 6'-0 high walls encasing an inclosed skip. This area is maintained at all times. Disinfecting and vermin are controlled on a daily basis by the operator.
There is one person who's responsibility it is at all times to service the toilets and empty bins. Disinfect all areas where food is stored and keep all these areas clean and tidy.

PHONE: 069 - 62292 FAX: 061 - 62336

DESCRIPTION OF MATERIALS AND WORKMANSHIP

Note:- As Irish and British Standards and Codes of Practice are subject to revision, the number and date of each publication indicated in these preambles shall be deemed to include all revisions and amendments current at the date of tender.

1.0 DEMOLITION AND SITE CLEARANCE.

1.1 GENERALLY.

1.1.1 STANDARD: Carry out all demolition work in accordance with recommended methods laid down in the British Standard Code of Practice CP 94: 1971.

1.1.2 SUPERVISION: Site staff responsible for supervision and control of demolitions are to be experienced in this type of work.

1.1.3 PLANT AND EQUIPMENT: All demolition, plant and equipment is to be:-

1. Of suitable types and standards for location and type of work.
2. In the charge of competent operators.
3. Maintained in good working condition.

1.1.4 MATERIAL ARISING from the demolitions and site clearance are to become the property of the Contractor except where otherwise provided. Remove from site as work proceeds.

1.1.5 BURNING on site of materials arising from the demolition and site clearance will not be permitted.

1.1.6 HARDCORE: Brick rubble or other hard materials arising from the demolitions and site clearance may be re-used as hardcore, subject to compliance with specification for filling.

1.1.7 MAKING GOOD: Carry out with materials to match existing, to approval.

1.2 PRELIMINARY WORK.

1.2.1 PLANS: Examine all available plans of buildings or structures to be demolished.

1.2.2 BENCH MARKS: Report any bench marks and other survey information found on structures to be demolished. Do not remove or destroy unless instructed.

1.2.3 SERVICES: Arrange with appropriate authority for the location and marking of the position of services affected by the demolition work.

1.2.4 DISCONNECTION OF SERVICES: Before starting demolition work arrange with the appropriate authority for the disconnection of services and removal of fittings and equipment.

1.2.5 UNDERGROUND VOIDS: Report to the Architect details of any underground chambers, vaults, wells etc., discovered during demolition work.

1.2.6 UNDERGROUND STORAGE TANKS: Determine positions, depths and contents and report to the Architect.

1.3 PRECAUTIONARY MEASURES.

1.3.1 ADJOINING PROPERTY: When demolishing structures against adjoining property leave adequate supports and protection at each stage and arrange for inspection by the Architect. Proceed with subsequent stages of demolition as instructed. Do not disturb support to foundations of adjoining property.

1.3.2 PARTLY DEMOLISHED STRUCTURES: Prevent access of unauthorised persons to partly demolished structures. Leave safe at close of each day's work.

1.3.3 DANGEROUS OPENINGS: Illuminate and protect as necessary.

1.3.4 OVERLOADING: Prevent debris from overloading any part of the structure.

1.3.5 GAS OR VAPOUR: Take precautions to prevent fire or explosion caused by gas or vapour.

1.3.6 DUST: Reduce by periodically spraying demolition works with water.

1.3.7 INFLAMMABLE LIQUIDS AND GASES: When removing tanks and pipes which may have contained inflammable liquids or gases.

1. Inform the officer of the appropriate authority and follow his advice.

2. Display danger notices and prohibit smoking and use of naked lights.

3. Use non-ferrous tools and equipment and an ample supply of water to reduce risk of sparking.

4. Empty and dispose of all fuel, ensuring that none enters any drainage system of water course.

5. Clean tanks and pipe and render inert.

1.3.8 SUPPORT existing structure as necessary during cutting of new openings or replacement of structural parts. Do not remove supports until new work is strong enough to support the existing structures.

1.3.9 PROTECT parts of existing building which are to be retained. Cut away and strip out with care to reduce the amount of making good to a minimum.

2.0 CONCRETE SPECIFICATION

2.1 Materials : cement

Cement used in concrete, concrete products and other cement based products shall be certified as complying with IS 1:1963 as amended, in accordance with the Irish Stand Mark Licensing Scheme of the IIRS. Manufacturers' or suppliers' certificates of compliance with the Standard shall be provided when requested by the engineer.

Cement must be stored in completely moisture proof conditions. Invoices and delivery dockets shall be available on request.

Records shall be kept by the contractor (and verified by resident supervisory staff) of the cement used in each pour. Care shall be taken that cement is used rotationally and that no cement is stored too long.

2.1.1. Materials : aggregates

Aggregates shall consist of natural pit sand and washed gravel or approved crushed stone. All aggregates shall be hard, uniform and clean. Aggregates shall conform to BS 877:Part 2, BS 1047:Part 2, BS 882,1201:Part 2, BS 3681:Part 2, and BS 3797:Part 2.

Normal maximum sizes of aggregates are 40 mm, 20 mm, 14 mm, and 10 mm.

Separate fine coarse aggregates shall be used except for grades 7, 10 & 15 where "all-in" aggregate may be used.

All aggregate deliveries shall be inspected and samples shall be sent for testing at engineer's discretion.

For grades of concrete other than 7, the grading of each size of aggregate from each source shall be determined weekly or otherwise at the discretion of the engineer.

For ordinary unreinforced structural concrete of grades 7, 10, 15, 20, 25 and 30 the mix proportions should be selected either:

(i) from the schedule of prescribed mixes and the constituent materials selected as detailed below or

(ii) from a designed mix to be determined by the contractor or his agent and submitted to the Engineer for his approval. In either case the requirements of clauses C.09 shall be adhered to as applicable.

For reinforced concrete the mix-proportions shall be determined as in (ii) above.

The grade of concrete to be used in a particular situation shall be as indicated on the relevant drawings but in any case shall not be less than the appropriate grade chosen from table 3.4 clause C.09 taking account of the relevant exposure condition as defined in table 3.2 of BS 8110.

The maximum nominal aggregate size shall be 20 mm. The Engineer shall be notified of any proposal to depart from this.

2.1.2. For Grades 7, 10 and 15

Cement complying with the requirements of clause C.01 above and with either BS 12 or BS 146, coarse aggregate complying with the requirements of BS 882 or BS 1047 and fine aggregate complying with the requirements of BS 882 or all-in aggregate complying with BS 882 with the higher sand contents given in the schedule of prescribed mixes.

For Grades 20, 25, and 30:

2.1.3. Cement complying with the requirements of clause C.01 above and with BS 12, BS 146 or BS 4027, coarse aggregate complying with the requirements of BS 882 of BS 1047 and sand complying with grading zones, 1 2 or 3 of BS 882.

The engineer should be informed of the nature and source of each material to be used and subsequently whenever a change is made. No admixtures should be used without written approval of the engineer.

The cement contents for these prescribed mixes are given in the schedule of prescribed mixes together with the total weights of dry aggregate to produce approximately one cubic metre of concrete. Depending upon the specific gravity of the aggregates slight adjustment may be required to the quantity of aggregates to produce this volume of concrete having the required workability, strength and cement content.

The schedule of prescribed mixes also gives the approximate proportions of fine aggregate to be used although small adjustments may be required on the site depending on the properties of the local materials. For grades 7 a range of fine aggregate proportions is given, the lower percentage being applicable to finer material such as zone 3 sand and higher percentage being applicable to coarser material such as zone 1 sand. Where single sizes coarse aggregates are used, the proportions should be chosen to produce a combined grading within the limits of BS 882 or BS 1047 for graded coarse aggregate of the appropriate size.

The actual batch weight should be calculated to suit the size of the mixer from the values given in the schedule of prescribed mixes for the appropriate grade of concrete. Allowances should be made for a moisture content typical of the aggregates being used.

Where necessary the aggregates for grades 7, may be batched by volume in which case the bulk density of the damp aggregate may be taken as 1500 kg/cu m. One whole bag of cement may be taken as weighing 50 kg.

All aggregate deliveries shall be inspected and samples shall be sent for testing at the engineer's discretion.

The results of such tests shall be reported to the engineer and be used to check whether the gradings are consistent with those of the samples used in the establishment of the batch weights.

Separate storage facilities shall be provided for each different size of aggregate used. Proper drainage of such storage facilities shall be provided and maintained.

Sufficient materials with an excess in each case of 20% shall be available in each aggregate bin before commencement of concreting.

2,1.4. Materials : water

Water shall be clean and free from harmful matter. Where tests are required they shall be in accordance with the requirement of BS 3148.

2.1.5. Materials : admixtures

Suitable admixtures may be used in concrete mixes for special structural concrete or for waterproof concrete.

The amount of admixture and the method by which the admixture is added shall be approved by the engineer.

The engineer shall be provided with all data relating to the effect of the additive such as:

a recommended dosage

b effect of over dosage

c effect of under dosage

d name of additive and chemical constituents in percentage.

e information on the air entrainment effect of the additive.

2.2. Classification of concrete mixes

Mixes shall be either "designed" or "prescribed".

Where mixes are "designed" the contractor shall be responsible for selecting the mix proportions and providing concrete which achieves the specified strength and workability subject to a stipulated minimum cement content, maximum free water/cement ratio and maximum aggregate size.

Where mixes are "prescribed" the mix proportions are specified. The contractor shall provide a properly mixed concrete containing the constituents in the specified proportions, but subject to a maximum free water/cement ratio.

2.2.1. Prescribed mixes

The concrete grade reference refers to the 28 day strength of the concrete (N/sq mm), workability and maximum size aggregate viz 25M20 represents a 28 day strength of 25 N/sq mm, medium workability and a maximum aggregate size of 20 mm.

2.2.2. Schedule of prescribed mixes for ordinary structural concrete

Weights of cement and total dry aggregates in kg to produce approximately one cubic metre of fully compacted concrete together with the percentages by weight of fine aggregate in total dry aggregates.

Concrete grade	Nominal maximum size of aggregate (mm)	40		20		14	
	Workability	Medium	High	Medium	High	Medium	High
	Limits to slump that may be expected (mm)	50-100	100-150	25-75	75-125	10-50	50-100
7	Cement (kg)	180	200	210	230	----	----
	Total aggregate (kg)	1950	1850	1900	1800	----	----
	Fine aggregate (%)	30-45	30-45	35-50	35-50	----	----
10	Cement (kg)	210	230	240	260	----	----
	Total aggregate (kg)	1900	1850	1850	1800	----	----
	Fine aggregate (%)	30-45	30-45	35-50	35-50	----	----
15	Cement (kg)	250	270	280	310	----	----
	Total aggregate (kg)	1850	1800	1800	1750	----	----
	Fine aggregate (%)	30-45	30-45	35-50	35-50	----	----
20	Cement (kg)	300	320	320	350	340	380
	Total aggregate (kg)	1850	1750	1800	1750	1750	1700
	Sand*						
	Zone 1 (%)	35	40	40	45	45	50
	Zone 2 (%)	30	35	35	40	40	45
	Zone 3 (%)	30	30	30	35	35	40
25	Cement (kg)	340	360	360	390	380	420
	Total aggregate (kg)	1800	1750	1750	1700	1700	1650
	Sand*						
	Zone 1 (%)	35	40	40	45	45	50
	Zone 2 (%)	30	35	35	40	40	45
	Zone 3 (%)	30	30	30	35	35	40
30	Cement (kg)	370	390	400	430	430	470
	Total aggregate (kg)	1750	1700	1700	1650	1700	1600
	Sand*						
	Zone 1 (%)	35	40	40	45	45	50
	Zone 2 (%)	30	35	35	40	40	45
	Zone 3 (%)	30	30	30	35	35	40

*Sand is fine aggregate resulting from the natural disintegration of rock.

REQUIREMENTS FOR PRESCRIBED MIXES:

Prescribed mixes for ordinary structural concrete:

The concrete should be produced to comply with any requirement described in detail in the specification.

Prescribed mixes for special structural concrete:

The concrete mix should be produced to comply with all the requirements described in detail in the specification.

2.2.3. Designed mixes

Designed mixes shall be used for the concrete grades listed hereunder whenever ready mixed concrete is used:

Grade	Characteristic strength
25	25 N/sq mm
30	30 N/sq mm
32.5	32.5 N/sq mm
35	35 N/sq mm
37	37.5 N/sq mm
40	40 N/sq mm
42.5	42.5 N/sq mm
50	50 N/sq mm
60	60 N/sq mm

The characteristic strength shall be the 28 day strength of all concrete.

2.2.4. Cement content, Water/Cement Ratio

The maximum free water/cement ratio for prescribed mixes (unreinforced concrete) shall be in accordance with Table 6.2 of BS 8110.

For designed mixes the minimum cement content and maximum free water/cement ratio shall be in accordance with Table 3.4 BS 8110 but modified as set out overleaf:

TABLE 3.4 FOR USE IN IRISH CONDITIONS

Conditions of Exposure	Nominal Cover				
	mm	mm	mm	mm	mm
Mild	25	20	20	20	20
Moderate	-	35	30	25	20
Severe	-	-	40	30	25
Very Severe	-	-	50	40	30
Extreme	-	-	-	60	50
Max. fee water /cement ratio	0.65	0.6	0.55	0.5	0.45
Min. cement content kg/m^3	275	300	325	350	400
Lowest grade of concrete	C32.5	C35	C37.5	C40	C42.5

Target mean strength

The Compliance Scheme for strengh shall be in accordance with BS 5328. Specifically for concrete of grade C20 and above:

(i) The average strength of any group of 4 consecutive 28 day cube results shall exceed the specified characteristic strength by 3 Newtons per sq mm.

(ii) No single test result shall fall short of the characteristic strength by more than 3 Newtons per sq mm.

At the Engineer's discretion the Target Mean Strength may be adjusted in the course of a job in the light of the variability of cube results as they accumulate. Specifically if the standard deviation of 28 day results exceeds 7.5 Newtowns per sq mm, the Target Mean Strength will be adjusted upwards and shall exceed the Characteristic Strength by 1.64 times the standard deviation.

2.3. Preliminary information

Evidence shall be submitted to the satisfaction of the engineer that the proposed mix proportions and manufacturing method will produce a concrete of required quality and workability. Before any designed mix is supplied the contractor shall supply the following items of information:

a Nature and source of each material.

b Data indicating satisfactory previous performance for target mean strength, current margin and workability or full details of tests on trial mixes.

c Proposed quantities of each ingredient per cubic metre of fully compacted concrete.

2.4. Trial mixes

Three separate batches of concrete shall be made using material likely to be typical of the proposed supply under full scale production conditions. If this is not feasible laboratory sampling facilities may be used. Sampling and testing shall be in accordance with BS 1881.

The workability of each of the trial batches shall be determined and three samples made from each batch for testing at 28 days. Three sample cubes shall also be made for testing at 7 days.

The trial mix proportions will be approved if the average strength of the nine cubes tested at 28 days exceeds the specified characteristic strength by the current margin minus 3.5 N/sq mm or if nine tests at an earlier date indicate that it is likely to be exceeded by this amount.

If trial mixes are required to demonstrate that the maximum free water/cement ratio is not exceeded two batches should be made in the laboratory with cement and surface dry aggregates known from past records of the suppliers of the material to be typical. Proposed mix proportions should not be accepted unless both batches have the correct cement content and a free water/cement ratio below the maximum specified value at the proposed degree of workability.

For this purpose existing laboratory test reports may be accepted instead of trial mixes only if the engineer is satisfied that the materials to be used in the structural concrete are likely to be similar to those used in the tests.

During construction the engineer may require trial mixes to be made before a substantial change is made in the materials or in the proportions of the materials to be used.

2.5. Adjustments to mix proportions

During production adjustments of mix proportions will be made in order to minimize the variability of strength and approach more closely the target mean strength. Such adjustments should not be taken to imply any change to the current margin.

2.6. Change of current margin:

A change in the current margin used for judging compliance with the specified characteristic strength becomes appropriate when results of a sufficiently large number of tests show that the previously established margin is significantly too large or too small. Recalculation of the margin should be carried out only with the agreement of the engineer.

2.7. Testing and non-compliance

Testing plan and rates of sampling shall conform with the relevant Clauses of BS 5328: 1981 and BS 1881.

2.8. Cement content, workability, water/cement ratio compliance:-

These shall comply with clauses 16.4, 16.5, and 16.6 of BS 5328: 1981:

2.9. Batching and mixing

The quantity of cement, fine aggregate shall be measured by weight only except for grades 7. The weighing apparatus for cement shall be totally separate or otherwise the cement shall be measured by using whole bag units.

Water may be measured by volume or by weight. Admixtures shall be measured and added in accordance with manufacturer's instructions.

Batch weights of aggregate shall be adjusted to allow for moisture content. Accuracy of the measuring equipment shall be within ± 3% for aggregates, cement and water and ± 5% for admixtures.

All measuring equipment shall be maintained clean and serviceable and shall be subjected to periodic tests by an approved authority.

Mixing time shall be determined on site to give workable mix consistent with the cement content, required workability and maximum strength subject to tests.

The capacity of the mechanical mixer shall be the minimum size consistent with bag batching in the various grades.

The mixer must be properly calibrated and shall be checked periodically. The measuring devices in the mixer must be properly calibrated and shall be checked periodically. Suitable containers and weighing equipment shall be made available for weight testing. Tests shall be done at the engineer's discretion. Concrete may be rejected if weight tests are not consistent with the mix and aggregate being used.

Slump tests will be carried out. A 300 mm x 200mm x 100 mm cone shall be available at all times on site.

Mixing shall conform with the best modern techniques consistent with producing a uniform dense thoroughly mixed concrete. Water shall be measured and added in an approved manner.

Hand mixing shall be allowed only on the approval of the engineer and in no case where significant structural members are being cast.

If allowed, hand mixing shall be on water proofed timber or on a concrete platform.

Materials shall be thoroughly mixed and water added in an approved manner.

2.10 Conveying and placing concrete

The concrete shall be conveyed from the mixer to it's final position in the work as rapidly as possible and in no case shall more than 20 minutes elapse between mixing and placing.

The depth of lift and or the extent of pour to be concreted in any one pour shall be subject to approval by the engineer.

Concrete shall be placed in such a manner that segregation does not occur.

In general the formwork shall be filled to the topmost point for the particular pour and shall be vibrated forward to avoid as far as possible the incidence of air bubbles. The concrete shall be thoroughly worked around reinforcement, tendons or duct formers.

In all cases with the exception of screeding all concrete shall be mechanically vibrated.

A standby vibrator of similar performance to the vibrator being used shall be available at all times on site when concrete is being placed.

2.11 Curing

After being placed concrete shall not be jarred, walked on or otherwise disturbed during setting. All concrete shall be kept thoroughly damp for at least a week after concreting and special precautions taken to prevent it drying out too quickly. Protection shall be provided to freshly placed concrete to prevent damage caused by heavy rain.

2.12 Defective work

Any concrete damaged during setting from any cause whatsoever shall be cut out and replaced by the contractor at his own expense.

All work damaged by frost or inclement weather shall be removed and reinstated at the contractor's expense, entirely to the satisfaction of the engineer.

2.13 Frosty weather

Concrete shall not be placed when temperature is below two degrees Celsius on a falling thermometer or below one degree Celsius on a rising thermometer unless the temperature of the concrete at the time of placing is five degrees Celsius and maintained at that temperature until a strength of 5N/sq mm is reached.

2.14 Stoppages and joints

All day work joints shall be in the positions shown on the drawings and if not specifically shown the following practice shall be adopted:

1 slabs and beams at the points of contraflexure

2 columns at the soffits of inframing beams

3 walls at points to be agreed on site

Joints shall be made at right angles to the main reinforcement. The surfaces shall be thoroughly brushed to remove laitance and to expose the aggregate. Vertical joints shall be swilled down and grouted with sand cement mortar. Fresh concrete shall then be thoroughly compacted against the existing face. Joints made on facing surfaces shall be treated especially carefully to avoid any leakage of grout.

All horizontal joints shall have a suitable rebate detail and shall be cleaned as above and grouted with a 30 mm thickness of 1:1 sand cement grout directly ahead of concreting.

When each beam is being poured a 30 mm thickness of 1:1 sand cement grout shall be poured directly ahead of concreting. Care shall be taken that the concrete is well worked into the grout to leave a dense uniform finish on the soffit of the beam.

2.15 Horsing

The contractor shall submit written proposals and drawings as may be required by the engineer for the systems of false work which he proposes to adopt for the various sections of the work. Where significant structural formwork for freshly placed concrete is required calculations shall be submitted with the proposals and drawings. This false work shall be structurally designed to comply with the British Standards relevant to the material being used and to the loads associated with the operation. Temporary supports under precast concrete units shall be similarly treated.

Where supported on the ground the sole pieces carrying the vertical supports shall be bedded and shall be designed to ensure against settlement under full load.

All vertical props shall be fitted with adjustable screws or hardwood folding wedges for adjusting or striking.

2.16 Shuttering

Shuttering shall be constructed from purpose made mild steel units, from quality planned seasoned timber or from other approved materials lined or treated consistent with the categories of finishes schedule.

All formwork shall be close jointed throughout to prevent cement paste or fine aggregate leaking.

All formwork shall be designed and arranged so that stripping can be carried out progressively without vibration or damage and without interference to props etc which have to be maintained in position longer.

The formwork to vertical sides of walls and beams shall be supported by means of suitable external braces, internal metal fasteners or bolts. The use of internal timber spacers or wire ties will not be permitted.

Internal metal fasteners and bolts shall be such that on removal of shuttering, resulting hole can be suitably filled to give the minimum cover on the steelwork generally.

All formwork shall be provided with temporary opes to facilitate removal of debris, the inner surface of all formwork shall be treated with an approved mould oil or retarding compound as appropriate.

Type of formwork	Minimum period before striking Surface temperature of concrete	
	16°C	7°C
Vertical formwork to columns, walls and large beams	1 day	1 day
Soffit formwork to slabs	4 days	7 days
Props to slabs	11 days	14 days
Soffit formwork to beams	8 days	14 days
Props for beams	15 days	21 days

Shuttering shall be removed without undue abrasion, impact or damage to the finished concrete.

2.17 Finishes

General

All concrete overground shall be finished smooth to Type C finish as described in BS 110:Part 1:1985, Clause 6.10.3.

This finish can be achieved by using marine ply faced shuttering with taped joints. The concrete shall be smooth with true clean arrises and shall be free from voids, honeycombing and air bubbles.

All concrete underground, not visible and generally behind suspended ceilings shall be finished to conform with Type A finish as described in BS 8110:Part 1: 1985, Clause 6.10.3.

This finish can be achieved by using properly designed formwork or moulds of closely jointed sawn boards. The surface shall be dense, free from voids, honeycombing and large blemishes but may be imprinted with the grain of the sawn boards and their joints.

