

SECTION NO 2 – PRELIMINARIES AND GENERAL CONDITIONS OF CONTRACT

1 General

- 1.1 The Preliminaries/General Conditions of Contract prepared by Church Architectural are included hereinafter (Pages 1/1 - 1/45)
- 1.2 The above mentioned are amended as follows
- 1.3 The Pre Construction Information is deemed included in the above/is included in the Appendices hereinafter

2 A11 Tender and Contract Documents

- 2.1 Site Visits (A11/250) – there are no particular arrangements required to visit the site unless an internal inspection is required; in such circumstances contact W A Clark of Clark Associates on tel 01275 876054 and/or email will.clark@clark-associates.co.uk

3 A12 The Site/Existing Buildings

- 3.1 The Contractor is to allow for a temporary footpath and/or haul route adjoining the site so as to segregate the public from his construction access; upon completion all surfaces are to be reinstated to the condition as at possession
- 3.2 The construction access must not impact on the existing trees/their root systems and hence temporary protection should be allowed for/reinstatement on completion as described above

4 A20 JCT Intermediate Building Contract (IC)

- 4.1 Delete A20/330 and add as follows

The Form of Contract, to be executed as a Deed under seal, will be that issued by the Joint Contracts Tribunal Intermediate Building Contract with contractors design 2011 incorporating all current Amendments. Payment terms are amended to 28 days.

A copy of the draft Form of Contract may be inspected at the offices of the Quantity Surveyor by prior arrangement. The Clauses are scheduled hereinafter but the Contractor must inspect the draft form for the full details of these clauses and he is to allow herein such sums as he may deem necessary for carrying out the obligations and services required therein.

Articles of Agreement

Recitals

First Recital	the Works
Second Recital	the Contractors Designed Portion
Third Recital	the Contract Drawings
Fourth Recital	the Employers Requirements
Fifth Recital	the Priced Document – Pricing Option A
Sixth Recital	the Contractors Proposals/the CDP Analysis
Seventh Recital	the Employers Requirements/the Contractors Proposals/the CDP Analysis
Eighth Recital	CIS Employers status
Ninth Recital	the Information Release Schedule

Tenth Recital the CDM Regulations

Eleventh Recital the division of the Works

Twelfth Recital the Framework Agreement

Thirteenth Recital the Supplemental Provisions

Articles

Article 1 Contractors obligations

Article 2 Contract Sum

Article 3 Architect/ Contract Administrator

Article 4 Quantity Surveyor

Article 5 CDM Coordinator/Principal Designer

Article 6 Principal Contractor

Article 7 Adjudication

Article 8 Arbitration

Article 9 Legal proceedings

Article 10 Amendment 1: CDM Regulations - incorporation

Contract Particulars

Part 1: General

Clause etc	Subject	
Fourth Recital	Employer's Requirements	as included herein
Sixth Recital	Contractor's Proposals	to be submitted
Sixth Recital	CDP Analysis	to be submitted
Eight Recital and clause 4.5	Construction Industry Scheme (CIS)	Employer at the Base Date is not a 'contractor' for the purposes of the CIS
Tenth Recital	CDM Regulations	the project is notifiable
Eleventh Recital	Description of Sections	not applicable
Twelfth Recital	Framework Agreement	not applicable
Thirteenth Recital and Schedule 5	Supplement Provisions	
	Collaborative working	Paragraph 1 applies
	Health and safety	Paragraph 2 applies
	Cost savings and value improvements	Paragraph 3 applies
	Sustainable development and	Paragraph 4 applies

	environmental considerations	
	Performance Indicators and monitoring	Paragraph 5 does not apply
	Notification and negotiation of disputes	Paragraph 6 applies
		Employers nominee
		TBA
		Contractors nominee
		TBA
		or such replacement as each Party may notify to the other from time to time
Article 8	Arbitration	Article 8 and clauses 9.3 to 9.8 (Arbitration) apply
1.1	Base Date	ten days before tender return date
1.1	CDM Planning Period	shall mean the period of two weeks ending on the Date of Possession
1.1	Date for Completion of the Works	as stated on Form of Tender
	Sections: Dates for Completion of Sections	not applicable
1.7	Addresses for service of notices by the Parties	Employer
		Contractor
2.4	Date of Possession of the site	to be agreed
	Sections: Dates of Possession of Sections	not applicable
2.5	Deferment of possession of the site	Clause 2.5 applies
		Maximum period of deferment (if less than 6 weeks) is 6 weeks
	Sections: deferment of possession of Sections	Clause 2.5 does not apply
2.23.2	Liquidated damages	at the rate of £2,000 per week or part thereof
	Sections: rate of liquidated damages for each Section	not applicable
2.29	Sections: Section Sums	not applicable
2.30	Rectification Period	12 months from the date of

		practical completion of the Works
	Sections: Rectification Periods	not applicable
2.34.3	Contractor's Designed Portion: limit of Contractor's liability for loss of use etc	£250,000
4.6	Advance payment	Clause 4.6 does not apply
4.6	Advance Payment Bond	An advance payment bond is not required
4.7.1	Interim payments – due dates	The first due date is: one month after the Date of Possession and thereafter the same date in each month or the nearest Business Day in that month
4.8.1	Interim payments – percentage value	
	Where the Works, or those works in a Section, have not achieved practical completion, the percentage of total value in respect of the works that have not achieved practical completion is	95%
	Where the Works, or those works in a Section, have achieved practical completion, the percentage in respect of the completed works is	97½%
4.9.4	Listed Items – uniquely identified	delete
4.9.5	Listed Items – not uniquely identified	delete
4.15 and Schedule 4	Contribution, levy and tax fluctuations	delete
6.4.1.2	Contractor's insurance: injury to persons or property – insurance cover (for any one occurrence or series of occurrences arising out of one event)	£5,000,000
6.5.1	Insurance – liability of Employer	Insurance is not required
6.7 and Schedule 1	Insurance of the Works – Insurance Options	Schedule 1: Insurance Option A applies
6.7 and Schedule 1 Insurance Option A (paragraphs A1 and A3)	Percentage to cover professional fees	15%
6.7 and Schedule 1 Insurance Option A (paragraph A.3)	Annual renewal date of insurance	to be advised

6.10 and Schedule 1	Terrorism Cover – details of the required cover	Pool Re Cover is required
6.12	Joint Fire Code	The Joint Fire Code does not apply
	If the Joint Fire Code applies, state whether the insurer under Schedule 1, Insurance Option A, B or C (paragraph C.2) has specified that the Works are a 'Large Project'	Not applicable
6.15	Joint Fire Code – amendments/ revisions	Not applicable
6.16	Contractors Designed Portion (CDP) Professional Indemnity insurance	
	Level of cover	Amount of indemnity required relates to claims or series of claims arising out of one event
		and is
		£250,000
	Cover for pollution and contamination claims	is not required
	Expiry of required period of CDP Professional Indemnity insurance is	12 years
8.9.2	Period of suspension	2 months
8.11.1.1 to 8.11.1.5	Period of suspension	2 months
9.2.1	Adjudication	
	Nominating body – where no Adjudicator is named or where the named Adjudicator is unwilling or unable to act (whenever that is established)	The Adjudicator is the Chartered Institute of Arbitrators
9.4.1	Arbitration – appointor of Arbitrator (and of any replacement)	President or a Vice-President: Chartered Institute of Arbitrators