Where fair faced, bush hammered or sand blasted concrete is specified sufficient aggregate of uniform colour, texture, shape and moisture content shall be arranged or stored to ensure a uniformity of finish, colour and texture throughout the project. All joints whether vertical or horizontal shall be in locations previously agreed with the architect or engineer. Tapered and indiscriminate jointing will not be acceptable.

Fair faced concrete

Where wrought and oiled formwork is described the basic finish shall be TYPE C above; however, THE FORMWORK SHALL BE SO FIXED, BRACED AND TIED THAT NEITHER BOLTS, WIRES NOR PATENTED FASTENERS SHALL BE USED THROUGH THE CONCRETE SECTION. THE FORMWORK SHALL BE ADEQUATELY STRONG AND SHALL BE BRACED OR TIED ABOVE AND BELOW THE RELEVANT SECTION IN ORDER TO AVOID THE FILLING OF HOLES ETC.

2.18 Holes

Holes, chases and other openings required for the passage of pipes, conduits, etc, shall be provided by inserting suitable sleeves, cores and sinkings in the shuttering before placing the concrete. Subcontractors shall be required by the general contractor to furnish full information in regard to the position and size of such opes and chases and the positions of bolts, slips and other fastenings to the engineer for approval. The cutting of chases, holes or other openings in the finished work shall not be permitted without the approval of the engineer. Such holes and chases shall be made only in approved locations and shall be cut with approved tools.

Plug holes shall be drilled at the rate of 5 mm/3 mm length of span and proportionally if required by the Engineer.

2.19 Camber

All beams shall be cambered at the rate of 5 mm/3 m length of span and proportionally if required by the Engineer.

2.20 Dimensional Tolerances:

Subject to C.26 all arrises, soffits and surfaces shall be true to line and level and shall generally conform to the following standard or to such other standard as shall be acceptable to the Engineer and agreed with the Contractor.

The standard described in BS 8110 Clause 6.11.3 for precast concrete. For cast-in-situ, these tolerances plus 50%.

Floor flatness shall conform with the following:

Level:	± 15 mm from datum
Slope:	1:250 max measured over 750 mm in any direction.
Texture:	as per a sample approved by the Architect.

2.21. Reinforcement

Reinforcement shall conform to the requirements of the following standards:

Rolled mild steel bars	BS 4449
Cold worked bars (high yield)	BS 4461
Fabrics	BS 4483

Fabrics will be made of hard drawn wire to BS 4482 or cold worked bars to BS 4461.

All mild steel bars from 16 mm to 40 mm sizes shall be of Irish manufacture and conform to BS 4449. Departure from this specification will only be allowed on the written approval of the Engineer.

All high yield bars from 12 mm to 40 mm sizes shall be of Irish manufacture, conforming to BS 4461 and classified as BS 8110 Type 2 bars. Departure from this specification will only be allowed on the written approval of the Engineer.

The contractor shall deliver free of charge samples of reinforcement for testing as directed or otherwise manufacturer's certificates. Any reinforcement not complying with the specification shall be removed from the site. In the measurement of weight, the nett lengths as shown on the drawings and schedules shall be taken in conjunction with the nett weight per metre based on the nominal diameter or size of reinforcement. Reinforcement shall be deemed to weigh 7850 kg/cu m. Reinforcement shall be cut and bent to the engineer's schedules and in accordance with BS 4466.

The size and other dimensions of the reinforcement shall be checked against the drawings and site dimensions before the materials are ordered. No alterations or substitution shall be made in the lengths, sizes or arrangement of reinforcement without prior written approval of the engineer.

Welding of reinforcement shall be allowed only on the written approval of the engineer subject always to a rigorous specification which will be provided if the contractor requests permission to weld reinforcement.

Reinforcement shall not be pitted and shall be free from millscale, loose rust, oil, paint, grease, soap or other lubricants, and shall be cleaned by wire brushing if so dirty.

2.22 Fixing reinforcement

Reinforcement shall be maintained in its correct position by means of suitable clips, soft tying wire, plastic stools, etc, where necessary all supplied under the item for reinforcement. Knots in tying wire shall be located on the side remote from the surface of the concrete. Concreting shall not commence until the formwork and reinforcing has been approved by the engineer. Mesh and fabric reinforcing shall be similarly supported at intervals of not more than 1 m centres each way.

2.23 Precast Concrete:

Precast concrete grade shall be as determined in accordance with clause C.02. Prices should include for timber moulds lined with 3 mm thick oil-tempered hardboard and for casting in suitable lengths. All exposed faces to be finished at least 6 mm thick in cement and sand (1 : 3) homogeneous with unit. Holes shall be filled and the surfaces pumiced. Arrises shall be protected. Joints shall be 3 mm maximum thickness and flush pointed where exposed.

2.24 Air Entrained Concrete:

Air entrained concrete, where specified, shall have nominal air cotent of 5% when tested in accordance with Clause 6 of BS 1881: Part 2: 1972.

The air content of any batch of air entrained concrete shall be within 1.5% of the nominal value specified above.

BLOCKWORK:

MATERIALS AND PROPERTIES

3.1 CONCRETE BLOCKS

All blocks shall comply with the requirements of IS 20: 1974.

3.1.1 Standard Blocks

The concrete blocks shall be Type A(5) solid (440 x 215 x 100mm 20kg 5N/mm^2) and conform to IS 20: 1974.

The minimum quality of the concrete blocks shall conform to Table 4.2 of CP 121: Part 1: 1973.

Methods of measuring dimensions and determining strength and drying shrinkage shall be in accordance with BS 6073: 1981.

3.2 MORTARS

3.2.1 Materials for Mortar

3.2.1.1 Cement

The cement used in the mortar shall be in accordance with IS 1: 1963.

3.2.1.2 Lime

Lime used in mortars shall be non-hydraulic (calcium) limes or semi-hydraulic (calcium) and magnesium limes to conform to the requirements of BS 890.

Alternatively lime shall be hydrated or magnesium hydrated and conform with IS 8: 1973.

3.2.1.3 Sand

The sand shall be free from deleterious substances and shall comply with the requirement for quality and grading of sand for mortar given in IS 5: 1974.

3.2.1.4 Water

Water shall be free from impurities harmful to the mortar. Where the quality of supply is doubtful the water shall be tested in accordance with BS 3148.

3.2.1.5 Admixtures

Admixtures may be used subject to the engineer's approval in writing. This includes plasticisers and anti-freeze agents.

Only plasticisers complying with BS 4887: Part 1: 1986 will be considered. Calcium-chloride based agents may never be used.

3.2.2 Preparation of mortars

3.2.2.1 Recommended mortars

A type (iii) mortar as described in Table 6 of CP 121: part 1: 1973 shall be used. For example for a cement: sand mortar with plasticiser proportions by volume of dry materials shall be 1:5 to 6.

3.2.2.2 Equivalent mortar mixes

Alternative mortar mixes may be used subject to the engineer's approval in writing.

3.2.2.3 Batching of mortars

The materials for the mortar shall be measured accurately to conform with the specified mix proportions either by weigh batching or by the use of gauge boxes.

3.2.2.4 Mixing of mortar

The mortar shall be mixed by machine. Mortar shall be used within two hours of the mixing of the cement and water and any mortar not then used shall be discarded and not retempered.

3.3 CONCRETE FOR CORE FILLING

3.3.1 Materials

3.3.1.1. Cement

The cement used in the concrete shall be in accordance with IS 1.

3.3.1.2 Fine and Coarse Aggregates

The coarse aggregate shall have a nominal size of 10mm and shall comply with the requirements of IS 5: 1974.

Fine aggregate shall be in accordance with IS 5.

3.3.1.3 Water

Water shall be free from impurities harmful to the concrete. Where the quality of supply is doubtful the water shall be tested in accordance with BS 3148: 1980.

3.3.1.4 Admixtures

Use of admixtures and the procedure for their use shall be subject to the engineers approval in writing.

3.3.2 Preparation of Concrete

3.3.2.1 Recommended mix

Concrete core filling shall be 35N having:

A slump of 125 mm
Minimum cement content = 300 kg/m^3
Maximum free water/cement ratio = 0.6
Details of proposed mix shall be forwarded to the engineer for approval in good time.

3.3.2.2 Alternative mix

Alternative concrete mixes may be used subject to the engineers approval in writing.

3.4 REINFORCEMENT, WALL AND BONDING TIES.

3.4.1 Reinforcement

Reinforcement used shall comply with the requirements of BS4461 and BS4449 as appropriate.

3.4.2 Bed Joint Reinforcement.

Bed joint reinforcement shall comply with the requirements of BS 4449 and BS 4461 as appropriate. Reinforcement in the outer leaves of external cavity walls or external walls generally shall be of stainless steel.

3.4.3 Bonding Ties

Metal straps for bonding where shown on drawings shall be galvanised mild steel fo the dimensions as specified on drawing.

3.4.4 Wall Ties

Wall ties shall be stainless steel vertical twist ties with fish tail ends and a minimum cross section of 20mm x 2mm and conform to the requirements of BS 1243: 1978 and for 200mm cavities ties shall be 325mm long stainless steel vertical twist ties with fish tail ends a minimum cross section of 30mm x 4mm.

Lugs shall be provided for fixing of insulation.

3.5 HANDLING AND STORAGE OF MATERIALS

3.5.1 Cement

Cement shall be stored in a manner to ensure that it is not affected by damp and shall be used in the order of delivery.

3.5.2 Sand

Sands shall be stored separately according to type where they will not be contaminated.

3.5.3 Metals

Reinforcement and ties shall be protected from becoming contaminated, and reinforcement shall be free from loose mill scale and rust.

3.5.4 Blocks

Facing blocks shall be carefully ^Cnloaded so as to avoid damage to the units. All blocks shall be stacked on prepared level areas to ensure that the stack is stable and blocks used for fairfaced work shall be protected to prevent the exposed faces from becoming stained or marked.

3 .5.5 Suppliers

Proposed suppliers of blocks, and readymixed mortar shall be notified and agreed with the engineer before the works commence and in sufficient time to enable samples to be seen and tested.

Any proposed change in suppliers shall be notified to the Engineer who may direct additional materials testing to be done.

3.6 TESTING

3.6.1 General

Independent testing of blocks shall be carried out in accordance with IS 20: 1974.

At least 5 sets of blocks samples shall be tested during the course of construction.

The maximum interval between sampling shall be 3 months.

The engineer shall be notified to supervise sampling.

3.6.2 Mortar

Independent testing of mortar shall be in accordance with BS 4551: 1980.

WORKMANSHIP

3.7 GENERAL

3.7.1 Dimensions

All blockwork shall be set out and built to the respective dimensions, thickness and heights shown upon the drawings.

3.7.2 Uniformity

All perpends, quoins, joints, etc., shall be kept strictly true and square, other angles shall be plumbed and the whole properly bonded or tied together and the bed joints levelled as the work proceeds.

3.7.3 Bond

The blockwork shall be built to the bond indicated on the drawings. Where no bond is indicated, the units shall be laid in stretcher bond. Where possible the coursing shall be arranged to allow a full block to be positioned directly beneath a lintel bearing.

3.7.4 Cutting

Blocks used for facing shall be cut with a masonry saw. Where it is necessary to cut the blocks wet they shall be allowed to dry before being built into the wall. Blocks used for profiled piers (see drawings) shall also be sawcut.

3.7.5 Chases

The positions and size of the chasings shall be as indicated on the drawings and shall be carried out neatly using a chasing tool. Chasing in any 4" blockwork and load bearing walls generally shall be only with the engineers approval. Chasing generally shall not exceed ont third of the wall thickness.

3.7.6 Weather

No block laying shall be carried out when the temperature is at or below 3°C unless precautions are taken to ensure a minimum temperature of 4°C in the work when laid and thereafter to maintain the temperature above freezing point until the mortar has hardened. Should any block wall be damaged by frost it shall be pulled down and made good at the contractor's expense. Walls shall, where necessary, be adequately braced during construction to prevent damage by winds or other causes.

Scaffolding platform planks shall be turned on edge at night to prevent damage to mortar beds from rain drop spatters.

3.7.7 Laying

Each block shall be laid and adjusted to its final position while the mortar is still plastic.

3.7.8 Maximum Tolerances

Plumbness:	± 10mm per metre
	± 10mm max.
Line:	± 10mm per metre
	± 10mm max
Level:	± 5mm per metre
	± 10mm max

Note: these figures are a guide only. The approved sample shall comprise the acceptable standard.

A 2m x 2m sample of each block type shall be built for the engineer's and arcitect's approval.

3.8 MORTAR JOINTS

3.8.1 Bedding

All blocks shall be laid on a full mortar bed. Vertical joints shall be filled. All joints are to be nominally 10mm thick.

3.8.2. Joint Types

3.8.3. *Facing work*

Joint profiles to be tooled as shown in drawings. The tooling of joints shall be carried out to the specified profiles while the mortar is thumb-print hard.

3.8.4. Standard work

Joints shall be raked for plastering.

3.8.5. Excess mortar

Any mortar which extrudes from the joint of fairfaced units shall be cut away and on no account is mortar to be smeared onto the face of the block.

Mortar droppings shall be removed from all wall ties and from cavity trays and stepped flashings.

3.8.6 Reinforced Walls

The cores shall be kept clear and clean of mortar droppings and any extruding mortar shall be removed while soft.

3.9. CONTROL JOINTS

Control joints shall be constructed as indicated on the drawings. Expansion joints shall be cleaned out to ensure that mortar does not bridge the joint.

3.10 DOUBLE LEAF (CAVITY) WALLS

3.10.1 Wall ties

The walls shall be built with cavities of the width shown on the drawings and tied together with ties embedded in the mortar at least 50 mm. Unless otherwise detailed the ties shall be staggered in alternate courses and spaced in accordance with the following table. (Applicable horizontal spacing of ties in 100mm cavity = 750mm.)

Where insulation is to be provided, the ties shall be fitted with lugs.

Least leaf thickness (mm)	Cavity Width (mm)	Horizontally (mm)	Vertically (mm)
75	50 - 75	450	450
90 or more	50 - 75	900	450
90 or more	75 - 100	750	450
90 or more	100 - 150	450	450

The spacing may be varied provided that the number of ties per unit area is maintained.

Additional ties shall be provided in every course within 225mm of openings and on each side of control joints. Ties shall be falling to the external leaf.

3.10.2 Cavities

The cavity and ties shall be kept clear and clean of mortar droppings or other materials during construction and any extruding mortar shall be struck off flush. No cavity shall be sealed off until inspected and approved by the engineer.

3.10.3 Weepholes (cavity walls)

Weepholes 10 mm wide by 75mm high, spaced at centres not exceeding 900mm and extending through the vertical mortar joints of the outer leaf, shall be provided at ground level and at positions where the cavity is bridged (eg over lintels, stepped damp proof courses etc.) or at locations indicated on the drawings.

3.10.4 Vent holes

Vent holes shall be of the dimensions as for weepholes and shall be positioned at locations indicated on the drawings.

3.11 PARTITIONS

Partitions shall not be built on suspended slabs until after the props have been removed.

3.12 REINFORCEMENT

3.12.1 Reinforcement

The reinforcement shall be of the size and number as shown on the drawings and shall be positioned accurately and secured against displacement so as to maintain the specified cover as shown on the drawings.

3.12.2 Bed Joint Reinforcement

Bed joint reinforcement shall have an effective cover of not less than 20 mm and shall be continuous except at control joints, or where otherwise indicated. Bed joint reinforcement is to be positioned as shown on the drawings.

3.13 CORE FILLING

Core shall be filled in lifts not exceeding 675 mm. The concrete or mortar filling shall be well tamped around reinforcement to ensure that it is fully compacted. The procedure for core filling shall be approved by the Engineer.

3.14 LINTELS

3.14.1 All lintels shall have a minimum sound bearing of 200mm or greater if indicated on drawings or recommended by manufacturers.

3.14.2 In situ concrete lintels shall be of concrete grade appropriate to the exposure condition as indicated on drawings. Cover to reinforcement shall likewise be appropriate. Details generally shall be as shown on drawings.

3.14.3 Prestressed concrete lintels shall not be used in opes exceeding 1500mm. Concrete grade and cover to reinforcement shall be as detailed in BS 8110. Propping arrangements shall be strictly in accordance with manufacturers recommendations. Lintels shall be laid rough side up and soffits shall be plastered using expanded metal as necessary. Lintels shall be not be drilled or notched. The contractor shall forward span/load tables from the proposed supplier. The suppliers shall be responsible for ensuring the correct type and stress level of reinforcement in accordance with BS 8110.

3.14.4 Steel lintels shall be used where indicated on drawings. All steel lintels shall be hot dip galvanised. Ends shall be touched up on site using bitumestic paint.

3.15 PROTECTION:

3.15.1 Stability

Precautions shall be taken to ensure stability of walls during backfilling and concreting operations.

3.15.2 Finished Work

The tops of constructed walls be protected from rain and in addition fairfaced work shall be protected against staining from construction activities.

3,16. MAKING GOOD

At the completion of the work all temporary holes in mortar joints of fairfaced work shall be filled with mortar and suitably tooled. Any damaged blockwork shall be repaired with approved materials or replaced to the satisfaction of the engineer.

RELATED WORK

3.17. SEALING

Joints around door and window frames, control joints, abutting joints at external columns and other joints where sealing is indicated or required shall be brush painted with primer and filled with sealant of a colour specified by the architect, the whole of which shall be carried out in accordance with the manufacturer's recommendations.

3.18 FLASHING

Wall flashings shall be built into or secured to the blockwork in accordance with the details shown on the drawings. Care shall be taken to ensure that the flashing has adequate laps.

3.19. DAMP-PROOFING

3.19.1 Damp- proof courses

Horizontal damp-proof courses shall be provided at positions shown on the drawings and be positioned so as to fully cover the leaf thickness. All horizontal damp-proof courses shall be laid on an even bed of fresh mortar and eventually covered by mortar so as to maintain regular coursing and joint thickness and while exposed shall be protected from damage while the building is proceeding. Stepped damp-proof courses at openings shall extend beyond the end of lintel by at least 100mm. All horizontal damp-proof courses shall protrude 10mm from the external face of the wall and be turned downwards. Vertical damp-proof courses shall be of adequate width and be fixed so as to separate the inner and outer leaves of the wall. The material for damp-proof courses shall comply with BS 743.

3.19.2. Tanking

Tanking and waterproofing of basement walls or retaining walls shall be carried out to the details as shown on the drawings and all materials are to be used in accordance with the manufacturer's recommendations.

3.20 BACKFILLING

Backfilling shall not be placed against concrete masonry walls within 5 days of completion of the construction. Vehicles shall not be operated closer to the wall than a distance equal to the height of the wall except where the engineer gives explicit approval in writing.

3.21 PAINTING

Concrete blockwork shall be painted in accordance with the painting schedule and paint shall be applied in accordance with the manufacturer's recommendations. Painting shall not commence until the surface of the walls has been allowed to dry out and has been cleaned down to remove all dust, dirt and mortar dabs. Where efflorescent occurs, it shall be removed with a cloth or stiff brush, prior to painting.

3.22 RENDERING

Newly applied rendering, including stipple and spatter-dash coats, shall be kept damp for the first three days. A second coat shall not be applied until the previous layer has hardened for seven days. The surface of rendering shall be as specified on the engineers drawings. The block surface and subsequent rendering coats may be damped sufficiently to ensure suction but in no case shall free water be left on the surface. Rendering shall not be applied to frost-bound walls or during frosty conditions. Any rendering shall be discontinuous at control joints. Plaster stops shall be provided as appropriate.

3.23 PLASTERING

Before plastering all dirt, dust and efflorescence shall be removed. The walls shall be treated and plastered in accordance with the manufacturer's recommendations. Any plastering shall be discontinuous at control joints. Plaster stops shall be provided as appropriate.

3.24 WALL TILING

Before tiling all walls shall be allowed to dry to the level recommended by the tiling manufacturer. Movement joints shall be provided at control joints and any other locations recommended by the tiling manufacturer.

4.0 TIMBERS:

4.1 Structural Timbers & Carcassing Generally

Structural and carcassing timbers shall be kiln dried and stress graded.

In those element where the use of Irish timber is permitted the Contractor shall make provision in his rates for timber for investigating sources of suitable Irish timber and arranging for inspection.

Species:

Main trusses: Imported White wood or an approved equivalent of comparable strength.

Joints, rafters, battens: In these cases the acceptable species shall be Irish Douglas Fir, Irish Larch or Irish Scots Pine. Imported substitute materials may be used on receipt of the written approval of the Architect.

Stress Grading:

Provision is made for a Prime Cost Sum of £500.00 to be expended in whole or in part for the services of a qualified visual stress grader to visit the supplier of timber and to visually stress grade and mark the timber.

The Contractor, through his nominated supplier, shall organize sufficient materials to enable the stress grader to assess all the material for the project in not more than three sessions.

The Contractor shall make provision for segregating and storing the graded material in secure compounds, pending fabrication.

The minimum standard acceptable for all structural timber shall be special structural, grade SS.

4.2. Panelling Timber:

All panelling timbers shall be Lodge Pole Pine of uniform grain and texture, free from knots and shakes. Panelling timbers sha^Cl be approved by the Architect before fabrication.

4.3. Joinery:

Hardwoods, where stipulated, shall be Iroko, West African Mahogany, Abura or Dark Red Meranti.

4.4. Alternatives:

Alternative timber to those stipulated above shall be used on the written approval of the Architects only.

4.5. STORAGE OF TIMBER:

Timber and timber products shall be stored in such a manner as to ensure that it is not damaged by the elements, in that the moisture content will be increased or that uneven heat is applied.

If site storage is unavoidable treatment with approved moisture retardants may be required by the Architects at no extra cost.

Should timber or timber products be stored under polythene provision shall be made for adequate ventilation.

4.6 MOISTURE CONTENT:

4.6.1 Limits:

The moisture content for timber in joinery work shall be within the limits listed below:-

Internal Joinery & Door	10%	- 12%
External Joinery & Doors	15%	- 18%

4.6.2 Certification

A certificate form the supplier must accompany all timber used internally, stating that the moisture content is within these limits and a copy of the certificate must be sent direct to the Architect from the supplier.

4.7. Plywood:

Plywood shall be of the quality described and be in accordance with BS 1455.

4.8. WORKMANSHIP:

4.8.1 General:

(a) Work shall be executed by operatives skilled in their respective trades, according to best practice and as specified herein and indicated on drawings.

(b) Finished carpentry work shall not be commenced until concrete, masonry and plaster are thoroughly dry.

(c) Joints and intersecting members shall be accurately fitted and made in true planes with adequate fastening. Joints shall be located over bearing or supporting surfaces.

(c) All work shall be fabricated and erected, square, plumb, straight and true.

(e) Set nail heads occurring within exposed carpentry work which is to be painted. Filling of nail heads specified in Painting Division.

(f) Machine marks and other marks or scrapes shall be sanded and removed from all exposed wood surfaces, including those which are to be painted.

(g) All governing dimensions shall be obtained before fabricating items which are to accommodate or abut articles supplied by the client.

4.8.2. Setting Out:

All joinery work is to be accurately set out, framed and executed in accordance with the detailed drawings, finished and cleaned up by hand to the approval of the Architect.

4.8.3. Exposed Fixing:

The Contractor will supply and fix temporary protective coverings, where required by the Architect, on exposed fixed joinery.

4.8.4 Fastening:

Fastenings to hollow masonry units shall be done with adequate size toggle bolts; to solid masonry or concrete surfaces with expansion shields and lag screws; to metal with nuts and bolts. Where screws are required, use lead or inorganic fibre plugs. Wood or organic plugs are not permitted.

4.9. JOINTS:

4.9.1 Glues:

Glues used for external work shall be in accordance with BS 1204 or DD 74: 1981k, water resistant quality. Glues used for internal work may be in accordance with BS 745, 1204 or DD 74: 1981, non water resisting quality, except where in contract with water, in which case, water resistant glues as described above, must be used.

4.9.2. Plugs:

All wood plugs are to be cut on the twist. For internal work plugs may be hardwood or soft wood; for external work, hardwood plugs must always be used. Alternatively, with the approval of the Architect, patent wall plugs or plastic filling may be used in lieu of plugs.

4.9.3. Details:

All glued joints in joinery over 225 mm wide are to be cross tongued, the tongue to be cut at right angles or diagonally to the grain of the wood.

All joinery is to be cut and framed together at the commencement of the work, but not to be glued or wedged until the building is ready for it to be fixed.

4.10 PRESERVATIVES & STAINS

4.10.1 Preservatives:

Treatments shall be double vacuum with organic solvent (OS) preservative including a contract insecticide. Composition of treatment shall be in accordance with the relevant specifications of the British Wood Preserving Association (BWPA) Nos 112 - 116 and 118. A water repellent grade shall be used for timber in an external situation.

4.10.2 Stains:

The stain to be used shall be 'Sadolins" applied as per manufacturer's instructions.

Colour shall be as directed by Architect.

4.10.3 Treatment - Softwood:

All fixing battens, grounds, plugs and all other concealed timbers to be treated with green Protim on all surfaces in accordance with the manufacturer's instructions. There will be no exception to this stipulation.

4.10.4 Treatment - End Grain

The bottom edge of all vertical boards and battens should be undercut to form a drip and the exposed end grain sealed with liberal applications of approved primer where the boards are to be painted, or clear sealer where the boards are to be varnished or left untreated.

4.10.5 Treatment - Windows:

The heads, jambs and cills shall be scribed and framed together with combed or laminated joints. The mullions and transoms shall be scribed and framed together and to heads, jambs an cills, with morticed and tenoned joints. The transon shall be through tenoned, with a pair of tenons into the jambs and full width of the transom be 1/3 of the depth of the transom. The mullions shall be through tenoned into the heads and cill in the same manner.

4.10.6 Treatment - External Doors and Windows:

The heads and jambs shall be framed together with either tongued or laminated joints. The transons shall be framed to the jambs with morticed and tenoned joints. The tenoned joints shall be as described above. Door linings shall be shoulder housed without horns.

4.11 IRONMONGERY:

All ironmongery and brasswork is to be carefully wrapped and protected until the completion of the work, and any which may be defaced or damaged is to be replaced as required by the Architect, at the Contractor's expense.

All locks, etc. are to be oiled, adjusted and left in perfect working order on completion, and all keys are to be properly labelled with aluminum tags 25 x 50 mm, securely fixed to the key ring, and delivered to the Architect.

SECTION B

4.12 STRUCTURAL TIMBERS

4.12.1 SCOPE

The specification covers the design factors and the fabrication and erection of procedures to be adapted in respect of the use of timber in structures.

4.12.2 DESIGN OF TIMBER STRUCTURES:

Where the design of timber structural members is not provided by Consulting Engineers the Contractor shall make provision in his rates for all costs associated with the design of the timber structures by a competent firm of Engineers experienced in the design of comparable structures. The Contractor shall submit to the Engineer for his approval design calculations and stress diagrams for all structural members as well as the specification for the proposed materials to be used. The design shall conform to the relevant British Standard Codes of Practice, or IIRS Standards where applicable, and shall be submitted in such detail as the Engineer may require to satisfy himself as the adequacy of the structure through all stages of construction and serviceable life of the building.

Dead and imposed loading shall be in accordance with BS CP 3 Chapter V.

Dead loads shall be based on all the materials and finishes used and shall take into consideration any slopes etc., which may affect the structure.

4.12.3 SHOP DRAWINGS:

Shop drawings of structural components such as trusses giving full details of cuts and joints shall be submitted to the Engineer for his approval before fabrication of the structure. Approval of such shop drawings will in no way mitigate the Contractor's responsibility in respect of the adequacy of the structure during erection or through its serviceable life, inaccordance with conditions of contract.

MATERIALS:

4.12.4 Timber

Where home grown timbers are specified the relevant conditions of Clause 2.01 shall apply. Otherwise the structural timbers shall conform to the following:-

All timber used shall be of the finest quality and shall be stress graded, certified and marked to the relevant standard.

The timber shall be stress graded in accordance with BS 4978 or to an alternative acceptable standard to which the Engineer's approval has to be given.

Grading shall be carried out by persons deemed qualified to do so by the IIRS or mechanically in accordance with BS 4978.

The marking of the graded timber shall conform to the requirements of the IIRS.

4.12.5 Connectors:

All connection details shall be designed in accordance with CP 112 for direct forces, bending and shear. Connectors shall conform to BS 1579. Bolts shall conform to BS 449. End and edge distances and spacings, shall not be less than the dimensions recommended in CP 112.

4.12.6 Metal Fasteners and Connections:

The material used shall be hot-dip zinc coated steel sheet or coil conforming to Clause 2A BS 2989, or equivalent approved.

The plate shall be so manufactured that it conforms the characteristics of the fastener on which the calculations were based.

The minimum thickness of plate shall be 0.91mm. All nail shall be galvanized t the relevant British Standard.

4.12.7 Patent Connectors:

Patent connectors, where used, shall carry an Agreement Board Certificate, either No. 73/232 or 76/358, and shall be designed and fixed in accordance wit the stipulations and conditions of these certificates. All metal plate fasteners shall be stamped with the manufacturers' identification mark.

The fasteners shall be at least the size specified and shall be located to ensure that the correct number of teeth as required by the design are embedded in each member/.

Metal plate fasteners shall not project beyond the upper or lower edges of the connecting members.

Fasteners shall be fully embedded to ensure full penetration of teeth only, and plate to a maximum depth of one quarter of its thickness.

All nails, screws, and bolts, in joints likely to be exposed to the weather, shall be galvanized or sheradized or otherwise treated to the Engineer's satisfaction.

Where necessary nails shall be driven into pre-bored holes of diameter not greater than four fifths of then nail diameter.

Nails shall never be driven into splits.

Spacing of nails, screws and bolts shall conform to CP 112 and in no case shall be so spaced as to induce splitting.

4.12.8 Plywood Gusset Plates:

Plywood gusset plates shall comply with CP 112 and shall be designed in accordance with correct and relevant standard structural engineering analytical methods for direct, bending and shear forces.

Plywood shall be suitably protected against damp and shall not be used where moisture is inevitable.

4.14 STRUCTURAL COMPONENT MEMBERS (GRADING)

4.14.1 Rafters and Ceiling Ties:

Rafters and ceiling ties shall be graded as beams. No increase in the size of knots outside the middle of their length shall be allowed.

4.14.2 Internal Struts and Ties:

When visually graded these members shall be graded as compression and as tension members in the irrespective cases.

4.14.3 Battens:

Joints in battens shall be sawn square ended and not more than 25% of battens shall be jointed on any one rafter.

Fixing nails shall be 10 gauge round wire and 38mm longer than the batten thickness. At joints the nails shall be skew driven on each side of the joint.

4.15 FAULTS:

Notwithstanding the stress graded standard of any timber the following stipulations shall also be adhered to:-

4.15.1 Wane:

Wane shall not be permitted within 100mm of the edge of metal plate fasteners, nor within the area of any joint at the time of fabrication.

4.15.2 FISSURES:

Fissures shall not be permitted within 100mm of the edge of metal plate fasteners at the time of fabrication.

4.15.3 Dead Knots:

Dead knots or knot holes shall not be permitted within 100mm of any plate fastener.

4.15.4 Liver Knots:

Live knots shall be allowed within the plate area provided that nails and teeth can be embedded satisfactorily in the material of the knots.

4.15.5 MOISTURE CONTENT:

The moisture content of timber at fabrication shall not exceed 18% when determined in accordance with any of the methods prescribed in ID 96.

Timber shall not be exposed to conditions likely to increase moisture content or otherwise induce deterioration.

4.15.6 INSPECTION AND TESTING:

The Engineer shall have access at all reasonable times to the fabricators yard and works, and shall be provided with the necessary facilities to inspect and test materials. At the Engineer's discretion and at no expense to the Employer.

4.16 TRANSPORT AND HANDLING:

Fabricated structures shall be transported to site in such a manner that undue stresses and vibrations are not induced. Similarly, erection and handling procedures shall be such that the structures are not over stressed during these various stages.

When erected, the structural element shall be braced and fixed in position until the unit is complete. The Contractor shall provide for all anchorages, ties and bracing for maintaining stability during all phases of erection, and during the serviceable life of the structure.

4.17 TIMBER DIMENSIONS AND LIMITING DISTORTIONS:

4.17.1 Timer Dimensions:

The dimensions of the various structural elements shall conform to the Engineer's drawings or otherwise the specialist supplier's approved drawings, subject only to those permissible deviations given in BS 4471. However, in the case of trussed rafters, the maximum difference in thickness permissible between abutting elements shall not be greater than 1mm.

4.17.2 Limiting Distortions:

In all members of trussed rafters the following distortion limits shall not be exceeded:-

Spring:	5mm Per 4 linear meters
Bow:	10mm Per 3 linear meters
Twist:	3 Per 3 linear meters
Cup:	2mm Per 100mm width of face.

If the fabricator utilizes distorted timber under this clause then the members shall be orientated in such a manner that the distortions are compensating rather than cumulative.

4.18 ASSEMBLY & WORKMANSHIP:

4.18.1 In the case o^C patent metal plate connectors being used the fabricator's assembly procedure shall utilise the plant and equipment and written instructions of the manufacturer of those connections.

4.18.2 Workmanship:

All timber shall be sawn, planed, drilled or otherwise machined in accordance with the detailed drawings and specifications.

Dimensions and spacing shall not be scaled from drawings or prints.

4.18.3 Joints:

Surfaces at any joint in the structure shall have a good sawn or planed finish.

Bearing surfaces of notches shall be true and smooth in relation to the other surfaces of the assembly.

Surfaces at any joint will be such that the parts maybe brought together over the whole area of the joint before connectors are inserted or any pressure of restraint from fastenings is applied.

4.19 PREPARATION OF CONNECTIONS:

Preparation of nailed or screwed joints shall be in accordance with BSCP 114.

Bolted joints, toothed plate connector joints, split ring connector joints, shear plate connector joints and glued joints shall be in accordance with BSCP 114.

4.20 SAFETY REGULATIONS:

All statutory safety regulations shall be adhered to in respect of the erection of the structure and all reasonable care shall be taken as a precaution against accidents. The Contractor shall provide for the necessary labour and materials to meet those requirements.

4.21 INSURANCE:

The Contractor shall carry good and sufficient insurance policies to indemnify the Client against all claims in accordance with the requirements of the Contract.

5.0 JOINERY

5.1 MATERIALS

Materials shall comply with the following specifications:-

Timber Nomenclature	- BS 881/589
Timber moisture content	- IS 96
Plywood	- BS 1455 and 1203 and 1088
Blockboard	- BS 3444
Chipboard	- BS 2604
Plastic laminates	- BS 3794
Flush Doors	- IS 48
Fire check doors	- BS 459 Part 3: 1951
Joinery, Timber and workmanship	- BS 1186 Parts 1 and 2
Glues	- BS 1204 and 1444
Grading rules for timber	- BS 3819 and 4047
Structural Softwoods, characteristics	- BS 1860
P.V.C. sheet	- BS 3757
Screws	- BS 1210
Nails	- BS 1202

5.2 SOURCES OF TIMBER

Timber shall be from the following sources.

White deal	- imported
Red deal	- Northern Swedish Ports
Mahogany	- Honduras, East or West Africa, Tobago, Cuba.
Teak	- Burma or Siam.
Iroka	- West Africa
Aframosia	- Ghana
Cedar	- Canada
Columbia Pine	- South America
Parana Pine	- South America
Oak, White	- America or Japan
Lauan	- Borneo

5.3 PLYWOOD

All plywood shall be first grade resin bonded and obtained from a manufacturer approved by the Architect and must be guaranteed. One side shall be completely free from joints and surface defects. Joints and minor blemishes shall be permitted on the reverse side only. In external work it shall be "Marine Quality."

5.4 HARDWOODS.

All hardwoods shall be prime selected quality, free from all defects, and well cut and seasoned. They shall be in conformity with samples submitted to and approved by the Architect.

5.5 QUALITY OF TIMBER

All timber shall be free from loose and unsound knots, clusters of knots, wane, pitch pockets, decay and woodworm. Timber generally shall comply with the requirements of BS1186, Part 1.

5.6 PRESERVATIVE TREATMENT

Timber described as treated shall be impregnated under pressure with an approved waterborne solution or by immersion in approved organic oil solution, and the solution shall be appropriate to the position of the timber in the building i.e. internal or external. Ends and any other surfaces, cut, trimmed, or planed after treatment shall be brushed liberally with the solution before fixing.

Timbers treated with a waterborne solution shall be dried down again to the required moisture contents before installation.

If the Contractor proposed to carry out the treatment on the site he shall obtain the Architect's approval of the method and solution before doing so.

5.7 IRONMONGERY

All ironmongery is to be of the best quality and fixed in the most workmanlike manner with screws of the same materials or finishes as the articles to be fixed.

All necessary nails, bolts, nuts, washers, screws, spikes, and other builder's ironmongery shall be provided and fixed where necessary.

5.8 DEFINITIONS

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

"f" The term "f" denotes finishes sizes.

5.9 FRAMING

The word "framing" is to include all the best methods of jointing woodwork together, by mortice and tenon, dovetailed, wedging etc., and these shall be used whether the word framed is employed or not.

Wall plates, purlins etc., shall be in long lengths halved, spiked or bolted and framed as necessary or as shown. Scarfs to be placed at the points of support so as to weaken the timber as little as possible.

NOTE:- Where timbers are described as being bolted, bolts and holes are measured separately.

All glued joints shall be cross-tongued and all mouldings in framings shall be properly mitred or scribed as required. External framed joinery shall have the joints, tenons, mortices, grooves etc., painted over with a thick mixture of white lead and oil immediately before fixing so as to be made perfectly watertight.

5.10 JOINERY GENERALLY

1.	Moisture Content:	(a) For external components to be 17% ± 2 at time of manufacture.
		(b) For internal components to be 10% ± 2 at time of manufacture and fixing.
		(c) For internal components in close proximity to sources of heat to be 8% ± 2 at time of manufacture and fixing.
2.	Exposed Surfaces:	(a) Laboratory benches; to BS. 1186, Part 1, Class 1.S.
		(b) Other joinery work: to BS. 1186, Part 1, Class 1.
3.	Bonding:	(a) Laboratory benches: type WBP (weather and boil-proof).
		(b) Other joinery work: type MR (moisture resistant)
4.	Grade:	Grade 1/3 Laboratory benches other joinery work Grade 2/3.

5.11 SCHEDULE OF FINISHED WORK JOINERY TYPES:

5.11.1. TIMBER FLUSH DOORS

1. Standard Flush Door: 50mm minimum finished thickness:

Core: Stiles, top and bottom rails not less than 44mm thick and 95mm wide 13 No. cross bearers 44 x 12mm, 200 x 100mm lock block.

Facings:
(a) Internally - Birch faced plywood minimum thickness 4mm glued over the whole of the area of the face of the door.

(b) Externally - Marine quality plywood minimum thickness 6mm glued over the whole area of the face of the door.

Lippings: Parana Pine lipping both sides of maximum face dimensions 9mm glued to stiles and rails.

Adhesives:
(a) Internally - Type recommended by manufacturer of material being fixed of bonding MR or better when tested to BS. 1203.

(b) Externally - Type recommended by manufacturer of material being fixed of bonding WBP or better when tested to B.S. 1203.

2. Double Timber Flush Doors: As 7.11.1. except

Frames: Central styles rebated in each door.

5.11.2. HALF HOUR FIRE CHECK FLUSH DOORS.

1. Core: To B.S. 459, Part 3, but with dimensions and tolerances, except door leaf thickness, to B.S.4787, Part 1.

Facings: As for standard timber flush doors.

Lippings: As for ditto.

Adhesives: As for ditto.

5.11.3. FRAMED GLAZED DOORS

1. Half Hour: Fire Check, double swing, double framed glazed doors, 50mm minimum finished thickness.

1. Frames: Afrormosia 100mm minimum width styles and top, 175mm minimum width lock rail, 225mm ditto bottom rail prepared to receive glazing fixed in marinite channel, in two panes.

Styles rounded and grooved to receive intumescent strip 2mm x 10mm deep.

Head and bottom rail groove to receive intumescent strip size 2mm x 10mm.

2. Sundries: (a) "Trada Marinite" or equal and approved fire check channel 50mm x 20mm fixed in prepared opening.

(b) 2mm x 10mm deep intumescent strip fixed in groove of frame.

2. Half Hour: Fire Check, single swing, double framed glazed doors, 50mm minimum finished thickness.

1. Frames: As 7.11.3/1. except all in red deal.

Central styles rebated.

2. Sundries: (a) "Trada Marinite" fire check channel as 7.11.3/1.

(b) 2mm x 10mm deep intumescent strip fixed in groove of frame.

3. Standard Framed Glazed Door: 50mm minimum finished thickness.

1. Frames: Red Deal 100mm minimum width styles and top 175mm minimum width intermediate rail, 225mm bottom rail, rebated and beaded to receive glazing in two panes.

5.11.4. DOUBLE STANDARD FRAMED LOUVRED DOORS

1. Standard Framed Louvred Door: 63mm minimum finished thickness.

Frames: Red Deal 125mm minimum width stiles, top, 225 bottom rails 200mm intermediate rail prepared for louvre blades.

Louvres: Red Deal 100mm x 33mm twice splayed louvre blades fitted to panels.

Frames: Central stile rebated in each door.

5.11.5. DOUBLE STANDARD FRAMED, LEDGED, BRACED AND SHEETED DOORS

1. Standard Framed Sheeted Door: 63mm minimum finished thickness.

Frames: Red Deal 125mm minimum width styles and top 225 x 38mm bottom rail, 200 x 38mm intermediate rail, 125 x 38mm braces and 25mm minimum thickness of tongued, grooved and V-jointed weather sheeting in matched narrow widths.

Central styles rebated in each door.

5.11.6. DOOR FRAMES

1. Standard Frame to Internal Doors:

Section: Red Deal rebated to detail out of minimum 100mm x 63mm to doors generally.

Compressed Seal: Asbestos Cord when fixed to fairfaced block or r.c.

2. Standard Frame to External Doors:

Section: (a) Afrormosia rebated to detail minimum 125 x 75mm

(b) Red Deal rebated to retail minimum 125 x 75mm and 125 x 63mm.

5.11.7. GLAZED SCREENS

1. Standard Screens:

Section: Red Deal rebated to detail minimum 100 x 63mm to screens generally.

2. Half Hour Fire Check Screen:

Section: Afrormosia rebated and hollow grooved to details, minimum 125 x 63mm generally.

Bead: Twice splayed cover slip hardwood minimum 75 x 16mm to both sides of glazed opes fixed to frame with brass cups and screws.

Sundries:

(a) "Trada Marinite" or equal and approved fire check channel size 50 x 20mm fixed in prepared opening with 37mm steel screws.

(b) 2mm x 10mm intumescent strips.

(c) Non-combustible cill 3.2mm asbestos sheet glued and screwed to hardwood threshold.

(d) Afrormosia threshold 175 x 25mm minimum.

5.12 ACCESSORIES

5.12.1 NAILS: To BS. 1202, generally to Parts 1, 2 or 3 but for external use and where liable to attack by moisture use non-ferrous types to Parts 2 and 3.

5.12.2 WOOD SCREWS:

1. Steel to BS. 1210 generally, but for external use and where liable to attack by moisture with an anti-corrosive finish.

2. Brass to BS. 1210.

5.12.3 SCREW CUPS: Brass to BS. 1494: Part 2.

5.12.4 BOLTS SCREWS AND NUTS: Unified black square and haxagon to BS. 2708.

5.12.5 WASHERS: Steel to BS. 3410.

5.12.6 ANCHORS: Galvanized steel frame fixing bolts complete with spreader to be of an approved manufacture.

512.7 FRAME JOINT FILLER: Asbestos cord of approved manufacture.

5.13 PROTOTYPES

Before starting repetitive fabrication of doors, furniture units etc., prepare and obtain approval of prototypes.

5.14 GUARANTEE

Furnish a written guarantee stating that finished joinery work will be guaranteed against warpage, opening of joints, cracking, delamination of veneer, or plastic laminate for a period of 12 months from completion of the building.

5.15 HANDLING AND STORAGE

5.151 PROTECTION: Prevent damage to arrises.

515.2 HANDLING: Where components have to site-jointed for handling purposes, the position and detail of joint is to be approved in advance by the Architect.

515.3 STORAGE: Do not store finished components in areas where glazing is incomplete or building not dry.

5.16 FIXINGS

516.1 PRIMING AND SEALING: Ensure that all frames etc., are primed or sealed as specified before fixing.

5.162 LOADING: Frames must not carry any structural loads unless specifically designed to do so.

5.16.3 DOOR FRAMES:

1. Ensure that at least one fixing is adjacent to each hanging point.
2. Fix at not more than 900mm centres unless shown otherwise.
3. At false ceiling heads, fix grounds with minimum 2 mild steel flat bars to underside of concrete slab.
4. Fix jambs at approximately 150mm from bottom edge and head and at 900mm maximum centres.

5.16.4 WINDOW FRAMES:

1. Fix at not more than 900mm centres.
2. Fix jambs at approximately 150mm from bottom edge and head and at 900mm maximum centres.

5.16.5 BEADING: Secure timber beads by countersunk screws and caps at centres predetermined by surround manufacturer.

5.17 WORKMANSHIP

5.17.1 COMPONENTS: Generally make to BS. 1186 Part 2 excluding Clause 2.5.1.

5.17.2 ARRISES: To be pencil rounded.

5.17.3 SCREWING SOFTWOOD: Provide matching clearance holes for all sizes of screw and matching pilot holes for screws of 6 gauge or more in 'first' quality work.