Part 2: Collateral Warranties

Purchaser and Tenant Warranties

(A) Identity of Purchasers/Tenants in whose favour Collateral Warranties may be required – not required

(B) Contractor's Warranties – Purchasers and Tenants – not required

Funder Warranties

(C) Identity of Funder – not applicable

(D) Collateral Warranties – Funder – not required

Collateral Warranties from Sub-Contractors

(E) Warranties are required from Sub-Contractors as below

Sub-Contractors from whom Warranties are required	Type of warranty required from each Sub-Contractor	Level of Professional Indemnity insurance required
Roof trusses	SCWa/E	£100,000
Heating & Plumbing Installations	SCWa/E	£100,000
Electrical Installations	SCWa/E	£100,000

Attestation

Executed as a Deed under seal by the Employer and the Contractor

Conditions:

Section 1	Definitions and Interpretation
Section 2	Carrying out the Works
Section 3	Control of the Works
Section 4	Payment
Section 5	Variations
Section 6	Injury, Damage and Insurance
Section 7	Assignment and Collateral Warranties
Section 8	Termination
Section 9	Settlement of Disputes

Schedules

Schedule 1	Insurance Options
Schedule 2	Named Sub Contractors
Schedule 3	Forms of Bonds
Schedule 4	Fluctuations Option – Contribution, levy and tax fluctuations
Schedule 5	Supplemental Provisions

5 Collateral Warranties

5.1 The Contractor and Sub Contractors shall execute and deliver to the Employer Warranties as included in the Appendices hereinafter and as described below for the due performance of the

Works. The execution of the Sub Contractor Warranties will be a condition precedent to the payment for the relevant elements of the Works

5.2 Warranties from Sub Contractors with design responsibility and employed by the Contractor are to be provided in favour of the Employer

5.3 It is the Contractor's responsibility to obtain Warranties from the Sub Contractors noted hereinbefore

5.4 All Agreements/Sub Contracts between the Contractor and Sub Contractors shall be executed as a deed, copies of which are to be passed to the Employer and provisions of the appropriate Warranties detailed above shall be a condition of their employment

6 Parent Company Guarantee

6.1 If the Contractor is a subsidiary Company, the Contractor will be required before a Contract for this work is let, to obtain from the Parent Company a Guarantee for the due performance of the design, where appropriate, and construction of the Works and all obligations arising therefrom

7 Performance Bond

7.1 The Contractor will, upon the execution of this Contract, be required to enter into a Bond in the sum equivalent to 10% of the Contract Sum for the due fulfilment of the Contract in all respects in accordance with the Contract/through to issue of the Certificate of Practical Completion

7.2 The Contractor shall allow for and shall indicate in the space provided within the Summary, the amount of premium required for the arrangement of the Bond and shall also state the names of the proposed Sureties, Bank or Guarantee Assurance Society

7.3 The Employer may, at this discretion, cancel the requirement for a Bond. Should the Bond not be required, the full amount indicated within the Summary for the amount of the premium will be deducted from the tender.

7.4 The Bond shall be delivered and executed at the time of signing the Contract and this will be a condition precedent to any payment being made under the Contract.

8 A 54 Provisional Works/Items

8.1 Delete A54 Provisional Work/Items and refer/include as Section No 7

9 A55 Dayworks

9.1 Delete A55 Dayworks and add as follows

Generally

9.2 Vouchers specifying the time daily spent upon the work (with the names of the workmen), the materials used and the plant employed in Dayworks shall be delivered to the CA weekly in accordance with the terms of Clause 13.5.4 of the Conditions of Contract

Labour

9.3 Include the Provisional Sum of Nil for the cost of labour in Dayworks as defined in Section 3 Institution of Chartered Surveyors and the Building Employers Confederation

9.4 Add for incidental costs, overheads and profit as defined in Section 6 of the above named document

.....%

Materials and Goods

- 9.5 Include the Provisional Sum of Nil for the cost of materials and goods in Dayworks as defined by the Royal Institution of Chartered Surveyors and the Building Employers Confederation
- 9.6 Add for incidental costs, overheads and profit as defined in Section 6 of the above named document
-%

Plant

- 9.7 Include the Provisional Sum of Nil for the hire value of plant in Dayworks as defined in Section 5 of the Definition of Prime Cost of Daywork carried out under a Building Contract published by The Royal Institution of Chartered Surveyors and the Building Employers Confederation, the hire value to be calculated at the rates listed in the Schedule of Basic Plant Charges 4th revision 1 January 1990 by The Royal Institution of Chartered Surveyors
- 9.8 Add to the adjusted hire value for incidental costs, overheads and profit as defined in Section 6 of the above named document
-%
- .
-

- 9.9 The Contractor is to identify below the percentage additions required for any Dayworks which may be authorised/executed between Practical Completion and Certificate of Making Good Defects

Labour%

Materials and Goods%

Plant%

Preliminaries

		£	p
A	PRELIMINARIES/GENERAL CONDITIONS		
A1	THE PROJECT GENERALLY		
A10	PROJECT PARTICULARS		
110	THE PROJECT: Name: Victory Park Nature: Football Pavilion Location: Victory Park, Cainscross, Stroud. Length of contract: TBC		
120	EMPLOYER (CLIENT): Cainscross Parish Council 39 Westward Road Stroud GL5 4JA		
130	THE PRINCIPAL CONTRACTOR: The Contractor		
1/1		To Collection	

		£	p
A11	TENDER AND CONTRACT DOCUMENTS		
110	THE TENDER DRAWINGS are: <u>Architects:</u> TBC. <u>Structural:</u> TBC		
120	THE CONTRACT DRAWINGS will be the same as the tender drawings.		
160	THE PRE-CONSTRUCTION HEALTH AND SAFETY INFORMATION PACK is appended to this document. It refers to information given elsewhere in the preliminaries, specification and drawings.		
180	OTHER DOCUMENTS Inspection: Drawings and other documents relating to the Contract but not in the tender documents may be seen by appointment during normal office hours at the office.		
A12	THE SITE/EXISTING BUILDINGS		
110	THE SITE: Victory Park Cainscross Stroud		
140	EXISTING MAINS/SERVICES: The positions of all known services are shown on the drawings. Other services may be present, their positions are not known. The Contractor is to make all possible investigations and make appropriate time allowance in his programme for dealing with such services expected to be present, positions unknown.		
200	ACCESS TO THE SITE: The access to the site is indicated on the drawings.		
210	PARKING of the Contractors and employees' vehicles will be restricted to the contractor's compound.		
220	USE OF THE SITE: - Do not use the site for any purpose other than carrying out the Works.		
230	SURROUNDING LAND/BUILDING USES: Residential and agricultural.		
1/2		To Collection	