5.17.4 SCREWING HARDWOOD: Provide clearance and pilot holes to match screw sizes.

5.17.5 PUNCH:- All nail heads below timber surfaces which will be visible in completed work.

5.17.6 COUNTERSINK: Countersink screw heads not less than 2mm below timber surfaces which will be visible in finished work, include matching caps where shown.

5.17.7 PELLETING: Countersink screw heads 6mm below timber surfaces which are to be clear finished. Glue in grain matched pellets not less than 6mm thick and cut from matching timber. Finish off flush with face.

5.17.8 LAMINATED PLASTICS: Stick in strict accordance with manufacturer's recommendations. Chamfer edges at all internal angles.

5.17.9 ASSEMBLY: Assemble items in joinery shop where possible. Make trial assembly prior to knocking down or shipping components to site.

5.17.10 HANGING DOORS: Hang doors so that they open and close freely and smoothly with no binding. Maintain an even, parallel margin clearance, not exceeding 4.8mm between door and frame, or double doors. At completion of building re-adjust doors as required.

5.17.11 EDGING: Plane or sand unfinished lippings equally on opposite edges when adjusting clearances. Reseal as originally specified if sanded planed or cut during fixing.

5.17.12 IRONMONGERY GENERALLY: Assemble and fix in accordance with manufacturer's recommendations. Use fastenings with matching finish supplied by ironmongery manufacturer. Check and adjust all ironmongery, lubricating all moving parts as necessary to ensure correct functioning.

8.0 STRUCTURAL STEELWORK.

8.1.1 DESCRIPTION:

The work consists of

8.1.2 LOCATION:

The project is located at

8.1.3 LIST OF DRAWINGS:

Drawing No:

8.1.4 PROGRAMME:

Steelwork will be required on site on

8.1.5 FORM OF AGREEMENT:

The form of agreement applicable to the main contract is the RIAI Form of Agreement (latest edition) where quantities form part of the contract.

8.2. SHOP DRAWINGS:

The steelwork contractors shall prepare shop drawings in sufficient detail to ensure accurate and adequate fabrication and submit at least two copies of each drawing to the Engineer at least 14 days prior to commencement of fabrication. Approval of shop drawings shall not relieve the Contractor of his responsibility for the accuracy of the fabrication or for the structural adequacy of the various details. Fabrication shall not commence until shop drawings are approved at which stage a full set of approved shop drawings shall be sent to the Engineer. The Engineer shall be notified of all discrepancies from the approved drawings at all stages of fabrication. The structural steelwork contractor shall be responsible for all errors insetting out and detailing and shall rectify same at his own expense.

8.3 SUPERVISION:

Competent supervisory staff shall be employed by the steelwork contractor in the workshop and on site at all stages of fabrication and erection.

8.4 FABRICATORS & ERECTORS:

Every welder shall be approved in accordance with the provisions of BS 4872. "Specification for approval testing of welders where procedure approval is not required" A current certificate from a recognised testing institution shall be presented at the Engineers request. Only such approved welders shall be employed on the job. Any expenses borne by the Contractor in respect of meeting the above requirements including proving the competence of the Welders shall be at the fabricators expanse. Tenderers shall include for such approval testing as necessary . All erectors employed shall be adequately experienced in the erection of structural steel, careful and skilled in the work.

8.5 PROCEDURES:

The provisions of BS 5135 shall apply. The fabricator shall keep a copy of this standard at his works for reference.

8.6 MATERIALS:

Materials fabrication and erection of steelwork shall comply with the requirements of the relevant British Standards and latest amendments, including the following:

BS	4	Part 1 & 2 Structural Steel Sections.
BS	449	Use of Structural Steel in buildings.
BS	4360	Weldable Structural Steel.
BS	1775	Steel tubes for structural engineering purposes.
BS	2708	Unified black square hexagon bolts and nuts.
BS	1768	Unified precision hexagon bolts and nuts.
BS	3139	High strength friction grip bolts.
BS	3294	Use of high strength friction grip bolts.
BS	3410	Metal washers for general engineering purposes.
BS	639	Covered electrodes for the manual arch-welding of carbon maganese steels.
BS	5135	Metal arc-welding of carbon and carbon manganese steels.
BS	4848	Part 2 and 4 hot rolled structural steel sections.

8.7. TESTING:

The Engineer may require any elements of material to be tested to prove that the element in question conforms to the relevant Specification. Certificates from the manufacturers shall be made available on demand. All tests shall comply with relevant British Standards. Every tenderer shall indicate with his tender the procedures he intends to adopt to ensure compliance with the specification. In particular the nature and percentage of non-destructive and destructive testing of welds. Tenderers shall also indicate how compliance with the paint specification is assured.

8.8. ANCHORAGE:

The steelwork contractor shall provide and deliver to site in advance all anchorages and assemblies requiring to be cast into reinforced concrete structure by the General Contractor. The steelwork subcontractor shall check dimensions before fabrication or otherwise agree dimension with the General Contractor. In the event of any discrepancies any expenditure in making corrections will not be borne by the client.

8.9. ERECTION:

The erection shall be carried out in such a way that at no stage will the safety of any operatives and site workers be impaired. Adequate bracing and tie ropes shall be provided at all stages, to secure the stability of the structure through to final completion. In the event of failure all responsibility for making good the damage and correcting the faults will rest with the steelwork subcontractor. On completion the steelwork will be plumb, level and straight in accordance with the steelwork drawings to a tolerance of 4mm in level and 8mm in line. Tolerances shall only be exceeded on written permission of the Engineer.

On completion of any section it shall be inspected and if any corrections are necessary they shall be carried out at the steelwork contractors expense. All erection procedures shall conform with the relevant statutory requirement relating to safety of erectors.

8.10 CONNECTIONS AND DETAILS:

All joints shall be as detailed on the relevant drawings. Where joints have not been detailed the Steelwork contractor shall make provision for fully developing the member in question for its particular function whether shear, tension, compression or combination of stresses.

8.11 DRIFTING:

All holes shall be sufficiently concentric that drifting is unnecessary to insert bolts. Reaming and burning holes during erection will not be allowed except by written permission form the Engineer.

8.12 TIGHTENING BOLTS:

All bolts shall be fully tightened by standard spanners of correct sizes and shapes for the bolts used. Calibrated torque spanners for the appropriate high strength bolts shall be used. The spanners or load indicating washers for the appropriate bolts shall be calibrated in accordance with the Manufacturers instructions and shall be tested periodically by the Engineer.

8.13 SITE WELDING:

Site welding shall only be done where shown specifically on drawings. If the steelwork contractor wishes to use site welding for any reason he shall apply in writing to the Engineer. Permission will only be granted provided all necessary working platforms are provided at no extra charge to the client. Unless the joints in question are readily accessible such permission will not be granted. Welding shall not be permitted on wet surfaces during rain, snow or high winds unless good and sufficient cover is provided. Welding shall not be permitted at temperatures below $0^{o}c$.

8.14 INSURANCES:

The steelwork Contractor shall indemnify the client with good and sufficient insurance policies against all claims in accordance with the requirements of the Contract.

8.15 QUOTATIONS:

The rates quoted shall include all bolts and other ancillaries for the proper fabrication and erection of the building. Bolts and other ancillaries are not measured separately in the schedule. The Contractor shall provide in his tender for the payment of 5% Discount to the Main Contractor.

8.16 RETENTION:

The percentages of certified value retained shall be in accordance with the main contract.

8.17 SAFETY REGULATIONS:

All statutory safety regulations shall be adhered to in respect of both the erection of structural steelwork and cladding and all reasonable care shall be taken as a precaution against accidents. The Contractor shall include in his quotation for all the necessary labour and materials to meet these requirements.

8.18 QUANTITIES:

Where a schedule of quantities is submitted for pricing it shall be priced and extended in ink and returned with the tender. Allowance for fabrication, waste has not been made in this schedule and the tenderer's rates and price shall include for any such waste.
Final quantities shall be re-measured from the successful tenderer's approved shop drawings.

8.19 ACCEPTANCE OF TENDER:

The lowest or any tender need not be accepted.

PAINT SPECIFICATION: STEELWORK NOT EXPOSED TO WEATHER; LOW HUMIDITY; NON-CORROSIVE ATMOSPHERE

8.20 PRE-FABRICATION:

8.20.1 Preparation:

Shot blast to Swedish Standard Sa $2\frac{1}{2}$ and or BS4232 second quality.
Remove all traces of loose rust, grit etc by compressed air or carefully clean dry brushing.
Inspect for laminations and remove by careful grinding, leaving a smooth surface.f

8.20.2 Blast Primer:

Within 2-hours of shot blasting apply, by airless spray 1 coat 2-pack Epoxy Organic Zinc rich Primer to BS 4652 Type 3 to a dry film thickness of 20/25 microns.

8.20.3. POST FABRICATION:

8.20.4. Preparation:

Carefully remove all weld flux and spatter, rough edges etc, by scraping, chipping and grinding to a smooth surface. Remove any unsound 'scorched' primer around weld areas, as well as all dirt, grease etc.

Wash with 'white spirit' where necessary.
Spot-primer all bare metal with 2-pack Epoxy Organic Zinc Rich Primer to BS 4652 Type 3.
Allow to dry overnight.

8.20.5. Site Holding Primer:

Apply by airless spray to the clean dry surface 1 coat 2-pack Epoxy Organic Zinc Rich Primer BS 4652 Type 3 to a dry film thickness 50 microns for the two coats of primer.
Allow to dry hard before despatch to site.

8.20.6. Site Treatment:

After erection all damaged areas (including bolt heads etc,) must be thoroughly repaired and carefully spot primed with 2-pack Epoxy Organic Zinc Rich Primer to BS 4652 Type 3 by the steelwork subcontractor.
Allow to dry overnight.

COMPLIANCE:

8.20.7. The following specifications are deemed to comply with the above general specification if carried out strictly in accordance with manufacturer's instruction:

a. Metalife System 500 Low Build.
b. HGW: Base Ref A.5214. Activator Ref.A5330 applied to the thicknesses specified above. Technical information sheet 2/5 October 1981.

8.21. GALVANISING SPECIFICATION FOR ALL STEELWORK

8.21.1. The provisions of BS 729: "Specification for hot dipped galvanised coatings on iron and steel articles" 1971 (1986) shall be adhered to and also those of BS 5493: "Protective Coating of Iron and Steel Structures" 1977.

8.21.2. The above not withstanding, the galvanising coat thickness adopted shall not be less than 2 oz. per sq ft. (611 g per sq. metre) or 85 micro metres in thickness. This corresponds to protection system Sb1 table 4B P.25 5493 1977 as a minimum.

8.21.3. It shall be the responsibility of the fabricator to ensure that the galvanising system used shall be sufficient to achieve the design performance specification. In this context if System SB2. BS 5493 1977 is deemed necessary to achieve same then it shall be deemed to be included in the tender.

8.21.4. It shall be the responsibility of the fabricator to provide a suitable zinc rich paint to touch up all damaged or unprotected areas.

8.21.5. Particular care shall be taken to use bolts, washers and other ancillaries which are suitably protected to the required standard (galvanised or sheradished).

9.0 WALL FINISHES

9.1 MATERIALS:

9.1.1 THE MATERIALS shall comply with the following specifications:-

Cement.	–	IS 1
Lime.	–	IS 8
Sand.	–	BS 1198 & 1199
Gypsum plaster.	–	IS 27
Metal Lathing.	–	BS 1369
Plaster lath.	–	IS 41

9.1.2 SECTIONS

1. Galvanised steel angle beads: Expamet angle bead Reference No. 550.

2. Galvanised steel plaster stops: Expamet Plaster stop Reference No. 566 (19mm) or to required thickness.

9.1.3 MESH

Expanded metal lathing to B.S. 1369, Plain expanded weighing 1.6 Kg/m^2 and galvanised.

9.1.4 FLEXIBLE SHEETS

Jute Scrim: 90 mm wide.

9.1.5 ACCESSORIES

Steel clout nails; to B. S. 1202: Part 1, table 3, galvanised to B.S. 729.

9.1.6 WATER: clean and fresh, tested to BS. 3148, if required.

9.2 WORKMANSHIP

9.2.1 WORKMANSHIP shall comply with the following Codes of Practice:-

Internal Plastering	–	BS. CP. 211
External rendering	–	BS. CP. 221
Tile and Slab Flooring	–	BS. CP. 202
Sheet and tile flooring	–	BS. CP. 203

9.2.2 PLANT TOOLS: The whole of the work is to be executed to the entire satisfaction of the Architect and all work rejected is to be re-executed by the Contractor without further charge, if proved to be of faulty workmanship for which the Contractor is responsible. Provide all scaffolding, tools, moulds, temporary rules etc., for the proper execution of the work.

9.2.3. SMOOTH CEMENT MORTAR: Scud, render, float and set in cement mortar composed of three parts washed sand to one part cement in all plain surfaces. The Contractor shall take special care in gauging of cement and sand for this plastering so that when finished it shall be of uniform tint without patches.

9.2.4. EXTERNAL WHITE roughcast to be three coat work as follows:-

(a)	Scudding Coat 1:3	Cement pebble gravel not exceeding 6 mm.
(b)	Rendering Coat 1:3	Cement Sand.
(c)	Dashing Coat 1:1:5	White cement, lime, 3 mm white spardust and 10 mm white spar pebbles to be in the proportions 1 part dust to 3 parts pebble.

9.2.5 PLASTER BOARD: ceilings and timber studwork shall be covered with 9.5 mm plasterboard slabs of approved manufacture tightly butt jointed and nailed with 32mm countersunk headed cadmium plated nails at 100 mm centres. The finishing coat shall consist of one coat gypsum plaster 3 mm thick with steel trowel finish.

9.2.6 METAL LATHING shall be tight galvanised 14 gauge expanded metal complying with B.S. 1369.

9.3 GENERALLY

9.3.1 SAMPLE AREAS: apply coatings to sample areas of the work as requested by the Architect.

9.3.2 DO NOT BEGIN coating work until all:

1. Required openings, chases or other apertures have been cut.

2. Pipes, fixtures, fixing pads and plugs have been fixed.

3. Making good has been completed.

9.3.3 GYPSUM AND LIGHTWEIGHT PLASTERS: mix in accordance with their manufacturers' recommendations.

9.3.4 CONTAMINATION: avoid contamination of one type of plaster by another.

9.3.5 PROTECT all existing work and approaches, with boards, dust sheets, etc. All droppings on to finished work to be cleaned off immediately.

9.3.6 CLEANLINESS: ensure that all plant and tools are kept clean and free from previous mixes.

9.3.7 COLD WEATHER: do not apply plaster to frosted or frozen surfaces.

9.3.8 COLD WEATHER: maintain temperature of coatings above 4°C until at least 24 hours after setting.

9.3.9 DRYING OUT: prevent excessively rapid or localised drying out.

9.3.10 MAKE GOOD defective or damaged coatings before starting decoration.

9.4 PREPARATION OF BACKGROUNDS: TRIMS & JOINTS

9.4.1 BEADS AND STOPS: fix plumb, square and true to line and level.

9.4.2 METAL BEADS, STOPS AND LATHING: protect cut edges with bitumen coating solution.

9.4.3 METAL ANGLE BEADS: fix to solid backgrounds with plaster dabs on each side of angle at not more than 600 mm centres.

9.4.4 METAL ANGLE BEADS: fix to timber supports with 38 mm clout nails on each side of angle at not more than 600 mm centres.

9.4.5 METAL PLASTER STOP: fix with plaster dabs or 38mm clout nails at not more than 600 mm centres.

9.4.6 METAL LATHING: fix joint reinforcing strips with plaster dabs or 38 mm clout nails to suit background on each side of joint at not more than 600 mm centres.

9.4.7 SCRIM: where specified bed 90 mm wide jute scrim centrally over joints in neat plaster similar to first coat. Do not lap ends. Press well in, trowel flat and smooth and allow to dry before applying coating.

9.4.8 GYPSUM BASEBOARD: scrim joints between boards in the same plane.

9.4.9 GYPSUM BASEBOARD:scrim joints between boards at angle, except those with angle beads.

9.4.10 GYPSUM BASEBOARD: scrim joints between boards and solid background.

9.5 PREPARATION OF BACKGROUNDS: SURFACES

9.5.1 BRUSHING: remove efflorescence, laitence, dirt and other loose material by thoroughly dry brushing.

9.5.2 SCRUBBING: remove all traces of mould oil, paint, grease, dirt and other materials, incompatible with plaster work by scrubbing with water containing detergent.

9.5.3 PROTECT surfaces to be coated from weather, to ensure that they are reasonably dry before starting work.

9.5.4 SOLID BACKGROUNDS: before coating, adjust porosity to give uniform suction.

9.6 APPLYING PLASTER

9.6.1 MANUFACTURER'S RECOMMENDATIONS: apply all proprietary and special purpose plasters in accordance with their manufacturer's recommendations.

9.6.2 ACCURACY: finish surfaces to a true plane to correct line and level, with all angles and corners to a right angle unless otherwise specified, and with walls and reveals plumb and squar.

9.6.3 DUBBING OUT: if necessary to correct inaccuracies, dub out in thickness of not more than 10 mm in same mix as first coat. Allow to dry out before next coat is applied. Cross scratch surface of each coat immediately after set.

9.6.4 RIGID : SHEET BACKINGS: apply plaster as soon as possible after fixing.

9.6.5 APPLY each coat firmly to achieve good adhesion, and rule to even surface.

9.6.6 APPLY each coat to each wall and ceiling surface in one continuous operation.

9.6.7 APPLY each coat at full thickness down to floor level or skirting lath.

9.6.8 CROSS SCRATCH all undercoats to provide key for next coat.

9.6.9 CONDUITS bedded in undercoat are to be covered with 90 mm wide jute scrim bedded in finishing coat mix, pressed flat and trowelled in. Do not lap ends of scrim.

9.6.10 SETTING: apply subsequent coats of gypsum and lightweight plasters as soon as undercoat has set, is firmly bonded to background and has developed reasonable suction.

10.0 FLOOR FINISHES

10.1 MATERIALS / MIXES

10.1.1 THE MATERIALS shall comply with the following specifications:-

Cement	-	IS 1
Lime	-	IS 8
Sand	-	BS 1198 & 1199

10.1.2 SCREEDS: cement sand mix 1:4. Use lowest water; cement ratio which can be thoroughly compacted using the means available. Mechanical methods of compaction are to be used whenever possible to keep water; cement ratio to a minimium.
A sample of the mix squeezed in the hand should ball together without water being forced out.

10.2 WORKMANSHIP

10.2.1 WORKMANSHIP shall comply with the following Codes of Practice:-

1. Tile and slab flooring - BSCP. 202
2. Sheet and tile flooring - BSCP. 203

10.2.2 MIX concrete to a uniform consistence in an approved mechanical mixer in accordance with mixer manufacturer's recommendations.

10.2.3 DO NOT USE mixes after initial set has taken place. Retempering or reconstitution of mixes will not be permitted.

10.2.4 OPERATIVES must be skilled in laying screeds.

10.2.5 PROTECT all existing work and approaches with boards, dust sheets, or other suitable means.

10.2.6 COLD WEATHER: do not lay screeds when air temperature is below $3^{o}C$ on a falling thermometer or $1^{o}C$ on a rising thermometer, or while any base surface remains frozen.

10.2.7 COLD WEATHER: do not use frozen or frost covered materials.

10.2.8 COLD WEATHER: submit details of methods to be used to maintain temperature of concrete above the specified mimimum temperature at time of placing.

10.2.9 HOT WEATHER: ensure that full compaction is not prevented by premature stiffening or drying out of mix. After compaction prevent rapid drying out-

10.2.10 WET WEATHER: protect freshly laid screeds from rain.

10.3 PREPARATION OF BASE SURFACES

10.3.1 CLEAN all bases thoroughly to remove all dirt, dust, rust and oil.

10.4 LAYING SCREEDS

10.4.1 UNBONDED CONCRETE: lay screed in two courses without bonding to base, the lower course thicker than the upper and neither course less than 20 mm thick. Compact lower course immediately before placing upper course.

10.4.2 BAYS: lay concrete screeds in bays of not more than 30 m^2 in chequerboard pattern. Allow at least 24 hours between placing adjacent bays.

10.4.3 JOINTS: form square and plain between screed bays or strips. Abut closely and level, and compact thoroughly at edges.

10.4.4 COMPACT material thoroughly for full depth. Do not bring excessive laitance to the surface, and remove any which appears. Do not wet surface.

10.5 FINISHING

10.5.1 TOLERANCES for floor screeds to be:
1. ± 15 - 5mm overall in large open areas.
2. ± 3mm under a 3m straight edge in areas adjacent to doors, walls and where special equipment may be installed.

10.5.2 STEEL FLOAT: finish surface of screed smooth with steel hand trowel or power float to receive thin sheets or tiles.

10.5.3 MAKE GOOD all defective work in screeds before applying finishes.

10.6 CURING

10.6.1 PROTECTION: immediately after laying, protect surface from wind, draughts and strong sunlight.

10.6.2 COVER surface as soon as it is sufficiently hardened with either:

1. Canvas, straw mats, or a 50mm layer of damp sand, kept damp, or
2. Waterproof sheeting kept in close contact with surface. Leave for not less than 7 days in normal weather conditions and not less than 14 days when temperature is below 3°C.

10.6.3 DO NOT HEAT screed or building artificially during first 4 to 6 weeks after laying; then raise temperature slowly.

10.7 FLOOR COVERINGS

10.14 QUARRY TILING

Clay floor quarries and fittings: to BS 1286.

1. Type: Fireflash Red Floor Tiles.

2. Size. 152 x 152 mm

3. Manufacturer: H & R Johnson Ltd., Stoke-on-Trent, England.

10.15 Fixing tiles with thin bed adhesive.

10.15.1 BASE: ensure that base to receive tiles is level, dry and clean, with no loose and friable areas and surface dusting.

10.15.2 ADHESIVE: prepare and use cement-based adhesive to manufacturer's recommendations to form a bed not more than 3 mm thick.

10.15.3 LAY tiles dry and tamp well down into the adhesive to ensure a proper bond with base and a level surface.

10.16 JOINTING AND FINISHING.

10.16.1 JOINTS to be even and not more than 3 mm wide.

10.16.2 GROUT up with coloured cement-sand 1:1 worked well into joints when bed is sufficiently firm to prevent disturbance of the tiles. Clean off surplus grout from face of tiles.

10.16.3 TRAFFIC: allow no traffic on the floor until 4 days after completion and then only light traffic for a further 10 days.

11.0 CEILING FINISHES

11.1 MATERIALS

11.1.1 THE MATERIALS shall comply with the following specifications:-

Cement	-	I.S. 1
Lime	-	I.S. 8
Sand.	-	B.S. 1198 & 1199
Gypsum plaster	-	I.S. 27
Metal lathing.	-	B.S. 1369
Plaster Lath	-	I.S. 41

11.1.2 PLASTERBOARD: Tapered edge plasterboards should be used. Fix the boards across the joist, grey or foil face to the framing i.e. the ivory surface visible. Leave a 3mm gap between each board, the boards should be nailed at every support at 150mm centres, commencing nailing from the centre of the boards and working outwards. Plasterboards to be nailed within 12mm of all edges.

11.1.3 METAL LATHING shall be tight galvanised 14 gauge expanded metal complying with B.S. 1369.

11.1.4 JUTE SCRIM: 90mm wide.

11.1.5 ANGLE BEADS: Expamet angle bead, Reference No. 550.

11.1.6 PLASTER STOPS: Expamet plaster stop, Reference No. 566 (19mm) or to a required thickness in galvanised.

11.1.7 STEEL CLOUT NAILS: to B.S. 1201, Part 1 table 3.

11.2 WORKMANSHIP

11.2.1 PLASTERBOARD: ceilings to be covered with 9.5mm plaster-boards, nailed with 32mm countersunk headed cadmium plated nails at a 100mm centres. The finishing coat shall consist of one coat gypsum plaster 3 mm thick with steel trowel finish.

11.2.2 EXPANDED METAL LATHING: render and float in cement mortar each coat 10mm thick. The first coat incorporating good quality ox or goat hair in the proportion of 5 Kg/m^3 of mix, and finish in hardwall plaster.

11.2.3 CONCRETE BONDING PLASTER: plastering and concrete ceilings shall be in two coats, the first coat consisting of concrete bonding plaster of approved manufacture to a thickness of 3mm and second or skimmed coat consisting of hardwall plaster to a thickness of 3mm.

11.3 SUSPENDED CEILINGS

11.3.1 GENERALLY: all suspended ceiling systems to be erected and fixed strictly in accordance with their manufacturer's recommendations and under their supervision.

11.3.2 SHOP DRAWINGS: submit at least two copies of complete details of each system including suspension system and means of access to services above ceilings.

11.3.3 SAMPLES: before commencement of work submit for approval a sample mock-up of each system to show all components (ceiling panels or strips, trims, suspension system, etc.)

11.3.4 OPERATIVES: must be skilled in the installation of the different systems and must produce first-class, flush finished surfaces to a true plane and free from warped or damaged sections.

11.3.5 STORAGE AND HANDLING: store all components indoors and clear of ground. Packaged materials to be handled and stored in original undamaged container with manufacturers' labels and seals intact. Stack materials to permit circulation of air and to prevent damage.

11.3.6 FIXTURES AND SERVICES: co-ordinate work of all other trades and services to ensure that their supports and fixings will not cause deflection in ceilings.

11.3.7 CONDITIONS: do not commence work in areas where glazing is incomplete or plasterwork is not thoroughly dry.

12.0 ROOF FINISHES

12.1 ASBESTOS SLATES

12.1.1 MATERIALS

12.1.2 MATERIALS shall comply with the following specifications:-

Felts.	-	BS 747
Lead.	-	BS 1178
Asbestos cement slates.	-	BS 690
Battens.	-	BS 1318

12.2 WORKMANSHIP

12.2.1 SLATING shall be carried out in accordance with BSCP 148 : 1968.

12.2.2 UNDERLAY: Lay parallel with eaves lapped 150 mm horizontally and 300 mm vertically.

12.2.3 UNDERLAY: Nail to each rafter at not more than 300 mm centres.

12.2.4 UNDERLAY: Nail to boarding at not more than 300 mm centres.

12.2.5 HIPS: Lay 600 mm wide underlay strips to overlap general underlay.

12.2.6 VALLEYS: Lay 600 mm wide underlay strips to under lap general underlay.

12.2.7 GUTTERS: Pull underlay taut, dress into gutters and nail to fascia.

12.2.8 COUNTER BATTENS: Nail through felt to coincide with centres of rafters.

12 2.9 BATTENS: Approved quality softwood slating battens of (51x25 mm) section lay to a maximum gauge of 250 mm. The joints of the battens are always to meet half way across the top face of the rafter.

12.3 LAYING AND FIXING ROOF SLATES

12.3.1 THE ROOF is to be covered with 600 x 300 mm (24" x 12") Matt blue/black "Thrutone" Asbestos Cement slates, or other approved, equal to sample approved, and centre fixed with two 1½" (32mm) galvanised nails and a copper disc rivet at the tail, in even courses of not more than 250 mm (10") gauge and not less than 100 mm (4") headlap. The pitch of the main rafters is 45 degrees. The slating is to be"broken-bonded," in exposed positions slating is to be carried out in accordance with Asbestos Cement Ltd. Publications (47) Mf6.

12.3.2 EAVE: the first course of slates is to be laid over the fascia board with undereave course. The eaves course should be tilted.

12.3.3 VERGES GENERALLY: The verge is to be formed with half-slates and full slates in alternate courses. All verges are to be bedded on a slate under cloak. Only very slight tilt is to be given, starting with the third slate in from the verge.

a) Verge on gable and Blockwork: The overhang from the blockwork should be 40 mm (1½) and not exceeding 50 mm (2"). The verge tiles are to be bedded on 114 mm (4½") in width. The undercloak slates are to be laid butt-jointed and bedded on the blockwork.

b) Verge on bargeboard: The overhang from the bargeboard should be 40 mm(1½) and not exceeding 50 mm (2"). The verge tiles are to be bedded on 230 mm (9") wide undercloak slates with mortar extending at least 125 mm (5") in width. The undercloak slates are to be drilled at each end, laid butt jointed, and twice nailed to the rafter along the inside of the bargeboard with aluminium alloy or copper nails. The fixing of the bargeboard whould be left until the finish overhang at the verge has been determined.

12.3.4 RIDGE: The ridge is to be covered with Universal Ridge Tiles, of identical colour and texture to that of the slates, bedded on the slating. Where considered necessary Security End Ridge should be used.

12.3.5 HIPS are to be covered with angle ridge of the appropriate pitch, of identical colour and texture to that of the slates, bedded on the slating. One galvanised hip iron is to be screwed to the foot of each hip rafter as support for the hip tiling.

12.6. ASPHALT WORK

12.6.1. WORKMANSHIP: The workmanship displayed in laying the asphalt shall comply with the relevant clauses of the Code of Practice 144 Part 2.

12.6.2. ASPHALT: The asphalt shall be mastic asphalt manufactured by a firm permitted under licence to use the British Standard "Kite" mark on its produce and the asphalt blocks shall be marked with the Kite mark, the letters B.S., the number of the standard and the manufacturer's trade-mark.

Asphalt for tanking and damp proof courses shall conform to B.S. 1097, asphaltic cement to Table 1 - cols. 2 or 3.

Asphalt for roofing shall conform with B.S. 988 asphaltic cement to Table 1 - cols. 2 or 3.

Asphalt for flooring shall conform with B.S. 1076 asphaltic cement content Table 1 - col. 2.

12.6.3. ISOLATING MEMBRANE: Felt for underlay shall be an impregnated flax felt to comply with B.S. 747, Class 4A (1) block sheeting felt and weighing not less than 17 kg/25 m roll.

12.6.4. METAL LATHING: Reinforcement shall consist of expanded metal felt lathing to B.S. 1369 not lighter than 26 S.W.G. in weight or galvanised wire netting 12 mm mesh and not lighter in weight than 19 S.W.G.

12.6.5. VAPOUR BARRIER: Vapour barriers shall be used in roofs over areas occupied by wet or humid processes or as directed. Vapour barriers shall be placed between the roof deck and the insulation and shall consist of a coated roofing felt complying with Clause 1C of B.S. 747 weighing not less than 13 Kg/10 m^2 with laps of not less than 50 mm bonded with a bitumen compound.

12.6.6. SOLAR REFLECTIVE TREATMENT: After the asphalt has weathered for 10-14 days the surface shall be thoroughly cleaned followed by one coat of silver film aluminium paint. The paint shall be obtained from Messrs. Evode Limited and applied in strict accordance with their instructions.

12.6.7. ROOFING: For flat roofs and slopes up to 30^0, asphalt shall be 20 mm finished thickness laid breaking joints in two equal layers. For vertical work and slopes over 30^0 other than timber surfaces, asphalt shall be 20 mm thickness breaking joint in three equal layers.

For horizontal roofs subject to traffic, asphalt shall be 25 mm finished thickness in two layers, the first layer being 10 mm thick and the second layer not less than 15 mm thick. The grade on the second layer shall be suitable to withstand traffic and shall be approved by the Engineer before ordering.

For vertical of sloping timber roofs, the asphalt shall be not less than 20 mm finished in three layers laid on expanded metal lathing fixed by nailing or stapling at 150 mm centres over felt underlay,

At the intersection of the two planes forming an internal angle and after the asphalt has been laid on the horizontal, sloping and vertical faces, a solid angle fillet of asphalt not less than 50 mm wide on the face shall be formed in two coat work,

12.6.8. TANKING: For tanking, the asphalt shall be applied on horizontal surfaces in three equal layers to give a total finished thickness of 30 mm.

The asphalt shall be applied on vertical surfaces in three equal layers to give a total finished thickness of 20 mm.

Two coat angle fillets shall be applied at all internal angles.

Changes in level shall be made up by slopes and not by rises with sharp angles.

12.6.9. DAMP PROOF MEMBRANES ON FLOORS AND WALLS: For damp proof membranes on horizontal surfaces, the asphalt shall be applied in two equal layers to a finished thickness of not less than 20 mm.

On vertical surfaces the asphalt shall be applied in two equal layers to a finished thickness of not less than 12 mm.

Two coats angle fillets shall be applied at all angles.

12.6.10. The asphalt for flooring shall be laid in one layer to the finished thickness indicated on the Drawings.

Where the thickness of the asphalt flooring is less than 25 mm finished thickness and generally when asphalt is laid over timber base, and isolating membrane shall be provided under the asphalt. Skirtings, coves and channels shall be executed in two coat work.

The flooring shall be laid in accordance with the recommendations for laying in Code of Practice 204.

12.6.11. CONTRACTOR FOR ASPHALT: The asphalting shall be carried out only by a specialist contractor approved by the Engineer. The asphalt contractor shall provide and lay the asphalt, the felt underlay and reinforcement.

12.6.12. ISOLATING MEMBRANE: On all horizontal roof surfaces and roof surfaces, sloping not more than 10^0, the asphalt shall be separated from the substructure by a felt underlay as specified. The felt shall be laid loose and lapped at least 75 mm at all joints.

On vertical timber structures and on sloping timber surfaces exceeding 10^0 a felt underlay and reinforcement as described shall be interspaced between the substructure and the asphalt. The underlay shall be nailed to the timber with 20 mm gauged galvanised round extra large headed felt nails at not less than 150 mm centres horizontally and vertically.

12.6.13. An adequate key shall be provided on all vertical and sloping surfaces.

Where asphalt is fixed vertically on walls, skirtings and upstands against brickwork, stone or concrete, it shall be tucked into a continuous chase not less than 25 mm x 25 mm formed on the structure and the asphalt shall be splayed to shed rainwater.

On brickwork the joints shall be raked out at least 12 mm deep and brushed clean. Smooth faced bricks shall be sparrow pecked to provide adequate key.

Vertical sloping concrete surfaces shall be sparrow pecked where necessary to provide an adequate key.

Alternatively, the surfaces may be scudded with a coat of 2:1 sand /cement mixture to a thickness of 33 m to 5 mm, the sand to be a clean sharp sand. The scud coat shall be well set before asphalt is applied.

12.6.14. PROTECTION OF MATERIALS AND SITING OF PLANT: Covered storage shall be provided for protecting the felt and insulating materials and the cauldron or mixer and asphalt blocks should be stored as near as possible to the place where the asphalt is to be laid.

12.6.15. PREPARE AND PROTECT SURFACES: The concrete screeds or any surfaces under the asphalt shall be well matured before the asphalt is laid. All insulating materials shall be well protected from damage by weather. The surfaces immediately before asphalting shall be well cleaned and protected from the weather.

12.6.16. RE-MELTING ASPHALT: re-melting of asphalt blocks shall be carried out in an approved type cauldron or mechanical mixer and over-heating of the asphalt shall be avoided. A suitable thermometer shall be used to determine the temperature which shall not exceed 215^0C. Oil or ashes shall not be used to lubricate the containers for transporting the asphalt. Blocks of asphalt shall be re-melted as delivered to site without addition or alternation in character.

12.6.17. LAYING: Each layer of asphalt shall be spread by float or trowel evenly and uniformly to the requisite thickness on the prepared surface and each succeeding layer shall be laid without undue delay on the layer beneath to prevent contamination.

The junction between continuous bays of any layer of asphalt shall be not less than 150 mm from a corresponding junction in the preceeding layer. For horizontal surfaces wood or metal gauges of the required thickness shall be used during the laying. Any "blows" formed during laying shall be carefully made good whilst the adjoining asphalt is warm.

When an insulating material is incorporated between the sub-structure and the asphalt, the exposed edge shall be sealed with asphalt at the end of each laying period to prevent the entry of moisture.

12.6.18. SURFACE FINISH: Immediately after completion of laying the specified number of layers and while the asphalt is still warm, horizontal surfaces and slight slopes shall be well rubbed with a wood float using a fine clean sand. Sand shall not be spread over the exposed edges of bays.

12.6.19. SURFACE TREATMENT: Immediately after the laying has been completed an approved solar reflecting treatment shall be applied. Where a finish of chippings is indicated they shall be embedded in hot bitumen or other approved adhesive on the finish asphalt surface. The surface shall be clean and free from dust and the chippings which shall be white marble or white spar chippings 6 mm to 10 mm size shall be laid uniformly and tightly side by side to form a dense white reflecting surface.

Where surface chippings are not indicated, the finished asphalt surface shall be given one coat of silver film which shall be applied in accordance with the manufacturer's instructions. The rate of speed for the film shall not be greater than 11 sq. metres per litre.

12.6.20. VENTILATORS:

Where roofs are insulated, adequate provision shall be provided for ventilating the insulation materials and to allow for evaporation of trapped moisture.

12,6.20 VENTILATORS:

Approved type ventilators shall be provided and a minimum of two ventilators and not less than one ventilator per 40 sq. metres approximately. These vents should be provided at the lower and upper ends of the falls and shall be built in before or during the laying of asphalt.

12.6.21. PROTECTION OF ASPHALT: In roofing and flooring asphalt, the main contractor is to cover and adequately protect all asphalt from excess heat, abrasion, impact the action of acids, alkalis, oils or solvents and is to deliver up the roof in a sound and clean condition.

In tanking damp proof courses, the damp proof membranes, the main contractor is to protect the horizontal asphalt in the same manner as the roofing asphalt and is to protect it from damage by subsequent building work, scaffolding poles etc.

The vertical asphalt shall be protected by the erection of the skin walls as soon as possible after asphalting.

12.6.22. SKIRTINGS: The minimum height of skirtings shall be 150 mm.

12.7. RAINWATER DISPOSAL.

12.7.1 MATERIALS.

12.7.2. PIPES AND FITTINGS: Unplasticised polyvinyl chloride (UPVC) to B.S. 4514.

12.7.3 ROOF OUTLETS: Vertical spigot high density polythene (HDP) with cast iron domed grating specific gravity 0.94.

12.7.4 WORKMANSHIP.

12.7.5 GENERALLY: Fix all pipes and fittings in strict accordance with manufacturers recommendations with necessary fixings and accessories as recommended by the manufacturers.

12.7.6 FIX pipes true to line.

12.7.7 FALL In horizontal pipes to be not less than 10 mm in 3 metre length.

12.7.8 METAL FIXING: Clips, screws, nuts, bolts, distance pieces etc., to be non-corrosive.
Screws to be not less than 45 mm long and of No. 12 minimum size.

12.7.9 EAR FIXING: Distance between holes made for fixings through ears should be such as to avoid damage to the pipes when fixing.

12. 7.10 P.V.C. FIXING: The wall thickness in no case to be less than that of the pipe being fixed.

12.7.11 JOINTING MATERIAL must not project into bore of pipe.

12.7.12 DISTANCE of backs of pipes from surfaces to which they are fixed to be at least 25 mm.

12.7.13 SUPPORT every length of pipe independently. Maximum distances between supports to be as follows:-

1.	Vertical Pipes.	1800 mm for 100 mm and 150 mm.
2.	Horizontal Pipes.	900 mm for 100 mm. 1200 mm for 150 mm.

12.7.14 THERMAL MOVEMENT: Make adequate provision in the fixing and jointing for thermal movement in the system.

12.7.15 ROOF OUTLETS: Fix in accordance with manufacturer's recommendations.

12.7.16 <u>TESTING.</u>

12.7.17 GENERALLY: Notify the Architect before carrying out tests.

12.7.18 PROVIDE clean water, apparatus and assistance for testing as required.

12.7.19 OBSTRUCTIONS: Before testing ensure that all pipe runs are clear.

12.7.20 RECORDS: Keep a record of all tests.

12.7.21 INTERNAL PIPES INTERMEDIATE TESTS. Close pipes at each end. Test with air at a pressure of 38 mm water gauge. Maintain constant reading for 3 minutes.

12.7.22 INTERNAL PIPES FINAL TEST: Close system at each end. Test with water at a pressure of 1.5 metre head to satisfaction of the Architect.

12.7.23 DEFECTS: Locate and make good all defects before commencing new work. Retest to satisfaction of the Architect. Leave system sound and perfect.

13.0 PLUMBING INSTALLATION.

13.1 MATERIALS:

13.1.1 MATERIALS shall comply with the following specifications:-

Light gauge copper tubes	-	BS 659
Pipe couplings for copper.	-	BS 864
Underground copper tubes.	-	BS 1386
Gate Valves.	-	BS 1952
Polythene pipes.	-	BS 1972
Unplasticised p.v.c. pipes and fittings.	-	BS 3505, BS 4346 Part 1, 4514 and 4576.
Thinwall copper tubes.	-	Irish Metal Industries Ltd.
Cast iron pipes and fittings.	-	BS 78, 1211, 3464 and 3961.
Cast iron soil and vent pipes.	-	BS 416

13.1.2 GENERALLY : Where applicable all work shall comply with the requirements of BSCP 304: 1968 - sanitary pipework above ground.

13.1.3 THE PLUMBING shall include all work, attendance, cutting of holes etc., and for supplying all labour and materials for the fixing of the fittings hereafter specified.

13.1.4 THE WORK shall be carried out in a first class manner and shall comply with the regulations of the Local Authority.

13.1.5 ONLY the best materials will be permitted to be used and none but competent plumbers shall be employed.

13.1.6 PROVIDE for making all necessary joints to water supplies, wastes and drains, plugging to walls and for all trades attending on plumber while fixing and making good after.

13.1.7 PIPE JOINTS:

Joints in cast iron pipes shall be made with gaskin and caulked lead.

Joints between brass ferrules and w.c. traps or other stoneware fittings shall be made with neat cement.

Joints between p.v.c. pipes shall be made with adhesive and couplers in strict accordance with the makers' directions.

Joints in copper pipe shall be brazed or made with compression fittings.

13.1.8 MAKE GOOD

The Contractor shall make good at his own expense all damage occasioned by negligence of plumbers, overflows, leakages etc.

13.1.9 PROTECTION:

Provide for all necessary protective coverings to the Sanitary Fittings, etc., and be responsible for and make good all damage to the same by want of sufficient and efficient such coverings.

13.1.10 TESTING

The whole of the work is to be tested at the Contractor's expense, at such times and in such manner as the Architect shall direct and to his satisfaction.

14. 0 GLAZING:

14. 1 SCOPE OF WORK: Glass and Glazing applicable to timber doors and screens.

14. 2 MATERIALS:

1. MIRRORS: Mirror glass to BS. 952 guaranteed against against silver spoilage for a period of 2 years from date of final completion.

2. CLEAR GLASS: (a) Clear float glass and polished plate to BS. 952 quality glazing 6mm thick.
(b) Clear sheet glass to BS. 952 selected quality glazing.

3. WIRED GLASS: 12.5mm square mesh clear plate wired glass to BS. 952. 6mm thick Wires to be straight both ways to approval.

4. GLAZING COMPOUNDS: to BS. 544: 1969.

5. BEADS: Hardwood and softwood as stated.

6. WASH LEATHER: or similar and approved.

7. FIXINGS: Chrome capped screws; brass caps and screws; stainless steel caps and screws.

14. 2.1 SAMPLES: Deliver for approval to the Architect's office samples of all glazing and mirrors specified. Samples to be not less than 150mm square.

14.3 DELIVERY & STORAGE:

1. Mark each pane clearly to indicate presence of glass. Use glass manufacturer's recommended marking material.

2. Replace, at own expense, scratched broken or damaged glass to leave final project without defects.

14. 4 WORKMANSHIP:

1. Generally: to CP. 152: 1966.

2. Maintain labels until final cleaning.

3. Accurately cut glass to fit openings and provide for expansion.

14.5 PREPARATION:

1. All rebates and grooves to be clean, dry and unobstructed at time of priming, sealing and glazing.

2. Painted timber surrounds; ensure that rebates have been sealed with primer and at least one undercoat before glazing. Refer to painting and decoration.

3. TIMBER BEADS: ensure that timber beads are sealed to match timber.

14.6 FIXING GENERALLY:

1. Edge Clearance to be equal all round each pane and not less than 3mm for single glazing.

2. EDGE COVER:

Glass Area in m^2	Edge
up to 0.5	5mm
0.5 to 1.5	9mm
1.5 to 4	12mm
over 4	As recommended by Sealant Manufacturer.

3. BEDDING: ensure that no voids or spaces are left in back of bedding compounds, if used.

4. MIRRORS: Instal mirrors of size noted on drawings; provide 7mm thick pressure sensitive formed plastic tape cushioning at 300 mm O.C. Secure mirrors in place using semi concealed chrome plated clips or chrome capped screws.

5. SINGLE GLAZING: Bedded in wash leather or similar with hardwood beads and fixed with brass caps and screws.

14.7 PROTECTING & CLEANING OF FINISHED WORK:

1. INDICATORS: white wash may be used on ordinary glass but must be restricted to small central areas of pane.

2. CLEANING: remove all smears and excess compound and sealant. Leave clean inside and out and free from scratches.

3. REPLACE all glass and fixing material broken or damaged before practical completion and re-decoration.

15.0 DECORATING.

15.1 MATERIALS GENERALLY:

15.1.1 PAINT, primings, and undercoatings, also pertifying liquid and distemper shall be obtained from the same manufacturers. Order must clearly indicate whether external or internal quality is required.

The contents of the cans shall be thoroughly stirred prior to pouring into kettles and strained free from skins etc., before application, in the case of open drums of standing kettles.

Each coat of paint shall be thoroughly dry before application of any subsequent coat.

No paint shall be applied to external work during foggy or inclement weather, nor upon any surface on which there is moisture.

The application of paint by spraying shall be permitted only with the written permission of the Architect.