		£	p
240	RISKS TO HEALTH AND SAFETY: - The nature and condition of the site/building cannot be fully and certainly ascertained before it is opened up. - The Employer or the CA does not guarantee the accuracy and sufficiency of this information and the Contractor must ascertain for himself any information he may require to ensure the safety of all persons and the Works.		
250	SITE VISIT: Before tendering, ascertain the nature of the site, access thereto and all local conditions and restrictions likely to affect the execution of the Works. Arrangements for visit: By appointment with the client, tel. 01453 756036		
A13	DESCRIPTION OF THE WORK		
120	THE WORK: The works comprise the construction of Football Pavilion, Parish Council Offices & Youth Centre.		
1/3		To Collection	

		£	p
A20	JCT INTERMEDIATE BUILDING CONTRACT (IC)		
330	JCT INTERMEDIATE BUILDING CONTRACT (IC) - The Contract: JCT Intermediate Building Contract 2011 Edition. - Requirement: Allow for the obligations, liabilities and services described as follows:		
	THE RECITALS		
	First - THE WORKS - Comprise: The Works are as described in clause A13/120. - Location: see A12/110.		
	Second - CONTRACT DRAWINGS - The contract drawings: As listed in clause A11/120.		
	Third - OTHER DOCUMENTS SUPPLIED BY THE EMPLOYER - Comprise: Specification. - Named person: The whole of the text referring to a named person as a subcontractor will be deleted.		
	Fourth A - PRICING BY THE CONTRACTOR - Option A will apply: Option B will be deleted. - Priced document: Within Option A the following words will be deleted: Bills of Quantities/Work schedules. - Priced Activity Schedule: The words 'and has provided the Employer with a priced Activity Schedule' will be deleted.		
	Sixth - INFORMATION RELEASE SCHEDULE - The Sixth Recital will be deleted.		
	Eighth - DIVISION OF THE WORKS INTO SECTIONS - The Eighth Recital will be deleted.		
	THE ARTICLES		
	3 - ARCHITECT/ CONTRACT ADMINISTRATOR - Architect/ Contract Administrator: See clause A10/140.		
	4 - QUANTITY SURVEYOR - Quantity Surveyor: See clause A10/160.		
	5 - CDM CO-ORDINATOR - Article 5 will be deleted.		
	6 - PRINCIPAL CONTRACTOR - Article 6 will be deleted.		

	£	p
9 - LEGAL PROCEEDINGS - Amendments: nil. CONTRACT PARTICULARS PART 1: GENERAL Fifth Recital and clause 4.5 - CONSTRUCTION INDUSTRY SCHEME (CIS) - Employer at the Base Date is not a Contractor for the purposes of the CIS. Seventh Recital - CDM REGULATIONS - The project is not notifiable. Ninth Recital - FRAMEWORK AGREEMENT - Does not apply. Tenth Recital and Schedule 5 - SUPPLEMENTAL PROVISIONS - Collaborative working: Paragraph 1 applies. - Health and safety: Paragraph 2 applies. - Cost savings and value improvements: Paragraph 3 applies. - Sustainable development and environmental considerations: Paragraph 4 applies. - Performance indicators and monitoring: Paragraph 5 does not apply. - Notification and negotiation of disputes: Paragraph 6 applies. - Where paragraph 6 applies, the respective nominees of the parties are: - Employer's nominee: Project quantity surveyor - Contractor's nominee: Project surveyor Or such replacement as each party may notify to the other from time to time. Article 8 - ARBITRATION - Article 8 and clauses 9.3 to 9.8 (arbitration) apply. Clause 1.1 - BASE DATE - Base Date: TBC Clause 1.1 - DATES FOR COMPLETION OF THE WORKS - Dates for completion of the Works: TBC Clause 1.7 - ADDRESSES FOR SERVICE OF NOTICES - Employer: see A10/120. - Contractor: Clause 2.4 - DATE OF POSSESSION OF THE SITE - Date for possession of the site: Section One: TBC Clause 2.5 and 2.20.3 - DEFERMENT OF POSSESSION OF THE SITE - Clause 2.5 applies. - Where clause 2.5 applies, maximum period of deferment is: 6 weeks		
1/5	To Collection	

	£	p
Clause 2.23.2 - LIQUIDATED DAMAGES - Damages: At the rate of £2000.00 per week. Clause 2.30 - RECTIFICATION PERIOD - Period: 12 months from the date of practical completion of the Works. Clause 4.6 - ADVANCE PAYMENT AND ADVANCE PAYMENT BOND - Advance payment: Clause 4.6 does not apply. Clause 4.7.1 - INTERIM PAYMENTS – DUE DATES - The first date is: one month after date of possession and thereafter the same day in each month or the nearest Business Day in that month. Clause 4.8.1 – INTERIM PAYMENTS - PERCENTAGE OF VALUE - Not achieved practical completion: Where the Works, or those works in a section have not achieved practical completion, the percentage of total value in respect of the works that have not achieved practical completion is 95%. - Completed works: Where the Works, or those works in a section, have achieved practical completion, the percentage of total value in respect of the completed works is 97.5%. Clause 4.9.4 - LISTED ITEMS - UNIQUELY IDENTIFIED - Listed items: Clause 4.9.4 will be deleted. Clause 4.9.5 - LISTED ITEMS - NOT UNIQUELY IDENTIFIED - Listed items: Clause 4.9.5 to be deleted. Clause 4.15 and Schedule 4 - CONTRIBUTION, LEVY AND TAX FLUCTUATIONS - Schedule 4 (Fluctuations Option) to be deleted. - Percentage addition for Fluctuations Option: nil. Clause 6.4.1.2 - CONTRACTOR'S INSURANCE - INJURY TO PERSONS OR PROPERTY - Insurance cover (for any one occurrence or series of occurrences arising out of one event): £10,000,000.00. Clause 6.5.1 - INSURANCE - LIABILITY OF EMPLOYER - Insurance may be required. - Minimum amount of indemnity for any one occurrence or series of occurrences arising out of one event: £10,000,000.00. Clause 6.7 and Schedule 1 - INSURANCE OF THE WORKS - INSURANCE OPTIONS - Schedule 1: Insurance option C applies. - Percentage to cover professional fees: 20 per cent. Clause 6.12 - JOINT FIRE CODE - The Joint Fire Code: Does not apply.		
1/6	To Collection	

	£	p
Clause 8.9.2 - PERIOD OF SUSPENSION (TERMINATION BY CONTRACTOR) - Period of suspension: 2 months. Clauses 8.11.1.1 to 8.11.1.5 - PERIOD OF SUSPENSION (TERMINATION BY EITHER PARTY) - Period of suspension: 2 months. Clause 9.2.1 - ADJUDICATION - Nominating body - where no Adjudicator is named or where the named Adjudicator is unwilling or unable to act (whenever that is established): President or a Vice-President or Chairman or a Vice-Chairman of the Royal Institution of Chartered Surveyors. Clause 9.4.1 - ARBITRATION - Appointor of Arbitrator (and of any replacement): President or a Vice President of the Royal Institution of Chartered Surveyors. PART 2: COLLATERAL WARRANTIES (TO BE DELETED) THE CONDITIONS SECTION 1: DEFINITIONS AND INTERPRETATION 1.5 - RECKONING PERIODS OF DAYS Amendments: to be deleted. 1.11 - APPLICABLE LAW - Amendments: to be deleted. SECTION 2: CARRYING OUT THE WORKS SECTION 3: CONTROL OF THE WORKS SECTION 4: PAYMENT SECTION 5: VARIATIONS SECTION 6: INJURY, DAMAGE AND INSURANCE SECTION 7: ASSIGNMENT AND COLLATERAL WARRANTIES SECTION 8: TERMINATION SECTION 9: SETTLEMENT OF DISPUTES		
1/7	To Collection	

	£	p
SCHEDULES SCHEDULE 1 INSURANCE OPTIONS Option C: The Contractor, not the Employer, shall take out 'All Risks' insurance cover for the Works. The cover may be obtained by a single policy or contractor's annual policy, as detailed in Option A. The provisions governing 'Loss or damage to Works – insurance claims – Contractor's obligations – use of insurance monies', all as detailed in clause A.4, but adapted to include the determination provisions included in Clause C.4, will be included in the Contract. These amendments to Option C together with the consequential amendments will be numbered 'Amendment No. 1A'. EXECUTION - The Contract: Will be executed as a deed. CONTRACT GUARANTEE BOND - Contract Guarantee Bond: not required.		
1/8	To Collection	

		£	p
A30	TENDERING/SUBLETTING/SUPPLY		
110	SCOPE: These conditions are supplementary to those stated in the invitation to tender and on the Form of Tender.		
145	TENDERING PROCEDURE		
-	General: Comply with the provisions of JCT Practice Note 6 (Series 2) 'Main Contract Tendering'.		
160	EXCLUSIONS: Inability to tender: Immediately inform if any parts of the work as defined in the tender documents cannot be tendered.		
-	Relevant parts of the work: Define those parts, stating reasons for the inability to tender.		
170	ACCEPTANCE OF TENDER: The Employer and the Employer's representatives:		
-	Offer no guarantee that the lowest or any tender will be recommended for acceptance or accepted.		
-	Will not be responsible for any cost incurred in the preparation of any tender.		
190	PERIOD OF VALIDITY: Tenders must remain open for consideration (unless previously withdrawn) for not less than 13 weeks from the date fixed for the submission or lodgement of tenders. Information on the date for possession/commencement is given in section A20.		
	PRICING/SUBMISSION OF DOCUMENTS		
210	PRELIMINARIES IN THE SPECIFICATION: The Preliminaries/General conditions sections (A10-A55 inclusive) must not be relied on as complying with SMM7.		
250	PRICED DOCUMENTS		
-	Alterations: Do not alter or qualify the priced documents without written consent. Tenders containing unauthorised alterations or qualifications may be rejected.		
-	Measurements: Where not stated, ascertain from the drawings.		
-	Deemed included: Costs relating to items, which are not priced, will be deemed to have been included elsewhere in the tender.		
-	Submit: within 2 days of request.		
270	ERRORS IN PRICED DOCUMENTS		
-	Errors: In accordance with JCT Practice Note 6 (Series 2) 'Main Contract Tendering'.		
316	PROJECTS WITHOUT QUANTITIES: Tenders must include for all work shown on described in the tender documents as a whole or clearly apparent as being necessary for the complete and proper execution of the Works. Any discrepancies or omission or queries in the tender documents must be brought to the attention of the architect/contract administrator during the tender period. Any work shown on the drawing(s) but not included elsewhere will be deemed to have been included in the tender price.		

		£	p
320	PRICING OF SPECIFICATION: Alterations and qualifications to the specification must not be made without the written consent of the CA. Tenders containing unauthorised alterations or qualifications may be rejected. Costs relating to items in the specification that are not priced will be deemed to have been included elsewhere in the tender.		
332	THE CONTRACTOR must check all page numbers are correct and there are none missing.		
333	THE CONTRACTOR must check all rates, extensions and totals are carried to the appropriate collection page and included in the tender sum.		
334	FINANCIAL REFERENCES: The Contractor is to submit the financial reference consent form if requested with the priced document if called for. See Appendix to these preliminaries.		
335	REFERENCES: The Contractor is to provide with his priced tender document if requested, names and addresses of three organisations familiar with his work and who are prepared to provide references.		
480	PROGRAMME		
-	Programme of work: Prepare a summary showing the sequence and timing of the principal parts of the Works and periods for planning and design. Itemize any work which is excluded.		
-	Submit: Within one week of request.		
530	SUBSTITUTE PRODUCTS		
-	Details: If products of different manufacture to those specified are proposed, submit details with the tender giving reasons for each proposed substitution. Substitutions, which have not been notified at tender stage, may not be considered.		
-	Compliance: Substitutions accepted will be subject to the verification requirements of clause A31/200.		
551	HEALTH AND SAFETY INFORMATION: A statement must be submitted with the tender describing the organisation and resources which the contractor proposes and undertakes to provide to safeguard the health and safety of operatives, including those of subcontractors and of any person who may be affected by the works, including:		
-	A copy of the contractor's health and safety policy document, including risk assessment procedures.		
-	Accident and illness records for the past five years.		
-	Records of previous Health and Safety Executive enforcement action.		
-	Records of training and training policy.		
-	The number and type of staff responsible for health and safety on this project with details of their qualifications and duties.		
570	AN OUTLINE CONSTRUCTION PHASE HEALTH AND SAFETY PLAN must be submitted two weeks prior to date of possession and is to include the following:		
1/10		To Collection	