15.1.2 PAINTS AND DISTEMPERS:

All primings, undercoats and finishing (except where otherwise specified) including petrifying liquids and distempers shall be proprietary branded products of approved quality. The contractor shall submit to the Architects the branded names of the materials that he proposes to use, together with the name of the manufacturer.

Where required by the Architect evidence of the durability of the material shall be provided and the length of time the brands have been on the market shall be stated. Small samples of the work shall be carried out with materials proposed to be used, when so requested by the Architect and such work when approved shall form the standard of finish to be maintained throughout the Contract.

15.1.3 COLOURS:

Undercoats and finishing shall be from the range of colours given in B.S. 3810 etc., and to be the appropriate shade to suit finishings. Colours shall be selected by the Architect.

15.1.4 CRESOTE

Cresote where specified is to conform to B.S. 144: 1936.

15 1.5 MORDANT

Mordant for treating new galvanised surfaces proposed to be painted shall be composed of soft water 64 parts, chloride of copper 1 part, Nitrate of Copper 1 part, Sal-ammonian 1 part, and Hydrochloric Acid 1 part.

15.1.6 HEAT RESISTING PAINTS are to be obtained from an approved manufacturer and to conform to a type suitable for maximum temperature it will be called upon to withstand.

15.1.7 STAINS are to be of a composition suitable to take the type of covering coats required.

15.1.8 WALL COMPOSITIONS:

The finishing coat shall dry with a high gloss or flat as ordered. When dry, it shall be set with and even, elastic surface, not liable to chip or crack,to be capable of with-standing changes of temperature, to be fast to light and lime, and to be suitable for washing down with soap and water, after a reasonable setting time has elapse.

15.2 PAINTING GENERALLY

15.2.1 ALL WORK shall be thoroughly rubbed down between each coat and stopped and/or faced up as necessary.

Finishing coat shall be full glosss, unless otherwise specified. No work shall be stopped unless so specified.

15. 2.2 PRIMING:

All priming is to be executed with the appropriate priming made by the firm from which all other paints are obtained.

15. 2.3 WOODWORK is to be knotted with two coats best shellac knotting and primed at joiner's shop, after inspection and before delivery.

15. 2.4 IRON AND STEELWORK:

All ironwork whether delivered primed or unprimed, it is to be thoroughly cleaned down and wire brushed and scraped as necessary to remove all rust and loose scale and primed on the site before or after fixing, as necessary or directed.

15.2.5 ENAMELLED CONDUIT ETC.

Enamelled conduits, and the like are to be primed with two coats of best shellac knotting.

15.2.6 PAINTING WOODWORK:

All crevices, cracks and holes are to be scraped out, primed and made good with hard stopping, faced up, and rubbed down to an even surface. The hard stopping must be of an approved make, or made up on the job according to approved practice. All knots in woodwork are to be treated to prevent bleeding. All large or loose knots are to be cut out and replaced with sound wood, or cut back, and the surface made good with filler. Smaller knots are to be treated with two thin coats of knotting. The knotting used is to be of approved make, free from resin, consisting entirely of shellac in methylated spirits.

The whole of the external woodwork, unless otherwise specified hereunder, is to be stopped, twice knotted, primed, painted two undercoats as before specified and finished one coat high gloss exterior quality paint.

The whole of the internal woodwork, unless otherwise specified hereunder, is to be stopped, twice knotted, primed, painted two undercoats as before specified, and finished one coat high gloss interior quality paint.

All joints, tongues, and grooves etc., and all timber in contact with brickwork, walls etc., are to be well primed before assembly or fixing in position. All end grain timber is to be given an additional coat of primer.

15.4 PAINTING METALWORK.

15.4.1 IRON AND STEELWORK delivered unprimed (except structural steelwork which is to be encased in concrete) shall be thoroughly cleaned down as specified above. Iron and Steelwork delivered primed shall be similarly cleaned.

Except as hereafter specified, the whole of the iron and steelwork including rainwater trunk heads, downpipes, including fastenings, exposed steelwork, including that of rolled steel beam etc., ventilators and grating, shall be prepared primed and painted three coats.

15.4.2 IRON and steelwork delivered primed shall have damaged areas touched up with red lead primer prior to the application of undercoats.

15.4.3 CAST IRON PIPES which to be painted and are already coated with Dr. Angus Smith's solution shall receive one coat of best shellac knotting and two coats of paint.

15.4.4 GALVANISED METAL shall be treated with mordant as described before painting.

15.5. WALLS INTERNALLY:

Glass paper and dust off all walls and ceilings to remove all plaster nibs, effloresecence and loose materials. Make good all defective plaster work with a suitable patent plaster (used neat) and allow all moisture to dry out.

15.5.1. GLASS PAPER:

15.5.2. WALLS TO TOILETS to be finished in Emalux, applied in accordance with the manufacturer's instructions.

16.0. DRAINAGE

16.1.1 Concrete Pipes:

Concrete pipes and fittings shall comply with BS 556 or the equivalent I.S.and shall be Class specified.

Concrete pipes and fittings shall be jointed with fixed rubber sealing rings which shall comply with BS 2494.

16.1.2 U.P.V.C. Pipes:

U.P.V.C. Pipes shall be Wavin or equalapproved U.P.V.C. drain pipes laid and jointed in accordance with the manufacturers' instructions.

16.1.3 Precast Concrete manholes:

Precast concrete manholes, manhole rings,Gullies etc., shall be as manufactured by Concrete Pipes Ltd., Templemungret, Co. Limerick, or equal approved, and shall comply with BS 556.

16.1.4 Manhole Covers, Gully gratings and frames:

Manhole covers, gully gratings and frames shall be heavy duty cast iron coated and shall comply with BS 479, Grades and type references specified herein are as more particulary described in the BS.

16.1.5 Step Irons:

Step irons shall be constructed of galvanised mild steel bar 25 mm diameter and built into manhole walls as described on the Drawings.

16.1.6 Trenches:

The Contractor is referred to the Preambles for "Excavation and Earthwork" for clauses covering the Drainage excavation where relevant.

The excavation for trenches shall be of such depths and widths as will allow the drains to be properly laid with adequate cover at highest points. The bottom shall be graded from point to point to that of the Grade for pipe lines as specified and shown on the Drawings and making due allowance for the thickness of beds.

In filling-in trenches careis to be taken so as not to disturb the drains. Trenches shall first be filled-in to a depth of 300 mm with specified material carefully handpacked over the barrel of the pipe. The remainder of the filling-in is to be carefully and throughly consolidated in 150 mm thick layers with each layer well watered and compacted. Mechanical rammers shall not be used in trenches until at least 600 mm of compacted material has been filled-in over the pipes.

16.1.7 Gravel beds, haunching and surrounds:

Gravel beds shall be Class B granular bedding material consisting of clean rounded broken stone 12 mm passing and 5 mm retained sieve size. The beds shall be 150 mm thickness and not less than 300 mm wider than the external diameter of the pipe.

The Gravel shall be carried up for the full width of the bed in a square section to a minimum 150 mm thickness over the barrel of the pipe.

16.1.8 Concrete Beds, haunching and surrounds:

The concrete beds shall be to the sprcified grade, 150 mm thickness and not less than 300 mm wider than the external diameter of the pipe.

Where pipes are required to be haunched, the concrete shall be carried up for the full width of the bed to the level of the horizontal diameter of the pipe and shall be splayed form this level and carried upwards to meet the pipe barrel tangentially. Where pipes are specified to be surrounded the concrete shall be carried up from the bed in a square section to a minimum of 150 mm thickness over the barrel of the pipe.

Concrete Grade 20 shall be used in bed, haunch and surround.

16.1.9 Drain Laying:

Each pipe shall be carefully examined on arrival, any defective pipes shall not be used and shall be segregated and marked in a comspicuous manner.

Drains shall be laid in straight lines and to even gradients as shown on the Drawings. Care shall be exercised in setting out and determining the levels of the pipes and the Contractor shall provide suitable instruments and set up and maintain all sight rails, boning rods and bench marks etc., necessary for the purpose.

All drains shall be kept free from earth, debris, surplus jointing materials and other obstructions during laying and until the completion of the works when they shall be handed over in a clean condition.

Pipes shall be laid with the sockets leaning up-hill and shall rest on solid and even foundation for the full length of the barrel. Socket holes shall be formed in the foundations as short as practicable but sufficiently deep to allow the pipe jointer room to work right fround the pipe.

16.1.10 Buried Services:

All pipes, ducts, cables, mains and other services exposed by the excavationsshall be effectively supported and protected by timbers or other means.

Where existing sewers and drains are exposed during excavation every joint and every part of them requiring support shall be packed up solid from the bed with concrete packing in such a way as to prevent settlement,

16.1.11 Restore Surfaces:

Surfaces interfered with whether on public or private property, are to be restored to their original condition.

16.1.12 Inspection:

The Contractor shall give notice to the Architectfor the purpose of inspection and measurement whenever sections of:

(a) Excavations are completed.

(b) Beds are laid.

(c) Drains are completed.

and no further works are to be executed unitl the works at these stages have been approved.

16.1.13 Drainage Bye-Laws:

All drainage works shall comply with the requirements of the Local Bye-Laws and are to be executed to the satisfaction of the Architect and the Local Sanitary Authority.

16.1.14 Testing:

The whole of the drainage system shall be tested for watertightness and straightness to the satisfaction of and in the presence of the Engineer and the Local Authority. Drains are to be filled with water to a head of 1.50 metres and are to be tested in sections agreed with the Engineer as follows:

(a) After jointing
(b) After haunching and backfilling
(c) After completion of the works.

The Contractor shall provide all necessary testing apparatus and shall carry out such other tests as are required by the Architect and the Local Authority and shall retest if necessary until passed. Testing by air pressure will only be permitted when a water test is impracticable in the opinion of the Architect.

In the event of any doubt or dispute the method of testing laid down in BS CP 301 Building Drainage and 304 Soil and Waste Pipes above ground shall be adopted.

17.0 EXCAVATION AND EARTHWORK

17.1 EXCAVATED MATERIALS

17.1.1 TOPSOIL: Soil capable of supporting vegetable growth.

17.1.2 ROCK: Any material met with in excavation which is of such size or position that it can only be removed by means of wedges, compressed air or other special plant, or explosives.

17.2 EXCAVATING GENERALLY

17.2.1 MATERIALS ARISING from the excavations are to remain the property of the Employer unless the Contractor is instructed to remove them from site.

17.2.2 TOPSOIL: before beginning general excavation or filling, excavate topsoil from required areas to an average depth of 150mm and keep separate from excavated subsoil.

17.2.3 TRIM excavations to required profiles and levels. Remove all loose material.

17.2.4 BENCH surface of sloping ground which is to receive filling.

17.2.5 EXCAVATED BOTTOMS: remove any exposed material that is unsuitable for building upon. Inform the Engineer when excavations will be ready for inspection, excavated bottoms are to be approved before new work is laid on them.

17.2.6 PLANKING AND STRUTTING: use as necessary to support sides of excavations and remove on completion unless otherwise instructed. Take measurements of any supports which are to be left in position and inform the Engineer.

17.2.7 ROCK encountered in the course of excavation shall be removed by the use of hammers, wedges, compressed air or special plant. Blasting will not be allowed unless by the written permission of the,Engineer who must be fully informed by the Contractor as to the steps taken to safeguard the works and surrounding property. The Contractor shall take all responsibility for any damage or annoyance caused by blasting and shall keep the Client indemnified against all claims. Any material which is removed by any other means, other than the foregoing, will be paid for at the rates quoted for soil excavation.

17.3 OBSTRUCTION

17.3.1 WATERWAYS: temporarily divert as necessary all ditches, field drains and other waterways encountered during the

excavations and reinstate to approval on completion

17.3.2 DISUSED DRAINS: take up any disused drains encountered in excavations and clear away. Seal off ends and remove any contaminated earth and disinfect as necessary. Backfill locally with approved material and compact in layers of not more than 150mm.

17.3.3 OLD FOUNDATIONS: break out and clear away all old foundations encountered within excavations.

17.4 BACKFILLING

17.4.1 EXCESS EXCAVATION:

1. Backfill any excavations taken wider than required with excavated material and compact, to approval.

2. Backfill any excavations taken deeper than required with Grade 15 concrete and compact, to approval.

17.4.2 FROZEN MATERIALS: Do not use for backfilling excavations.

17.4.3 FOUNDATION TRENCHES: backfill with selected excavated material and compact in 150mm layers.

17.4.4 UNAUTHORISED EXCAVATIONS: backfill and compact, to approval.

17.5 DISPOSAL OF MATERIALS

17.5.1 UNSUITABLE MATERIALS: remove excavated materials unsuitable for filling from site.

17 5.2 SURPLUS MATERIALS: remove surplus excavated materials from site. or spread evenly over site where directed, whichever is specified.

17.5.3 TOPSOIL: stockpile excavated topsoil in temporary spoil heaps where directed. Keep separate from other materials.

17.6 DISPOSAL OF WATER

17.6.1 WATER: keep all excavations free from water and keep water from excavations clear of other construction work.

17.6.2 PUMPING: do not disturb material in and around excavations by pumping operations.

17.6.3. SUMPS: construct all sumps clear of excavations for permanent work and fill with approved material when no longer required.

17.6.4. PERMANENT DRAINAGE SYSTEM is not to be used for disposal of water from excavations without approval.

17.7. FILLING MATERIALS

17.7.1. EARTH FILLING: subsoil, resulting from the excavations or imported, free from rubbish and vegetable matter.

17.7.2. HARDCORE under floor slabs and walkways shall consist of clean crushed stone, uniformly graded and the maximum size of 100 mm.

It shall be compacted in layers not exceeding 225 mm thick with a mechanically propelled vibrating roller not less than one tonne weight. The rolling shall continue until the hardcore is thoroughly compacted and no visible movement of hardcore occurs on the passage of the roller. During the rolling process the hardcore shall be adequately watered.

17.7.3. PLACE filling using approved methods to required dimensions, levels, lines and profiles and so that water may drain freely.

17.7.4. UNSUITABLE MATERIALS: remove from site any imported filling materials deemed unsuitably by the Engineer.

17.7.5. SURPLUS: remove surplus imported filling materials from site.

17.7.6. BLIND surface of hardcore with sand to fill all surface interstices.

Dubl County Council Comhairle Chontae Atha Cliath **Planning Department**

Bloc 2, Ionad Bheatha na hEireann,
Block 2, Irish Life Centre,
Sraid na Mainistreach Iacht,
Lower Abbey Street,
Baile Atha Cliath 1.
Dublin 1.
Telephone. (01)724755
Fax. (01)724896

NOTIFICATION OF DECISION TO GRANT PERMISSION
LOCAL GOVERNMENT (PLANNING AND DEVELOPMENT)ACTS 1963-1990.

Decision Order Number : P/ 1265 /91 Date of Decision : 26th March 1991

Register Reference : 91A/0138 Date Received : 8th February 1991

Applicant : T. & S. Taverns Ltd,

Development : New lounge, conservatory, restaurant, toilets, access corridor, wall signs with alterations to existing building

Location : The Red Cow Inn, Clondalkin

Time Extension(s) up to and including :

Additional Information Requested/Received : //

In pursuance of its functions under the above mentioned Acts,the Dublin County Council,being the Planning Authority for the County Health District of Dublin, did by Order dated as above make a decision to GRANT PERMISSION in respect of the above proposal.

Subject to the Conditions on the attached Numbered Pages.

NUMBER OF CONDITIONS:- 17 ATTACHED.

Signed on behalf of the Dublin County Council J. de Barra
for Principal Officer

Date: 26/3/91

McCarthy & Patterson,
Bridge Street,
Newcastle West,
Co. Limerick.

NOTES

1. An appeal against the decision may be made to An Bord Pleanala. The applicant may appeal within one month from the date of receipt by him of this notification. ANY OTHER PERSON may appeal within twenty one days beginning on the date of this decision.

2. An appeal shall be in writing and shall state the subject matter and grounds of appeal. It should be addressed to:-

An Bord Pleanala,
Blocks 6 and 7
Irish Life Centre,
Lower Abbey Street,
Dublin 1.

3.An appeal lodged by an applicant or his agent with An Bord Pleanala will be invalid unless accompanied by the prescribed fee.

(a) An appeal against a decision relating to commercial development by the person by whom the application was made must be accompanied by a fee of £100 (one hundred Pounds).

"Commercial Development" means development for the purposes of any professional, commercial or industrial undertaking, development in connection with the provision for reward of services to persons or undertakings, or development consisting of the provision of two or more dwellings, but does not include developmemt for the purposes of agriculture.

(b) An appeal other then an appeal mentioned at (a) above, including third party appeal must be accompanied by a fee of £50 (fifty pounds)

(c) A party to an appeal making a request to An Bord Pleanala for an Oral Hearing of an appeal must, in addition to the prescribed fee, pay to An Bord Pleanala a fee of £50 (fifty pounds).

(d) A person who is not a party to an appeal must pay a fee of £15 (fifteen pounds) to An Bord Pleanala when making submissions or observations to An Bord Pleanala in relation to an appeal.

4.If the Council makes a decision to grant permission/approval and there is no appeal to An Bord Pleanala against this decision, PERMISSION/APPROVAL will be granted by the Council as soon as may be after the expiration of the period for the taking of such an appeal. If every appeal made in accordance with the Acts has been withdrawn, the Council will grant the PERMISSION/APPROVAL after the withdrawal.

5. Approval of the Council under the Building Bye-Laws must be obtained and the terms of the approval must be complied with in the carrying out of the work before any development which may be permitted is commenced.

Dublin County Council Comhairle Chontae Atha Cliath **Planning Department**

Bloc 2, Ionad Bheatha na hEireann,
Block 2, Irish Life Centre,
Sraid na Mainistreach Iacht,
Lower Abbey Street,
Baile Atha Cliath 1.
Dublin 1.
Telephone. (01)724755
Fax. (01)724896

Reg.Ref. 91A/0138
Decision Order No. P/ 1265 /91

C O N D I T I O N S / R E A S O N S

01 The development to be carried out in its entirety in accordance with the plans, particulars and specifications lodged with the application save as may be required by the other conditions attached hereto.
REASON:To ensure that the development shall be in accordance with the permission and that effective control be maintained.

02 That before development commences, approval under the Building Bye- Laws be obtained and all conditions of that approval be observed in the development.
REASON:In order to comply with the Sanitary Services Acts, 1878-1964.

03 That the water supply and drainage arrangements, including the disposal of surface water, be in accordance with the requirements of the County Council.
REASON: In order to comply with the Sanitary Services Acts, 1878-1964.

04 That the approval of the Chief Fire Officer be ascertained on fire prevention and escape before development commences and standards strictly adhered to in the development.
REASON: In the interest of safety and the avoidance of fire hazard.

05 That the requirements of the Supervising Environmental Health Officer be ascertained and strictly adhered to in the development.
REASON: In the interest of health.

06 That all external finishes harmonise in colour and texture with the existing premises.
REASON: In the interest of visual amenity.

07 That the boundary wall adjoining the Naas Road shall be finished in brick, to match the existing, as far as the western site boundary junction with the re-aligned Turnpike Road.
REASON: In the interest of visual amenity.

08 That before development work is commenced, a detailed landscape scheme for the site including a time scale for such works shall be submitted and agreed by the County Council.
REASON: In the interest of visual amenity.

09 That the advertising hoarding at the western end of the car park shall be removed at the expiry of the present lease, in accordance with the undertaking given in the letter dated 8/2/91.

09 REASON: In the interest of visual amenity and the proper planning and development of the area.

10 That no further advertising signs or structures, apart from those

NOTES

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Lower Abbey Street,
Dublin 1.

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4.If the Council makes a decision to grant permission/approval and there is no appeal to An Bord Pleanala against this decision, PERMISSION/APPROVAL will be granted by the Council as soon as may be after the expiration of the period for the taking of such an appeal. If every appeal made in accordance with the Acts has been withdrawn, the Council will grant the PERMISSION/APPROVAL after the withdrawal.

5. Approval of the Council under the Building Bye-Laws must be obtained and the terms of the approval must be complied with in the carrying out of the work before any development which may be permitted is commenced.

Bloc 2, Ionad Bheatha na hEireann,
Block 2, Irish Life Centre,
Sraid na Mainistreach Iacht,
Lower Abbey Street,
Baile Atha Cliath 1.
Dublin 1.
Telephone. (01)724755
Fax. (01)724896

indicated on the plans lodged 8/2/91, shall be erected on the building or on the site, and that all other signs shall be removed from the building and site.
REASON: In the interest of visual amenity and the proper planning and development of the area.

11 That the floodlighting of signs on the building from the car park, as indicated on plans lodged 8/2/91, shall be carried out in accordance with the requirements of the Councils' Roads Department.
REASON: In the interest of safety and avoidance of traffic hazard.

12 That prior to the opening of the new extensions to the public, the hard shoulder shall be resurfaced for a distance of 50 metres on each side of the car park entrance to the requirements of the Area Engineer, Roads Maintenance.
REASON: In the interest of safety and avoidance of traffic hazard.

13 After the resurfacing and redevelopment work have been completed, (including the car park), the developer shall agree with Roads Department, road markings and road signs considered appropriate to reduce the amount of parking in the vicinity of the car park entrance; such markings for road signs to be provided at the developers' expense. Details of proposals in this regard to be the subject of a written submission for the agreement of the Planning Authority.
REASON: In the interest of safety and avoidance of traffic hazard.

14 That the car park shall be laid out and completed including surface markings prior to the opening of the new extension to the public.
REASON: In the interest of safety and avoidance of traffic hazard.

15 Within six months of the opening of the new extensions to the public, the developer shall provide at his own expense the parking layby on the Naas side of the car park entrance (as schematically shown on the drawings lodged 8/2/91) if required by Roads Department Dublin County Council.
REASON: In the interest of safety and avoidance of traffic hazard.

16 That the agreement for the use of the additional car parking space in th vicinity in accordance with the letter from Myles Balfe Ltd., dated 7/2/91 and lodged as part of the application on 8/2/91, shall be put into operation as soon as the new extensions are opened to the public.
REASON: In the interest of safety and avoidance of traffic hazard.

17 That a financial contribution in the sum of £6878 be paid by the proposer to the Dublin County Council towards the cost of provision of public services in the area of the proposed development and which facilitate this development; this contribution to be paid before the commencement of development on the site.
REASON: The provision of such services in the area by the Council will facilitate the proposed development. It is considered reasonable that the developer should contribute towards the cost of providing the

Dublin County Council Comhairle Chontae Atha Cliath **Planning Department**

Bloc 2, Ionad Bheatha na hEireann,
Block 2, Irish Life Centre,
Sraid na Mainistreach Iacht,
Lower Abbey Street,
Baile Atha Cliath 1.
Dublin 1.
Telephone. (01)724755
Fax. (01)724896

services.

RECEIPT CODE

COMHAIRLE CHONTAE ÁTHA CLIATH
DUBLIN COUNTY COUNCIL
46/49 UPPER O'CONNELL STREET,
DUBLIN 1.