		£	p
590	- Method statements related to the construction hazards identified in the pre-tender health and safety plan and/or statements on how the hazards will be addressed and other significant hazards identified by the contractor. - Details of the management structure and responsibilities. - Arrangements for issuing health and safety directions. - Procedures for informing other contractors and employees of health and safety hazards. - Selection procedures for ensuring competency of other contractors, the self-employed and designers. - Procedures for communications between the project team, other contractors and site operatives. - Arrangements for co-operation and co-ordination between contractors. - Procedures for carrying out risk assessment and for managing and controlling the risk. - Emergency procedures including those for fire prevention and escape. - Arrangements for ensuring that all accidents, illness and dangerous occurrences are recorded. - Arrangements for welfare facilities. - Procedures for ensuring that all persons on site have received relevant health and safety information and any training. - Arrangements for consulting with and taking the views of people on site. - Arrangements for preparing site rules and drawing them to the attention of those affected and ensuring their compliance. - Monitoring procedures to ensure compliance with site rules, selection and management procedures, health and safety standards and statutory requirements. - Review procedures to obtain feedback.		
	SITE WASTE MANAGEMENT PLAN - Person responsible for drafting the Plan: The Contractor. - Content: Include details of: - Principal Contractor for the purposes of the regulations. - Location of the site. - Description of the project. - Estimated project cost. - Type and quantities of waste that will be generated. - Resource management options for these wastes including proposals for minimisation/reuse/recycling. - The use of appropriate and licensed waste management contractors. - Record keeping procedures. - Waste auditing protocols. - Submit with tender.		
		1/11	To Collection

		£	p
A31	PROVISION, CONTENT AND USE OF DOCUMENTS		
	DEFINITIONS AND INTERPRETATIONS		
110	DEFINITIONS		
-	Meaning: Terms, derived terms and synonyms used in the preliminaries/ general conditions and specification are as stated therein or in the appropriate British Standard or British Standard glossary.		
120	COMMUNICATION		
-	Definition: Includes advise, inform, submit, give notice, instruct, agree, confirm, seek or obtain information, consent or instructions, or make arrangements.		
-	Format: In writing to the person named in clause A10/140 unless specified otherwise.		
-	Response: Do not proceed until response has been received.		
130	PRODUCTS		
-	Definition: Materials, both manufactured and naturally occurring, and goods, including components, equipment and accessories, intended for the permanent incorporation in the Works.		
-	Includes: Goods, plant, materials, site materials and things for incorporation into the Works.		
135	SITE EQUIPMENT		
-	Definition: All appliances or things of whatsoever nature required in or about the construction for completion of the Works but not materials or other things intended to form or forming part of the Permanent Works.		
-	Includes: Construction appliances, vehicles, consumables, tools, temporary works, scaffolding, cabins and other site facilities.		
160	TERMS USED IN SPECIFICATION		
-	Remove: Disconnect, dismantle as necessary and take out the designated products or work and associated accessories, fastenings, supports, linings and bedding materials. Dispose of unwanted materials. Excludes taking out and disposing of associated pipework, wiring, ductwork or other services.		
-	Fix: Unload, handle, store, place and fasten in position including all labours and use of site equipment.		
-	Supply and fix: Includes all labour and site equipment for unloading, handling, storing and execution. All products to be supplied and fixed unless stated otherwise.		
-	Keep for reuse: Do not damage designated products or work. Clean off bedding and jointing materials. Stack neatly, adequately protect and store until required by the Employer or for use in the Works as instructed.		
-	Make good: Execute local remedial work to designated work. Make secure, sound and neat. Excludes redecoration and/ or replacement.		
-	Replace: Supply and fix new products matching those removed. Execute work to match original new state of that removed.		
-	Repair: Execute remedial work to designated products. Make secure, sound and neat. Excludes redecoration and/ or replacement.		
-	Refix: Fix removed products.		
1/12		To Collection	

		£	p
	- Ease: Adjust moving parts of designated products or work to achieve free movement and good fit in open and closed positions. - Match existing: Provide products and work of the same appearance and features as the original, excluding ageing and weathering. Make joints between existing and new work as inconspicuous as possible. - System: Equipment, accessories, controls, supports and ancillary items, including installation, necessary for that section of the work to function.		
170	MANUFACTURER AND PRODUCT REFERENCE Definition: When used in this combination: - Manufacturer: The firm under whose name the particular product is marketed. - Product reference: The proprietary brand name and/ or reference by which the particular product is identified. - Currency: References are to the particular product as specified in the manufacture's technical literature current on the date of the invitation to tender.		
200	SUBSTITUTION OF PRODUCTS - Products: If an alternative product to that specified is proposed, obtain approval before ordering the product. - Reasons: Submit reasons for the proposed substitution. - Documentation: Submit relevant information, including: - manufacturer and product reference; - cost; - availability; - relevant standards; - performance; - function; - compatibility of accessories; - proposed revisions to drawings and specification; - compatibility with adjacent work; - appearance; - copy of warranty/ guarantee. - Alterations to adjacent work: If needed, advise scope, nature and cost. - Manufacturers' guarantees: If substitution is accepted, submit before ordering products.		
210	CROSS REFERENCES - Accuracy: Check remainder of the annotation or item description against the terminology used in the section or clause referred to. - Related terminology: Where a numerical cross-reference is not given the relevant sections and clauses of the specification will apply. - Relevant clauses: Clauses in the referred to specification section dealing with general matters, ancillary products and execution also apply. - Discrepancy or ambiguity: Before proceeding, obtain clarification or instructions.		
220	REFERENCED DOCUMENTS - Conflicts: Specification prevails over referenced documents.		
1/13		To Collection	

		£	p
230	EQUIVALENT PRODUCTS		
-	Inadvertent omission: Wherever products are specified by proprietary name the phrase 'or equivalent' is to be deemed included.		
240	SUBSTITUTION OF STANDARDS		
-	Products specified to British Standard or European Standard: Substitution may be proposed of products complying with a grade or category within a national standard of another Member State of the European Community or an international standard recognised in the UK.		
-	Before ordering: Submit notification of all such proposals.		
-	Documentary evidence: Submit for verification when requested as detailed in clause A31/200. Any submitted foreign language documents must be accompanied by certified translations into English.		
250	CURRENCY OF DOCUMENTS		
-	Currency: References to published documents are to the editions, including amendments and revisions, current on the date of the Invitation to tender.		
260	SIZES		
-	General dimensions: Products are specified by their co-ordinating sizes.		
-	Timber: Cross section dimensions shown on drawings are:		
-	- Target sizes as defined in BS EN 336 for structural softwood and hardwood sections.		
-	- Finished sizes for non-structural softwood or hardwood sawn and further processed sections.		
	DOCUMENTS PROVIDED ON BEHALF OF EMPLOYER		
410	ADDITIONAL COPIES OF THE DRAWINGS/ DOCUMENTS		
-	Additional copies: Issued on request and charged to the Contractor.		
440	DIMENSIONS		
-	Scaled dimensions: Do not rely on.		
450	MEASURED QUANTITIES		
-	Ordering products and constructing the Works: The accuracy and sufficiency of the measured quantities is not guaranteed.		
-	Precedence: The specification and drawings shall override the measured quantities.		
460	THE SPECIFICATION		
-	Coordination: All sections must be read in conjunction with Main Contract Preliminaries/ General conditions.		
470	DIVERGENCE FROM THE STATUTORY REQUIREMENTS		
-	Divergence: Between the drawings or specification and the requirements of the Building Regulations, other Statutes, statutory undertakers and other regulatory authorities.		
-	Action: Inform immediately.		