PAID BY
CASH
CHEQUE ✓
M.O.
B.L.
I.T.

BYE-LAW APPLICATION.
REC. No. N 34652

£2982.00

Received this 25th day of 19

from T. & S. [redacted] Taverns Ltd.
c/o Red Cow Inn.
Clondalkin

the sum of two thousand, nine hundred & eighty two Pounds

Pence being balance

of bye-law fee on 91A/138

Noleen Deane Cashier

S. CAREY
Principal Officer

Red Cow Inn

Specialists in:
WEDDINGS • DINNER DANCES • 21st BIRTHDAY PARTIES • TRADE SHOWS • FASHION SHOWS etc.

Naas Road, Dublin 22. Telephone: 593650/591250

22. 3 - 91.

Please find enclosed cheque for £2982-00. By-laws approval. for 1 no 5. Taverns L/C/- at THE RED Cow Inn.

Plus.
Balance of £665-00: Shortfall in Planning fees for 1 no 5 Taverns L/C/- at THE RED Cow Inn.

~~90A/1594~~
91A/138.

RECEIVED
25 MAR 1991
REG. SEC.

ENCL.

P.P. T. Moran,
Ann Rooke,

McCARTHY AND PATTERSON
ARCHITECTS AND INTERIOR DESIGNERS
Consulting Engineer
Joe Hennessy B.E.

Associates
FULLERS FOLLY,
NEWCASTLE WEST,
CO. LIMERICK.

Your Ref: 91A/0138.
old Planning Ref: 90A/1494.

Ref Proposed Lounge Conservatory Restaurant, toilets, access corridor, wall signs with alterations to existing Building at Red Cow Inn, Clondalkin, Dublin.

Dear Sir,

Please find enclosed as requested copy of outlined drawings showing proposed new building.

We had the area calculated on the drawings when first submitted as noted.

There is also funds in the Planning Office from the previous planning application. re 90A/1494.

Please let us know if you require any fee for planning Bye laws.

Yours Faith fully,
Damien Patterson.

PHONE: 069 - 62292 FAX: 061 - 62336

Dublin County Council Comhairle Chontae Atha Cliath **Planning Department**

Building Control Department,
Liffey House,
Tara Street,
Dublin 1.
Telephone:773066

Bloc 2, Ionad Bheatha na hEireann,
Block 2, Irish Life Centre,
Sraid na Mainistreach Iacht,
Lower Abbey Street,
Baile Atha Cliath 1.
Dublin 1.
Telephone. (01)724755
Fax. (01)724896

Register Reference : 91A/0138

Date : 12th February 1991

Our Ref.

LOCAL GOVERNMENT (PLANNING AND DEVELOPMENT) ACTS 1963 TO 1990

Your Ref.

Date

Dear Sir/Madam,

DEVELOPMENT : New lounge, conservatory, restaurant, toilets, access corridor, wall signs with alterations to existing building

LOCATION : The Red Cow Inn, Clondalkin

APPLICANT : T. & S. Taverns Ltd,

APP. TYPE : PERMISSION/BUILDING BYE-LAW APPROVAL

With reference to above, I acknowledge receipt of your application received on 8th February 1991.

Yours faithfully,

.....

PRINCIPAL OFFICER

McCarthy & Patterson,
Bridge Street,
Newcastle West,
Co. Limerick.

Dublin County Council
Comhairle Chontae Atha Cliath

Planning Application Form/
Bye - Law Application Form

PLEASE READ INSTRUCTIONS AT BACK BEFORE COMPLETING FORM. ALL QUESTIONS MUST BE ANSWERED.

1. Application for Permission ☑ Outline Permission ☐ Approval ☐ Place ✓ in appropriate box.
Approval should be sought only where an outline permission was previously granted. Outline permission may not be sought for the retention of structures or continuances of uses.

2. Postal address of site or building ..... Red Cow Inn, Clondalkin,
(If none, give description sufficient to identify) ..... Co. Dublin. BYE LAW APPLICATION

3. Name of applicant (Principal not Agent) ..... "T.J.S. TAVERNS" REG. NO.

Address ..... c/o "Red Cow Inn" Tel. No. 01-

4. Name and address of person or firm responsible for preparation of drawings ..... McCarthy, Patterson, Bridge St., Newcastle West, Co. Limerick Tel. No 069-62292

5. Name and address to which notifications should be sent ..... McCarthy, Patterson, Bridge St. Newcastle West, Co. Limerick.

6. Brief description of proposed development ..... Proposed lounge, Conservatory, Restaurant, toilets access corridor, wall Signs with alterations to Existing Building

7. Method of drainage ..... Mains 8. Source of Water Supply ..... Mains

9. In the case of any building or buildings to be retained on site, please state:-
(a) Present use of each floor or use when last used. ..... ground floor/Bars/Restaurant/function Room/toilets. first floor. function Rooms. toilets
(b) Proposed use of each floor ..... g.f.: Bars/function Room/toilets/Sun Lounge/

10. Does the proposal involve demolition, partial demolition or change of use of any habitable house or part thereof? ..... Very little demolition to Existing Building

11. (a) Area of Site ..... 0.62 Hectares. SITE 1/2 ..... Sq. m.

(b) Floor area of proposed development ..... 852. ..... Sq. m.

(c) Floor area of buildings proposed to be retained on site ..... 7352 ..... Sq. m.

FEE PAID £1036 N 31227

Irish Independent 5/2/91

CO. DUBLIN — We, T. & S. Taverns Ltd. wish to apply to Dublin County Council for planning permission to erect a new lounge, conservatory, restaurant, toilets, access corridor, wall signs with alterations to existing building at the Red Cow Inn, Clondalkin, Co. Dublin.

12. State applicant's legal interest or estate in site (i.e. freehold, leasehold, etc.) ..... Freehold.

13. Are you now applying also for an approval under the Building Bye Laws? Yes ☑ No ☐ Place ✓ in appropriate box.

14. Please state the extent to which the Draft Building Regulations have been taken in account in your proposal.
..... In Total.

15. List of documents enclosed with application. ..... 4 sets of drawings. / Planning form. cheque for fee / Newspaper advertisement

16. Gross floor space of proposed development (See back) ..... 852 ..... Sq. m.

No of dwellings proposed (if any) ..... one ..... Class(es) of Development .....

Fee Payable £ ..... 1036-00 ..... Basis of Calculation ..... As Below.

If a reduced fee is tendered details of previous relevant payment should be given

Signature of Applicant (or his Agent) ..... Damien Patterson ..... Date ..... 7/2/91.

FOR OFFICE USE ONLY

Application Type ..... P/BBL

Register Reference 91A/0138

Amount Received £ ..... 21-4 ..... £ 240 8/2

Receipt No .....

Date .....

LOCAL GOVERNMENT (PLANNING & DEVELOPMENT) REGULATIONS 1977 to 1984.

Outline of requirements for applications for permission or Approval under the Local Government (Planning & Development) A[illegible] 1963 to 1983. The Planning Acts and Regulations made thereunder may be purchased from the Government Publications Sales Office, Sun Alliance House, Molesworth Street, Dublin 2.

1. Name and Address of applicant.

2. Particulars of the interest held in the land or structure, i.e. whether freehold, leasehold, etc.

3. The page of a newspaper, circulating in the area in which the land or structure is situate, containing the required statutory notice. The newspaper advertisement should state after the heading Co. Dublin.

   (a) The address of the structure or the location of the land.
   (b) The nature and extent of the development proposed. If retention of development is involved, the notice should be worded accordingly. Any demolition of habitable accommodation should be indicated.
   (c) The name of the applicant.

   NB. Applications must be received within 2 weeks from date of publication of the notice.

4. Four (4) sets of drawings to a stated scale must be submitted. Each set to include a layout or block plan, proposed and existing services to be shown on this drawing, location map, and drawings of relevant floor plans, elevations, sections, details of type and location of septic tank (if applicable) and such other particulars as are necessary to identify the land and to describe the works or structure to which the application relates (new work to be coloured or otherwise distinguished from any retained structures). Buildings, roads, boundaries and other features bounding the structure or other land to which the application relates shall be shown on site plans or layout plans. The location map should be of scale not less than 1: 2500 and should indicate the north point. The site of the proposed development must be outlined in red. Plans and drawings should indicate the name and address of the person by whom they were prepared. Any adjoining lands in which the applicant has an interest must be outlined in blue.

5. In the case of a proposed change of use of any structure or land, requirements in addition to 1, 2, & 3 are:
   (a) a statement of the existing use and the proposed use, or, where appropriate, the former use and the use proposed.

   (b) (i) Four (4) sets of the drawings to a stated scale must be submitted. Each set to consist of a plan or location map (marked or coloured in red so as to identify the structure or land to which the application relates) to a scale of not less than 1:2500 and to indicate the North point. Any adjoining lands in which the application has an interest must be outlined in blue.

   (ii) A layout and a survey plan of each floor of any structure to which the application relates.

   (c) Plans and drawings should indicate the name and address of the person by whom they were prepared.

6. Applications should be addressed to: Dublin County Council, Planning Department, Irish Life Centre, Lr. Abbey Street, Dublin 1, Tel. 724755.

SEPTIC TANK DRAINAGE: Where drainage by means of a septic tank is proposed, before a planning application is considered, the applicant may be required to arrange for a trial hole to be inspected and declared suitable for the satisfactory percolation of septic tank effluent. The trial hole to be dug seven feet deep at or about the site of the septic tank. Septic tanks are to be in accordence with I.I.R.S. S.R. 6:75.

INDUSTRIAL DEVELOPMENT:
The proposed use of an industrial premises should, where possible, be stated together with the estimated number of employees, (male and female). Details of trade effluents, if any, should be submitted.

Applicants to comply in full with the requirements of the Local Government (Water Pollution) Act,1977 in particular the licencing provisions of Sections 4 and 16.

PLANNING APPLICATIONS

CLASS NO.	DESCRIPTION	FEE
1.	Provision of dwelling — House/Flat.	£32.00 each
2.	Domestic extensions/other improvements.	£16.00
3.	Provision of agricultural buildings (See Regs.)	£40.00 minimum
4.	Other buildings (i.e. offices, commercial, etc.)	£1.75 per sq. metre (Min. £40.00)
5.	Use of land (Mining, deposit or waste)	£25.00 per 0.1 ha (Min £250.00)
6.	Use of land (Camping, parking, storage)	£25.00 per 0.1 ha (Min. £40.00)
7.	Provision of plant/machinery/tank or other structure for storage purposes.	£25.00 per 0.1 ha (Min. £100.00)
8.	Petrol Filling Station.	£100.00
9.	Advertising Structures.	£10.00 per m² (min £40.00)
10.	Electricity transmission lines.	£25.00 per 1,000m (Min. £40.00)
11.	Any other development.	£5.00 per 0.1 ha (Min. £40.00)

BUILDING BYE-LAW APPLICATIONS

CLASS NO.	DESCRIPTION	FEE
A	Dwelling (House/Flat)	£55.00 each
B	Domestic Extension (improvement/alteration)	£30.00 each
C	Building — Office/ Commercial Purposes	£3.50 per m² (min. £70.00)
D	Agricultural Buildings/Structures	£1.00 per m² in excess of 300 sq. metres (min. - £70.00) (Max. - £300.00)
E	Petrol Filling Station	£200.00
F	Development or Proposals not coming within any of the foregoing classes.	£9.00 per 0.1 ha (£70.00 min.) Min. Fee £30.00 Max. Fee £20,000

Cheques etc. should be made payable to: Dublin County Council.
Gross Floor space is to be taken as the total floor space on each floor measured from the inside of the external walls.
For full details of Fees and Exemptions see Local Government (Planning and Development) (Fees) Regulations 1984.

COMHAIRLE CHONTAE ÁTHA CLIATH

DUBLIN COUNTY COUNCIL

46/49 UPPER O'CONNELL STREET,
DUBLIN 1.

RECEIPT CODE

PAID BY
CASH
CHEQUE
M.O.
P.L.
I.T.

issue of this receipt is not an acknowledgement that the fee tendered is the prescribed application fee.

N 31227

£1036.00

Received this 11th day of February 19 91

from Taverns Ltd

Red Cow Inn

the sum of One thousand and thirty six Pounds

Pence, being re application at Red Cow Inn

Cashier

S. CAREY
Principal Officer

McCARTHY & PATTERSON
ARCHITECTURAL CONSULTANTS
AND SURVEYORS.

CONSULTANT ENGINEER
J. HENNESSY B.E.

'FULLERS FOLLY',
BRIDGE STREET,
NEWCASTLE WEST,
CO. LIMERICK.
PHONE: 069 - 62292

OUR REF. YOUR REF. WHEN CALLING ASK FOR

NEW APPLICATION

RE: Proposed lounge, conservatory, restaurant, toilets access corridor, Wall signs with alterations to existing building at Red Cow Inn, Clondalkin , Co. Dublin.

Dear Sir,

Please find enclosed revised drawings for the above, as our new application we also enclose cheque for planning fee.

Changes have been made to elevations/interior layouts and car parking.

There are also changes to the front entrance and exit with improvements to hard shoulder.

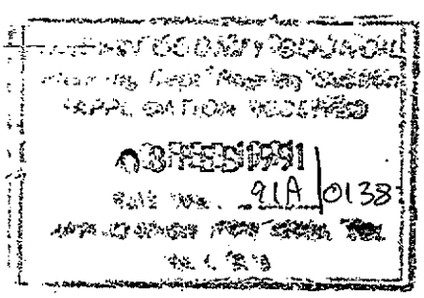
Hoping this is acceptable to your office.

Looking forward to a favourable reply.

Yours faithfully,

Damien Patterson

McCARTHY & PATTERSON



Red Cow Inn

Specialists in:
WEDDINGS • DINNER DANCES • 21st BIRTHDAY PARTIES • TRADE SHOWS • FASHION SHOWS etc.

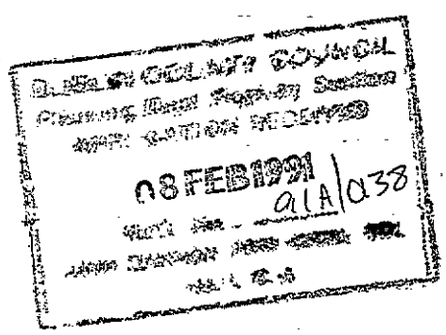
Naas Road, Dublin 22. Telephone: 593650/591250

8th February, 1991

This is to state that I, Tom Moran, will give an undertaking to Dublin County Council to remove sign at the end of the car park when lease expires with David Allen.

Signed : T Moran

Tom Moran.



A MEMBER OF THE MULCAHY GROUP

ENGINES 1992 LTD.

IMPORTERS AND EXPORTERS TO THE MOTOR INDUSTRY

HEAD OFFICE
16 Market St.,
Clonmel, Co. Tipperary.
Ireland.
Tel. 052-25054
Fax. 052-24544

DEPOTS

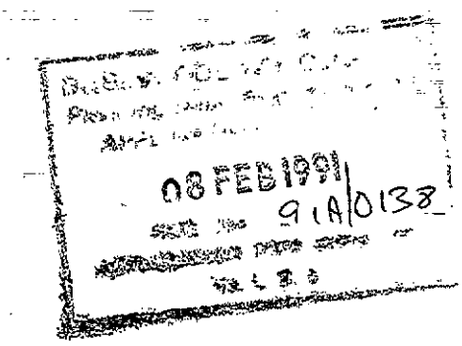
CORK
Unit K6,
Marina Commercial Pk.,
Centre Park Road.
Tel. (021) 966244
Fax. (021) 966968

DUBLIN
RED COW SERVICE STATION,
Naas Road, Dublin 22.
Tel: 01-594717
Fax: 01-594676

LIMERICK
Dock Road.
Tel. 061-43177
Fax. 061-43746

6th Feburary 1991.

Thomas Moran, Proprietor,
The Red Cow Inn,
Naas Rd.,
DUBLIN 22.



Dear Mr Moran,

I refer to our recent meeting and have pleasure in confirming our agreement authorizing you to use part of our forecourt at the Red Cow Service Station, Naas Rd. Dublin 22 as a Car Park.

Yours sincerely,

John Higgins.
Managing Director.

Low Mileage Japanese Engines

****

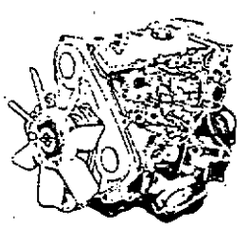
Reconditioned European Engines

****

Gear Boxes All Models

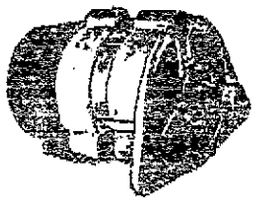
****

Reconditioned Japanese Engines



ATT: ANN ROCHE . FAX NO. 592891

MYLES BALFE LTD.



FAST REPLACEMENT SERVICE

Replacement for Starters, Dynamos & Alternators Ex-Stock

CAV - LUCAS - BOSCH - HINO - DELCO - BUTEC

24/25 Phibsboro Road,
Dublin 7
Telephone: 307544, 307785, 306657

Red Cow, Naas Road,
Clondalkin, Co. Dublin
Telephone: 592676, 593930, 592371

FAX 307825

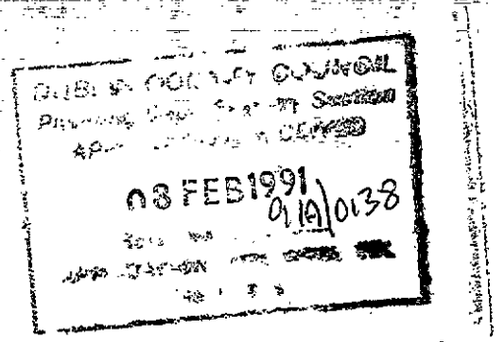
February 7th, 1991

To whom it may concern,

This is to state that I, Myles Balfe give Tom Moran of (T & S Taverns) The Red Cow Inn permission to use the forecourt of my premises for customer car parking after 6 pm each night.

Yours faithfully,

MYLES BALFE



BYE LAW APPLICATION FEES

REF. NO.: 91/A/0138 CERTIFICATE NO.: 13983 B ~~21257~~

PROPOSAL: Lounge Restaurant, Conservatory Toilets, Corridor

LOCATION: The Red Cow Inn Clondalkin

APPLICANT: T.P.S Taverns

	1	2	3	4	5	6	7
CLASS	DWELLINGS/AREA LENGTH/STRUCTURE	RATE	AMT. OF FEE REQUIRED	AMT. LODGED	BALANCE DUE	RED. FEE APPL.	AMT. OF RED. FEE
A	Dwelling (Houses/Flats)	@ £55					
B	Domestic Ext. (Improvement/ Alts.)	@ £30					
C	Building for office or other comm. purpose	@ £3.50 per M^2 or £70 852 m^2	2982	NIL	2982		
D	Building or other structure for purposes of agriculture	@ £1.00 per M^2 in excess of 300 M^2 Min. £70					
E	Petrol Filling Station	@ £200					
F	Dev. of prop. not coming within any of the forgoing classes	£70 or £9 per .1 hect. whichever is the greater					

2982 paid 25/3/91 N 34652.

Column 1 Certified: Signed: _____ Grade: _____ Date: _____

Column 1 Endorsed: Signed: _____ Grade: _____ Date: _____

Columns 2,3,4,5,6 & 7 Certified: Signed: [signature] Grade: S.O Date: 13/2/91

Columns 2,3,4,5,6 & 7 Endorsed: Signed: _____ Grade: _____ Date: _____

CERTIFICATE NO: N 31227

F.: 91A/0138.

PROPOSAL: Laing restaurant conservatory Toilets, corridor, wood signs

LOCATION : The Red Cow Inn, Clondalkin

APPLICANT : T.S. Taverns

1	2	3	4	5	6	7
DWELLINGS/AREA LENGTH/STRUCT	RATE	AMT. OF FEE REQ'D	AMOUNT LODGED	BALANCE DUE	BALANCE DUE	DATE/ RECEIPT NO
Dwellings	£32					
	£16					
	£50p per M² in excess of 300M² Min. £40					
metres² 852.0M²	£1.75 per M² or £40	£1491	826	£665		
x .1 hect.	£25 per .1 hect. or £250					
x .1 hect.	£225 per hectare £40					
x .1 hect	£225 per hect. or £100					
	£100					
x metres² 21.0M²	£10 per M² or £40	£210	£210			
x1,000M²	£225 per 1,000M² or £40					
x .1 hect.	£5 per hect. or £40					

£665 paid by Bank Draft 25/3/91 Receipt No. N34356

Dick, Could we have the new works outlined please. John, 14/3/91

Column 1 Certified: Signed: [signature] Grade: DPT Date: 19/3/91.

Column 1 Endorsed: Signed: ---------- Grade: ---------- Date: ----------

Columns 2,3,4,5,6 & 7 Certified Signed: [signature] Grade: S.O Date: 13/2/

Columns 2,3,4,5,6 & 7 Endorsed: Signed: ---------- Grade: ---------- Date: ----------

McCarthy & Pattterson,
Bridge Street,
Newcastle West,
Co. Limerick.

RW/LD

19/02/91

RE: Proposed new lounge, conservatory, restaurant, toilets, access corridor and wall signs at The Red Cow Inn, Clondalkin - Reg. Ref. 91A/0138

Dear Sirs,

I refer to the above Planning and Bye Law Application received in this Department on 8th February, 1991. The correct fee in respect of this application cannot be assessed as the area of proposed development has not been outlined on the drawings lodged.

As the statutory two month period within which the Planning Authority must make a decision will not begin to run until the correct fee has been paid, it is important that you submit this information immediately.

Yours faithfully

for PRINCIPAL OFFICER

DUBLIN COUNTY COUNCIL

PLANNING DEPARTMENT

Register Reference : 91A/0138 Date Received : 8th February 1991

Applicant : T. & S. Taverns Ltd, Appl.Type : PERMISSION/BUIL

Development : New lounge, conservatory, restaurant, toilets, access corridor, wall signs with alterations to existing building

LOCATION : The Red Cow Inn, Clondalkin

O.S.REFS. 21-4

AREA REFERENCE WS0504

HISTORY 89A/449 90A/252

FEES CERTIFICATE NO. _____

FEE CLASS

MEASUREMENT FOR FEES

SIGNED ..... DATE .....

SENIOR EXECUTIVE DRAUGHTSMAN

FEE PAID	FEE ASSESSED	BALANCE DUE

CERTIFIED _____ GRADE _____ DATE _____

LOCATION GOVERNMENT (PLANNING AND DEVELOPMENT) ACTS, 1963 TO 1982

ASSESSMENT OF FINANCIAL CONTRIBUTION

REG. REF.: 91A/138

CONT. REG.:

SERVICES INVOLVED: WATER/FOUL SEWER/SURFACE WATER

AREA OF SITE:

FLOOR AREA OF PRESENT PROPOSAL: 9171 ft²

MEASURED BY: J.G. 19/3/91.