1/14
To Collection

[illegible]

To Collection

		£	p
	- Work by or on behalf of the Employer and concurrent with the Contract (see section A50). The nature and scope of which, the relationship with preceding and following work and any relevant limitations are suitably defined in the Contract Documents. - Exclusions: Where and to the extent that the programme implications for work which is not so defined are impossible to assess, the Contractor should exclude it and confirm this when submitting the programme. - Submit: 2 copies.		
230	SUBMISSION OF PROGRAMME - Further information: Submission of the programme will not relieve the Contractor of the responsibility to advise of the need for further drawings or details or instructions in accordance with the Contract.		
240	COMMENCEMENT OF WORK - Notice: Before the proposed date for commencement of work on site give minimum notice of one week.		
250	MONITORING - Progress: Record on a copy of the programme kept on site. - Avoiding delays: If any circumstances arise which may affect the progress of the Works submit proposals or take other action as appropriate to minimize any delay and to recover any lost time.		
260	SITE MEETINGS - General: Site meetings will be held to review progress and other matters arising from administration of the Contract. - Frequency: monthly. - Location: Contractor's site offices. - Accommodation: Ensure availability at the time of such meetings. - Attendees: Attend meetings and inform subcontractors and suppliers when their presence is required. - Chairperson (who will also take and distribute minutes): see A10/140.		
265	CONTRACTOR'S PROGRESS REPORT - General: Submit a progress report at least two days before the site meeting. - Content: Notwithstanding the Contractor's obligations under the Contract the report must include: - A progress statement by reference to the master programme for the Works. - Details of any matters materially affecting the regular progress of the Works. - Subcontractors' and suppliers' progress reports. - Any requirements for further drawings or details or instructions to fulfil any obligations under Clause 1.7.2 of the Conditions of Contract.		
290	NOTICE OF COMPLETION - Requirement: Give notice of the anticipated dates of completion of the whole or parts of the Works. - Associated works: Ensure necessary access, services and facilities are complete. - Period of notice (minimum): two weeks.		
310	EXTENSIONS OF TIME		
1/17		To Collection	

		£	p
-	Notice: When a notice of the cause of any delay or likely delay in the progress of the Works is given under the Contract, written notice must also be given of all other causes which apply concurrently.		
-	Details: As soon as possible, submit:		
-	- Relevant particulars of the expected effects, if appropriate related to the concurrent causes.		
-	- An estimate of the extent, if any, of the expected delay in the completion of the Works beyond the Date for Completion.		
-	- All other relevant information required.		
320	DISTURBANCE OF REGULAR PROGRESS		
-	Applications under Contract clause 4.11 in respect of direct loss and/or expense: Make as soon as possible and with (or to be followed by) the requisite supporting information so sufficient time is allowed to issue instructions designed (according to the circumstances) to minimize or avoid that loss and/or expense.		
	All detailed claims for loss and expense for assessment by the quantity surveyor must set out the individual causes of delay, their effect on the programme and be subsequently costed in detail and include all substantiating documentation.		
	CONTROL OF COST		
410	CASH FLOW FORECAST		
-	Submission: Before starting work on site submit a forecast showing the gross valuation of the Works at the date of each Interim Certificate throughout the Contract period and based upon the programme for the Works.		
420	REMOVAL/ REPLACEMENT OF EXISTING WORK		
-	Extent and location: Agree before commencement.		
-	Execution: Carry out in ways that minimize the extent of work.		
430	PROPOSED INSTRUCTIONS		
-	Estimates: If a proposed instruction requests an estimate of cost, submit without delay and in any case within seven days.		
-	Include:		
-	- A detailed breakdown of the cost, including any allowance for direct loss and expense.		
-	- Details of any additional resources required.		
-	- Details of any adjustments to be made to the programme for the Works.		
-	- Any other information as is reasonably necessary to fully assess the implications of issuing such an instruction.		
-	Inability to comply: Inform immediately if it is not possible to comply with any of the above requirements.		
440	MEASUREMENT		
-	Covered work: Give notice before covering work required to be measured.		
450	DAYWORK VOUCHERS		
-	Before commencing work: Give reasonable notice to person countersigning daywork vouchers.		
-	Content: Before delivery each voucher must be:		

		£	p
	- Referenced to the instruction under which the work is authorised. - Signed by the Contractor's person in charge as evidence that the operatives' names, the time daily spent by each and the equipment and products employed are correct. - Submit: By the end of the week in which the work has been executed.		
452	DAYWORK: In the event of any work being allowed at daywork rates, it shall be based upon the following: <u>Basic Cost of Labour:</u> shall be calculated as the Standard Basic Wage Rate plus Guaranteed Minimum Bonus. The percentage addition entered by the Contractor on the Form of Tender and in the Specification shall be deemed to cover all other costs incurred by the Contractor in connection with the employment of labour, including overheads and profit. <u>Basic Cost of Materials</u> shall be current market prices (where supplied from the Contractor's stock) or invoice values, after deduction of all trade and other discounts except cash discounts (maximum 5%). The percentage addition entered by the Contractor on the Form of Tender and in the Specification shall be deemed to cover all other costs incurred by the Contractor in connection with the purchase and supply of materials, including delivery, overheads and profit. <u>Basic Cost of Plant</u> shall be based upon and shall not exceed those normally applicable in the locality at the time of the works are carried out, less 5% when the Contractor uses his own plant. The percentage addition entered by the Contractor on the Form of Tender and in the Specification shall be deemed to cover all other costs incurred by him in connection with the purchase and/or hire of plant, including delivery, overheads and profit.		
453	SIGNED DOCUMENTS: The signature of the Contract Administrator, Clerk of Works or others engaged by the Employer appended to any site records, daywork sheets, site instructions or other contractor's documentation is for record purposes only. It acknowledges the work has been carried out, but does not constitute any agreement that hours or subsequent costs are acceptable or that work is authorised or additional to the contract.		
460	INTERIM VALUATIONS - Applications: Include details of amounts due under the Contract together with all necessary supporting information. - Submission: At least seven days before established dates.		
470	PRODUCTS NOT INCORPORATED INTO THE WORKS - Ownership: At the time of each valuation, supply details of those products not incorporated into the Works which are subject to any reservation of title inconsistent with passing of property as required by the Conditions of Contract, together with their respective values.		
1/19		To Collection	

		£	p
480	- Evidence: When requested, provide evidence of freedom of reservation of title.		
	LABOUR AND EQUIPMENT RETURNS - Daily records: Provide at the beginning of each week for verification. - Records must show: - The number and description of craftsmen, labourers and other persons employed on or in connection with the Works, including those employed by subcontractors. - The number, type and capacity of all mechanical and power-operated equipment employed in constructing the Works.		
1/20		To Collection	

		£	p
A33	QUALITY STANDARDS/CONTROL		
	STANDARDS OF PRODUCTS AND EXECUTIONS		
110	INCOMPLETE DOCUMENTATION		
-	General: Where and to the extent that products or work are not fully documented, they are to be:		
-	Of a kind and standard appropriate to the nature and character of that part of the Works where they will be used.		
-	Suitable for the purposes stated or reasonably to be inferred from the project documents.		
-	Contract documents: Omissions or errors in description and/ or quantity shall not vitiate the Contract nor release the Contractor from any obligations or liabilities under the Contract.		
120	WORKMANSHIP SKILLS		
-	Operatives: Appropriately skilled and experienced for the type and quality of work.		
-	Registration: With Construction Skills Certification Scheme.		
-	Evidence: Operatives must produce evidence of skills/ qualifications when requested.		
130	QUALITY OF PRODUCTS		
-	Generally: New. (Proposals for recycled products may be considered).		
-	Supply of each product: From the same source or manufacturer.		
-	Whole quantity of each product required to complete the Works: Consistent in kind, size, quality and overall appearance.		
-	Tolerances: Where critical, measure a sufficient quantity to determine compliance.		
-	Deterioration: Prevent. Order in suitable quantities to a programme and use in appropriate sequence.		
135	QUALITY OF EXECUTION		
-	Generally: Fix, apply, install or lay products securely, accurately, plumb, neatly and in alignment.		
-	Colour batching: Do not use different colour batches where they can be seen together.		
-	Dimensions: Check on-site dimensions.		
-	Finished work: Not defective, e.g. not damaged, disfigured, dirty, faulty, or out of tolerance.		
-	Location and fixing of products: Adjust joints open to view so they are even and regular.		
140	COMPLIANCE		
-	Compliance with proprietary specifications: Retain on site evidence that the proprietary product specified has been supplied.		
-	Compliance with performance specifications: Submit evidence of compliance, including test reports indicating:		
-	Properties tested.		
-	Pass/ fail criteria.		
-	Test methods and procedures.		
1/21		To Collection	

		£	p
	- Test results. - Identity of testing agency. - Test dates and times. - Identities of witnesses. - Analysis of results.		
150	INSPECTIONS - Products and executions: Inspection or any other action must not be taken as approval unless confirmed in writing referring to: - Date of inspection. - Part of the work inspected. - Respects or characteristics which are approved. - Extent and purpose of the approval. - Any associated conditions.		
160	RELATED WORK - Details: Provide all trades with necessary details of related types of work. Before starting each new type or section of work ensure previous related work is: - Appropriately complete. - In accordance with the project documents. - To a suitable standard. - In a suitable condition to receive the new work. - Preparatory work: Ensure all necessary preparatory work has been carried out.		
170	MANUFACTURER'S RECOMMENDATIONS/ INSTRUCTIONS - General: Comply with manufacturer's printed recommendations and instructions current on the date of the Invitation to tender. - Changes to recommendations or instructions: Submit details. - Ancillary products and accessories: Use those supplied or recommended by main product manufacturer. - Agrément certified products: Comply with limitations, recommendations and requirements of relevant valid certificates.		
180	WATER FOR THE WORKS - Mains supply: Clean and uncontaminated. - Other: Do not use until: - Evidence of suitability is provided. - Tested to BS EN 1008 if instructed.		
	SAMPLES/ APPROVALS		
210	SAMPLES - Products or executions: Comply with all other specification requirements and in respect of the stated or implied characteristics either: - To an express approval. - To match a sample expressly approved as a standard for the purpose.		
220	APPROVAL OF PRODUCTS - Submissions, samples, inspections and tests: Undertake or arrange to suit the Works programme.		
1/22		To Collection	

		£	p
	- Approval: Relates to a sample of the product and not to the product as used in the Works. Do not confirm orders or use the product until approval of the sample has been obtained. - Complying sample: Retain in good, clean condition on site. Remove when no longer required.		
230	APPROVAL OF EXECUTION - Submissions, samples, inspections and tests: Undertake or arrange to suit the Works programme. - Approval: Relates to the stated characteristics of the sample. (If approval of the finished work as a whole is required this is specified separately). Do not conceal, or proceed with affected work until compliance with requirements is confirmed. - Complying sample: Retain in good, clean condition on site. Remove when no longer required.		
	ACCURACY/ SETTING OUT GENERALLY		
320	SETTING OUT - General: Submit details of methods and equipment to be used in setting out the Works. - Levels and dimensions: Check and record the results on a copy of drawings. Notify discrepancies immediately and confirm in writing and obtain instructions before proceeding. - Inform: When complete and before commencing construction.		
330	APPEARANCE AND FIT - Tolerances and dimensions: If likely to be critical to execution or difficult to achieve, as early as possible either: - Submit proposals; or - Arrange for inspection of appearance of relevant aspects of partially finished work. - General tolerances (maximum): To BS 5606, tables 1 and 2.		
340	CRITICAL DIMENSIONS - Critical dimensions: Set out and construct the Works to ensure compliance with the tolerances stated.		
342	CRITICAL DIMENSIONS: All dimensions in the connections to the existing building are critical. Set out and construct the works to ensure levels, finishes, layouts and patterns match up. Report any difficulties to the Architect immediately they become apparent.		
350	LEVELS OF STRUCTURAL FLOORS - Maximum tolerances for designed levels to be: - Floors to be self-finished, and floors to receive sheet or tile finishes directly bedded in adhesive: +/- 10 mm. - Floors to receive dry board/ panel construction with little or no tolerance on thickness: +/- 10 mm. - Floors to receive mastic asphalt flooring/ underlays directly: +/- 10 mm. - Floors to receive mastic asphalt flooring/ underlays laid on mastic asphalt levelling coat(s): +/- 15 mm.		
1/23		To Collection	

		£	p
- Floors to receive fully bonded screeds/ toppings/ beds: +/- 15 mm. - Floors to receive unbonded or floating screeds/ beds: +/- 20 mm.			
360	RECORD DRAWINGS - Site setting out drawing: Record details of all grid lines, setting-out stations, benchmarks and profiles. Retain on site throughout the contract and hand over on completion.		
SERVICES GENERALLY			
410	SERVICES REGULATIONS - New or existing services: Comply with the Byelaws or Regulations of the relevant Statutory Authority.		
420	WATER REGULATIONS/ BYELAWS NOTIFICATION - Requirements: Notify Water Undertaker of any work carried out to or which affects new or existing services and submit any required plans, diagrams and details. - Consent: Allow adequate time to receive Undertaker's consent before starting work. Inform immediately if consent is withheld or is granted subject to significant conditions.		
430	WATER REGULATIONS/ BYELAWS CONTRACTOR'S CERTIFICATE - On completion of the work: Submit (copy where also required to the Water Undertaker) a certificate including: - The address of the premises. - A brief description of the new installation and/ or work carried out to an existing installation. - The Contractor's name and address. - A statement that the installation complies with the relevant Water Regulations or Byelaws. - The name and signature of the individual responsible for checking compliance. - The date on which the installation was checked.		
440	GAS INSTALLATION CERTIFICATE - Before the completion date stated in the contract: Submit a certificate stating: - The address of the premises. - A brief description of the new installation and/ or work carried out to an existing installation. - Any special recommendations or instructions for the safe use and operation of gas appliances and flues. - The Contractor's name and address. - A statement that the installation complies with the Gas Safety (Installation and Use) Regulations. - The name and signature of the CORGI registered individual responsible for checking compliance. - The date on which the installation was checked.		
1/24		To Collection	