CHECKED BY:

METHOD OF ASSESSMENT:

TOTAL ASSESSMENT

MANAGER'S ORDERED NO: P/ /
DATED

9171 / 1000 @ 750

ENTERED IN CONTRIBUTIONS REGISTER:

6878.25

£6878

DEVELOPMENT CONTROL ASSISTANT GRADE

21/3/91

McCarthy & Patterson,
Fullers Folly,
Newcastle West,
Co. Limerick.

Our Ref. RW/GC

Date; 18/9/91

Re; New lounge, conservatory, restaurant, toilets, access corridor, wall signs and alterations to existing building at Red Cow Inn, Clondalkin. Reg.Ref. 91A/0138

Dear Sirs,

I refer to your letter dated 18/4/91 which was received in this department on 4th July, 1991, requesting a refund of part of planning application fee paid in respect of the above application.

Article 10 Subarticle 3 of the Local Government (Planning & Development) (Fees) Regulations 1984 provides that a refund shall be made on a claim made in writing to the planning authority and received by them within (but not after) the period of the months beginning on the day of the giving of the decision by the planning authority on the subsequent application.

As a decision on the subsequent application in this case (Reg.Ref. 91A/0138) issued on 26/3/91 and your claim for a refund was not received until 4/7/91, a period greater than 2 months had elapsed, and accordingly no refund of fees can be made on foot of this claim.

Yours faithfully,

for PRINCIPAL OFFICER

PK

McCARTHY AND PATTERSON
ARCHITECTS AND INTERIOR DESIGNERS
Consulting Engineer
Joe Hennessy B.E.

Associates

FULLERS FOLLY,
NEWCASTLE WEST,
CO. LIMERICK.

91A/138

Ref: New Lounge, Conservatory, Restaurant, toilets, access corridor, wall signs with alterations to existing building at Red Cow Inn, Clondalkin, Co. Dublin.

18th April, 1991.

9/7

Dear Sir/Madam,

We have been instructed by Mr. Tommy Moran of the above to request a refund on planning fees for the above application.

Yours faithfully,

McCARTHY & PATTERSON

04 JUL 91

PHONE: 069 - 62292 FAX: 061 - 62336

4

Seol aon fhreagra chun
(Reply to)
AN RÚNAÍ
(The Secretary)
faoin uimhir seo:—
(Quoting)

AN ROINN COSANTA
(Department of Defence)
TEACH NA PÁIRCE
(Park House)
BAILE ÁTHA CLIATH, 7
(Dublin, 7)

2/50719

Teileafón 01/XXXXXX 771881

13 March, 1991.

Dear Sir,

Re: Planning Applications which might affect the use of Casement Aerodrome, Baldonnel, Co. Dublin.

I am directed by the Minister for Defence to refer to applications:

91A/0129 - B. Murphy, Redgap, Rathcoole. MD

91A/0134 - S. Kelly, Athgoe North. MG

91A/0138 - T & S Taverns Ltd., The Red Cow Inn, Clondalkin. MD

91A/0142 - Larnwood Ltd., Ballymount Road Upper, Ballymount Little. MD

91B/0103 - Michael Smyth, Saggart Hill, Crooksling.

No objection is seen to these developments provided they are not of exceptional height.

Yours sincerely,

JOHN P. MORAN
EXECUTIVE OFFICER

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 15/3/91
Time 12:45

The Secretary,
Dublin County Council,
Planning Department,
Irish Life Mall,
Lower Abbey Street,
Dublin 1.

Register Reference : 91A/0138 Date : 19th February 1991

Development : New lounge, conservatory, restaurant, toilets, access corridor, wall signs with alterations to existing building MD

LOCATION : The Red Cow Inn, Clondalkin

Applicant : T. & S. Taverns Ltd,

App. Type : PERMISSION/BUILDING BYE-LAW APPROVAL

Planning Officer :

Date Recd. : 8th February 1991

PLANNING DEP.
DEVELOPMENT CONTROL SECT
Date 11/4/91
Time 4:30

Attached is a copy of the application for the above development .Your report would be appreciated within the next 28 days.

Yours faithfully,

DUBLIN CO. COUNCIL
SANITARY SERVICES
PRINCIPAL OFFICER
1 APR 1991
Returned

DUBLIN CO. COUNCIL
21 FEB 1991
SAN SERVICES

Date received in Sanitary Services .....

FOUL SEWER Insufficient Information

1. Applicant must provide details of existing foul drains as far as the Public Sewer (including pipe sizes & levels) & indicate all connections to these drains
2. Applicant must demonstrate that permission is forthcoming to use drains not in the applicants ownership as far as the Public Sewer

NOTE: Applicant proposes to discharge surface water to the foul sewer system - this is not acceptable to Engineering Services

SURFACE WATER Insufficient Information

1. Applicant proposes to discharge surface water to the foul sewer system - applicant must submit an acceptable proposal (detailed) for the disposal of surface water from the entire site to a seperate system.
2. Applicant to provide details of drainage of car parking area.

SENIOR ENGINEER,
SANITARY SERVICES DEPARTMENT,
46/49 UPPER O'CONNELL STREET,
DUBLIN 1

J. Rice
5/4/'91

Register Reference : 91A/0138 Date : 19th February 1991

MA

Development : New lounge, conservatory, restaurant, toilets, access corridor, wall signs with alterations to existing building

LOCATION : The Red Cow Inn, Clondalkin

Applicant : T. & S. Taverns Ltd,

App. Type : PERMISSION/BUILDING BYE-LAW APPROVAL

Planning Officer :

Date Recd. : 8th February 1991

PLANNING DEPT.
DEVELOPMENT CONTROL SEC.
Date 23.4.91
Time 10.00

DUBLIN COUNTY COUNCIL
11 APR 1991
ENVIRONMENTAL HEALTH OFFICERS

Attached is a copy of the application for the above development. Your report would be appreciated within the next 28 days.

Yours faithfully,

.....

PRINCIPAL OFFICER

The proposal is not acceptable for the following reasons

1) Drainage layout as indicated is unsatisfactory (see engineers report)

2) Insufficient information available on the following

(i) Water closet accommodation and lobbies leading thereto being permanently and independently ventilated to the open air and all sanitary accommodation being separated from food rooms/lounge areas by means of an intervening ventilated lobby

(ii) Proposed ventilation of kitchen/food storage/dining areas with number of air changes per hour

(iii) Details of proposed water supply and drinking water facilities

(iv) Details of refuse storage and storage of cleaning materials

(v) Proposed layout of kitchen areas indicating food preparation, food storage, cooking areas, washing up facilities and wash-hand basins

SUPER. ENVIRON. HEALTH OFFICER,
33 GARDINER PLACE,
DUBLIN 1.

(vi) Proposed nature and extent of food business including numbers of patrons to be catered for, numbers of staff to be employed and types of meals and functions proposed.

Kieran J. Carberry EHO 16/4/91

Fra Devine for John O'Reilly SEHO 17/4/91

Register Reference : 91A/0138 Date : 19th February 1991

.....

ENDORSED _____ DATE _____

WATER SUPPLY Existing Supply - no objection

Refer to C.F.O.

22/2/91

.....

ENDORSED _____ DATE 22/2/91

9/4/91

P/1265/91

COMHAIRLE CHONTAE ÁTHA CLIATH

Record of Executive Business and Manager's Orders

Register Reference : 91A/0138 Date Received : 8th February 1991

Correspondence Name and Address : McCarthy & Patterson, Bridge Street, Newcastle West, Co. Limerick.

Development : New lounge, conservatory, restaurant, toilets, access corridor, wall signs with alterations to existing building

Location : The Red Cow Inn, Clondalkin

Applicant : T. & S. Taverns Ltd,

App. Type : Permission

Zoning : E

CONTRIBUTION:	
Standard:	6878
Roads:	
S. Sers:	
Open Space:	
Other:	
SECURITY:	
Bond / C.I.F.:	
Cash:	

Report of the Dublin Planning Officer, dated 19th March, 1991.

This application is for permission for lounge, conservatory, restaurant, toilets, access corridor, wall signs and alterations comprising 852sq. metres on a site of 0.62 hectares at the Red Cow Inn, Naas Road, Clondalkin for T. & S. Taverns Ltd. The Development Plan zoning objective for the area is "To provide for industrial related uses".
The site has a long and complex history:-

Reg. Ref. TA.1085: By decision order PA/1663/80, permission was refused for reconstruction of the Inn (resulting from fire damage).

Reg. Ref. SA.25: By decision order P/958.79, permission was refused for advertising panels.

Reg. Ref. SA.86: By decision order PL6/5/45251, permission was refused for illuminated signs.

Reg. Ref. WA.2330: By decision order P/120/82, permission was granted subject to eight conditions for rebuilding and relocation of a single storey betting office to be relocated from the west to the east side of the premises of the Inn.

Reg. Ref. WA.2331: By decision order PA/119/82, outline permission was granted subject to seven conditions for reconstruction and relocation of the Red Cow Inn. The floor area proposed was 1,210sq. m.

Reg. Ref. XA.643: By decision order PA/1620/82, permission was granted subject to nine conditions for a restaurant, lounge and ancillary work/storage areas at first floor level.

COMHAIRLE CHONTAE ÁTHA CLIATH

Record of Executive Business and Manager's Orders

Reg.Ref: 91A/0138

Page No: 0002

Location: The Red Cow Inn, Clondalkin

Reg. Ref. 85A/206: By decision order P/1355/85, planning permission was granted subject to ten conditions for revisions to approved plans (XA.643) for use of 1st floor for 24 bedrooms (proposed development 350sq. m.).

Reg. Ref. 85A/1111: By decision order P/327/86, permission was granted subject to eleven conditions for a second floor (proposed development 989sq. m.) of 24 bedrooms, giving a total of 48 permitted bedrooms and 102 car spaces.

Reg. Ref. 87A/488: Permission was granted by Order P/2027/87, dated 12/6/87, for extra car parking at the Red Cow.

Reg. Ref. 87A/1416: By decision order P/1478/88, dated 12/5/88, permission was granted for ground floor restaurant and alterations with 22 bedrooms over, subject to fifteen conditions. Condition No. 11 excluded the second floor bedrooms.

Reg. Ref. 89A/1493: permission granted for flagpoles and sign, on 12/10/89. Condition appealed. Permission granted on 15/2/90, by An Bord Pleanala, removing a condition.

Reg. Ref. 90A/1494: By decision order P/4693/90, dated 12/10/90, permission was refused for a new lounge, conservatory, restaurant, toilets, access corridor, wall signs and alterations.

This decision is currently on appeal.

The present application is similar to 90A/1494, however, following discussions with the applicants, some adjustments have been made and the car park layout improved to accommodate 220 cars. The entrance details now proposed have also been improved.

The elevations now proposed are also modified to include somewhat less ornate detailing.

Roads report dated 13/3/91, expresses concern at the intensification of development, but taking into account the planning permission for redevelopment which already exists, Roads Department considers the present proposal more acceptable.

Roads Department list four conditions which should be applied if permission is to be granted. These relate to the car park and to treatment of the hard shoulder, discussed with the applicant and shown schematically on the drawings submitted. Roads Department express major concern at shortfall in parking and recommend that the developer put into operation the agreement for use of additional space in the vicinity (at Red Cow Garage, letter of agreement

Location: The Red Cow Inn, Clondalkin

on file).

The car parking requirement for the current application is assessed as follows and includes existing and proposed uses:-

USE - Lounge Bars/Function Rooms - PUBLIC FLOOR AREA - 969sq. metres - DEVELOPMENT PLAN PARKING STANDARD - 2 spaces per 8sq. metres, CAR PARKING REQUIRED - 242.

USE - Restaurant - PUBLIC FLOOR AREA - 150sq. metres - DEVELOPMENT PLAN PARKING STANDARD - 2 spaces per 10sq. metres - CAR PARKING REQUIRED - 30.

USE - Conservatory (considered as lounge space) - PUBLIC FLOOR AREA - 80sq. metres - DEVELOPMENT PLAN PARKING STANDARD - 2 spaces per 8sq. metres - CAR PARKING REQUIRED - 20.

USE - Bookmakers Shop - PUBLIC FLOOR AREA - 55sq. metres - DEVELOPMENT PLAN PARKING STANDARD - 5 spaces per 100sq. metres - CAR PARKING REQUIRED - 2.

Total no. car parking spaces required - 294.

A total of 220 spaces are shown in the car park layout, leaving a shortfall of 74 spaces. While some extra car parking can be supplied at The Red Cow Garage, there is still a shortfall in supply. The availability of the spaces at Red Cow Garage is limited to after 6pm. (see letter from Myles Balfe Ltd. dated 7/2/91 on file).

I note Roads Department report however, that the proposal is more acceptable, taking into account the planning permission for redevelopment of the site that already exists.

The current application includes an undertaking from Mr. T. Moran, Red Cow Inn, to remove the sign at the end of the car park, when the lease expires with David Allen, (letter dated 8.2.91). This had previously been required to be removed by Condition 5 of the permission granted on 12/10/89, Reg. Ref. 89A/1493, but this condition was removed by An Bord Pleanala on appeal, in their decision of 15/2/90.

Reports have been requested from Sanitary Services, Environmental Health Inspector and Fire Officer, but these have not been received.

It is considered that on balance the current application includes a number of improvements compared to previous permissions and proposals and in view of the Roads Report which finds the present proposal more acceptable,

I recommend that a decision to GRANT PERMISSION be made under the Local

COMHAIRLE CHONTAE ÁTHA CLIATH

Record of Executive Business and Manager's Orders

Reg.Ref: 91A/0138

Page No: 0004

Location: The Red Cow Inn, Clondalkin

Government (Planning and Development) Acts, 1963-1990, subject to the following (17) conditions:-

C O N D I T I O N S / R E A S O N S

01 The development to be carried out in its entirety in accordance with the plans, particulars and specifications lodged with the application save as may be required by the other conditions attached hereto.
REASON:To ensure that the development shall be in accordance with the permission and that effective control be maintained.

02 That before development commences, approval under the Building Bye- Laws be obtained and all conditions of that approval be observed in the development.
REASON:In order to comply with the Sanitary Services Acts, 1878-1964.

03 That the water supply and drainage arrangements, including the disposal of surface water, be in accordance with the requirements of the County Council.
REASON: In order to comply with the Sanitary Services Acts, 1878-1964.

04 That the approval of the Chief Fire Officer be ascertained on fire prevention and escape before development commences and standards strictly adhered to in the development.
REASON: In the interest of safety and the avoidance of fire hazard.

05 That the requirements of the Supervising Environmental Health Officer be ascertained and strictly adhered to in the development.
REASON: In the interest of health.

06 That all external finishes harmonise in colour and texture with the existing premises.
REASON: In the interest of visual amenity.

07 That the boundary wall adjoining the Naas Road shall be finished in brick, to match the existing, as far as the ~~roundabout.~~ western site boundary junction with the re-aligned Turnpike Road.
REASON: In the interest of visual amenity.

08 That before development work is commenced, a detailed landscape scheme for the site including a time scale for such works shall be submitted and agreed by the County Council.
REASON: In the interest of visual amenity.

COMHAIRLE CHONTAE ÁTHA CLIATH

Record of Executive Business and Manager's Orders

Reg.Ref: 91A/0138

Page No: 0005

Location: The Red Cow Inn, Clondalkin

09 That the advertising hoarding at the western end of the car park shall be removed at the expiry of the present lease, in accordance with the undertaking given in the letter dated 8/2/91.

09 REASON: In the interest of visual amenity and the proper planning and development of the area.

10 That no further advertising signs or structures, apart from those indicated on the plans lodged 8/2/91, shall be erected on the building or on the site, and that all other signs shall be removed from the building and site.
REASON: In the interest of visual amenity and the proper planning and development of the area.

11 That the floodlighting of signs on the building from the car park, as indicated on plans lodged 8/2/91, shall be carried out in accordance with the requirements of the Councils' Roads Department.
REASON: In the interest of safety and avoidance of traffic hazard.

12 That prior to the opening of the new extensions to the public, the hard shoulder shall be resurfaced for a distance of 50 metres on each side of the car park entrance to the requirements of the Area Engineer, Roads Maintenance.
REASON: In the interest of safety and avoidance of traffic hazard.

13 After the resurfacing and redevelopment work have been completed, (including the car park), the developer shall agree with Roads Department, road markings and road signs considered appropriate to reduce the amount of parking in the vicinity of the car park entrance; such markings or road signs to be provided at the developers' expense.
REASON: In the interest of safety and avoidance of traffic hazard.

14 That the car park shall be laid out and completed including surface markings prior to the opening of the new extensions to the public.
REASON: In the interest of safety and avoidance of traffic hazard.

15 Within six months of the opening of the new extensions to the public, the developer shall ~~determine whether the provision of a parking layby on~~ the Naas side of the car park entrance (as schematically shown on the drawings lodged 8/2/91) is required by Roads Department, ~~and shall provide such at his own expense if required to do so by the Council.~~
REASON: In the interest of safety and avoidance of traffic hazard.

16 That the agreement for the use of the additional car parking space in the vicinity in accordance with the letter from Myles Balfe Ltd., dated 7/2/91 and lodged as part of the application on 8/2/91, shall be put

COMHAIRLE CHONTAE ÁTHA CLIATH

Record of Executive Business and Manager's Orders

Reg.Ref: 91A/0138

Page No: 0006

Location: The Red Cow Inn, Clondalkin

into operation as soon as the new extensions are opened to the public.
REASON: In the interest of safety and avoidance of traffic hazard.

17 That a financial contribution in the sum of £6878.-- be paid by the proposer to the Dublin County Council towards the cost of provision of public services in the area of the proposed development and which facilitate this development; this contribution to be paid before the commencement of development on the site.
REASON: The provision of such services in the area by the Council will facilitate the proposed development. It is considered reasonable that the developer should contribute towards the cost of providing the services.

Endorsed:-.....
for Principal officer

.....
for Dublin Planning officer

Order: A decision pursuant to Section 26(1) of the Local Government (Planning and Development) Acts, 1963-1990 to GRANT PERMISSION for the above proposal subject to the (17) conditions set out above is hereby made.

Dated : 26 March 1991 .....
~~ASSISTANT CITY AND COUNTY MANAGER~~ Approved Officer

to whom the appropriate powers have been delegated by order of the Dublin City and County Manager dated ~~21st February 1991~~ 15th March 1991.

DUBLIN COUNTY COUNCIL

REG. REF:	91A/138.
LOCATION:	The Red Cow Inn, Clondalkin.
APPLICANT:	T. & S. Taverns Ltd.
PROPOSAL:	New lounge, conservatory, restaurant.
DATE LODGED:	8.2.91.

This application for extensions and alterations to the Red Cow Inn.

A previous similar proposal was refused by the Council. Discussions were had with the applicant prior to the present submission and some adjustments to the internal layout, to reduce the amount of public space, have been made and the car park layout has been improved to accommodate 220 spaces. The car park entrance details have also been improved. The bedrooms originally proposed have also been omitted.

As expressed in our previous Report we are concerned at the intensification of development at this location but taking into account the planning permission for redevelopment of the site that already exists the present proposal is more acceptable.

One of the problems associated with the site at present is parking of vehicles on the hard shoulder adjacent to the car park entrance. We have not as yet come up with a soluation to this problem and feel that it should be examined when the works shown on the drawings have been completed. It is likely that some form of road markings and signs will be required. The surfacing of the hard shoulder in the vicinity of the entrance is unsuitable for such markings so the developer should be conditioned to resurface the shoulder across the car park entrance and extending 50 metres in both directions.

If permission is being granted the following conditions should apply:-

1. The hard shoulder should be resurfaced for a distance of 50 metres on each side of the car park entrance to the requirements of the Area Engineer Roads Maintenance.

2. After the resurfacing has been completed and the redevelopment works completed (including the car park) the developer is to agree with the Roads Department road markings and signs considered appropriate to reduce the amount of parking in the vicinity of the car park entrance. Such markings etc. to be provided at the developers expense.

3. The car park should be laid out and completed including surface markings prior to opening of the new extensions to the public.

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 20/2/91
Time 9.20

Contd./.

4. Within 6 months of re-opening for business the developer is to determine whether the provision of a parking layby on the Naas side of the car park entrance (schematically shown on the drawings) is required by the Roads Department and to provide such at his own expense if required to do so by the Council.

Note: The shortfall in parking is of major concern and the developer should put into operation the agreements for the use of additional parking space in the vicinity as submitted with this application.

JH/BMcC
13.3.91.

SIGNED: E. Madden ENDORSED:

DATE: 13th March '91 DATE: 13/3/91

Dublin County Council Comhairle Chontae Atha Cliath **Planning Department**

Bloc 2, Ionad Bheatha na hEireann,
Block 2, Irish Life Centre,
Sraid na Mainistreach Iacht,
Lower Abbey Street,
Baile Atha Cliath 1.
Dublin 1.
Telephone. (01)724755
Fax. (01)724896

Register Reference : 91A/0138 Date : 20th March 1991

Dear Sir/Madam,

Development : New lounge, conservatory, restaurant, toilets, access corridor, wall signs with alterations to existing building

LOCATION : The Red Cow Inn, Clondalkin

Applicant : T. & S. Taverns Ltd,

App. Type : PERMISSION/BUILDING BYE-LAW APPROVAL

Date Recd : 8th February 1991

Your application in relation to the above was submitted with a fee of £1036.00.

On examination of the plans submitted it would appear that the appropriate amount should be £1701.00.

I should be obliged if you would submit the balance of £665.00 as soon as possible as a decision cannot be made on this application until the correct fee is received.

Yours faithfully,

.....

PRINCIPAL OFFICER

McCarthy & Patterson,
Bridge Street,
Newcastle West,
Co. Limerick.

DUBLIN COUNTY COUNCIL

REG. REF: 91A/138.

LOCATION: The Red Cow Inn, Clondalkin.

APPLICANT: T. & S. Taverns Ltd.

PROPOSAL: New lounge, conservatory, restaurant.

DATE LODGED: 8.2.91.

Maeve

This application for extensions and alterations to the Red Cow Inn.

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3. The car park should be laid out and completed including surface markings prior to opening of the new extensions to the public.

PLANNING DEPT.
DEVELOPMENT CONTROL SECT
Date 13/3/91
Time 3.30

Contd./.

91A/138

4. Within 6 months of re-opening for business the developer is to determine whether the provision of a parking layby on the Naas side of the car park entrance (schematically shown on the drawings) is required by the Roads Department and to provide such at his own expense if required to do so by the Council.

Note: The shortfall in parking is of major concern and the developer should put into operation the agreements for the use of additional parking space in the vicinity as submitted with this application.

JH/BMcC
13.3.91.

SIGNED: E. Madden ENDORSED: John Henry

DATE: 13th March '91 DATE: 13/3/91