		£	p
445	SERVICE RUNS - General: Provide adequate space and support for services, including unobstructed routes and fixings. - Ducts, chases and holes: Form during construction rather than cut. - Coordination with other works: Submit details of locations, types/ methods of fixing of services to fabric and identification of runs and fittings.		
450	MECHANICAL AND ELECTRICAL SERVICES - Final tests and commissioning: Carry out so that services are in full working order at completion of the Works.		
	SUPERVISION/ INSPECTION/ DEFECTIVE WORK		
510	SUPERVISION - General: In addition to the constant management and supervision of the Works provided by the Contractor's person in charge, all significant types of work must be under the close control of competent trade supervisors to ensure maintenance of satisfactory quality and progress. - Replacement: Give maximum possible notice before changing person in charge or site agent.		
520	COORDINATION OF ENGINEERING SERVICES - Suitability: Site organisation staff must include one or more persons with appropriate knowledge and experience of mechanical and electrical engineering services to ensure compatibility between engineering and the Works generally. - Evidence: Submit when requested CVs or other documentary evidence relating to the staff concerned.		
525	ACCESS - Extent: Provide at all reasonable times access to the Works and to other places of the Contractor or subcontractors where work is being prepared for the Contract. - Designate: Contract Administrator.		
530	OVERTIME WORKING - Notice: Prior to overtime being worked, submit details of times, types and locations of work to be done. - Minimum period of notice: two days. - Concealed work: If executed during overtime for which notice has not been given, it may be required to be opened up for inspection and reinstated at the Contractor's expense.		
540	DEFECTS IN EXISTING WORK - Undocumented defects: When discovered, immediately give notice. Do not proceed with affected related work until response has been received. - Documented remedial work: Do not execute work which may: - Hinder access to defective products or work; or - Be rendered abortive by remedial work.		
1/25		To Collection	

		£	p
550	ACCESS FOR INSPECTION - Removal: Before removing scaffolding or other facilities for access, give notice of not less than two days.		
560	TESTS AND INSPECTIONS - Timing: Agree and record dates and times of tests and inspections to enable all affected parties to be represented. - Confirmation: One working day prior to each such test or inspection. If sample or test is not ready, agree a new date and time. - Records: Submit a copy of test certificates and retain copies on site.		
570	AIR PERMEABILITY - Method: Pressure test in accordance with the ATTMA publication: TS 1: Measuring Air Permeability of Building Envelopes. - Requirement: Air leakage not to exceed 10m³/h/m² at an internal to external pressure difference of 50 Pascals - Copy: To be lodged in Health & safety File. Bear all costs incurred during construction and in preparation for air test. Allow for the cost of employing a specialist to carry out all necessary air tests.		
580	CONTINUITY OF THERMAL INSULATION - Method: Infra-red thermography inspection to BRE Report 176. - Compliance: Submit inspection report.		
610	PROPOSALS FOR RECTIFICATION OF DEFECTIVE PRODUCTS/ EXECUTIONS - Proposals: Immediately any execution or product is known, or appears, to be not in accordance with the Contract, submit proposals for opening up, inspection, testing, making good, adjustment of the Contract Sum, or removal and re-execution. - Acceptability: Such proposals may be unacceptable and contrary instructions may be issued.		
620	MEASURES TO ESTABLISH ACCEPTABILITY - General: Wherever inspection or testing shows that the work, materials or goods are not in accordance with the contract and measures (e.g. testing, opening up, experimental making good) are taken to help in establishing whether or not the work is acceptable, such measures: - Will be at the expense of the Contractor. - Will not be considered as grounds for extension of time.		
630	QUALITY CONTROL - Procedures: Establish and maintain to ensure that the Works, including the work of subcontractors, comply with specified requirements. - Records: Maintain full records, keep copies on site for inspection, and submit copies on request. - Content of records: - Identification of the element, item, batch or lot including location in the Works. - Nature and dates of inspections, tests and approvals. - Nature and extent of nonconforming work found. - Details of corrective action.		
1/26		To Collection	

(

		£	p
A34	SECURITY/SAFETY/PROTECTION		
	SECURITY, HEALTH AND SAFETY		
110	PRE-CONSTRUCTION HEALTH AND SAFETY INFORMATION PACK		
-	Location: Appended to this document, it includes but is not restricted to the following sections:		
-	Description of project: Sections A10 and A11.		
-	Client's consideration and management requirements: Sections A12, A13 and A36.		
-	Environmental restrictions and on-site risks: Section A12, A35 and A34.		
-	Significant design and construction hazards: Section A34.		
-	The Health and Safety File: Section A37.		
150	SECURITY		
-	Protection: Safeguard the site, the Works, products, materials, and any existing buildings affected by the Works from damage and theft.		
-	Access: Take all reasonable precautions to prevent unauthorized access to the site, the Works and adjoining property.		
160	STABILITY		
-	Responsibility: Maintain the stability and structural integrity of the Works during the Contract.		
-	Design loads: Obtain details, support as necessary and prevent overloading.		
170	OCCUPIED PREMISES		
-	Extent: Existing buildings will be occupied during the Contract.		
-	Works: Carry out without undue inconvenience and nuisance and without danger to occupants and users.		
-	Overtime: If compliance with this clause requires certain operations to be carried out during overtime, and such overtime is not required for any other reason, the extra cost will be paid to the Contractor, provided that such overtime is authorized in advance.		
210	EMPLOYER'S REPRESENTATIVES SITE VISITS		
-	Safety: Submit details in advance, to the Employer or the person identified in clause A10/140, of safety provisions and procedures (including those relating to materials, which may be deleterious), which will require their compliance when visiting the site.		
-	Protective clothing and/ or equipment: Provide and maintain on site for the Employer and the person stated in clause A10/140 and other visitors to the site.		
	PROTECT AGAINST THE FOLLOWING		
330	NOISE CONTROL		
-	Standard: Comply generally with the recommendations of BS 5228-1, clause 9.3 to minimize noise levels during the execution of the Works.		

1/28
To Collection

		£	p
-	Equipment: Fit compressors, percussion tools and vehicles with effective silencers of a type recommended by manufacturers of the compressors, tools or vehicles.		
-	Restrictions: Do not use:		
-	- Pneumatic drills and other noisy appliances without consent.		
-	- Radios or other audio equipment or permit employees to use in ways or at times that may cause nuisance.		
340	POLLUTION		
-	Prevention: Protect the site, the Works and the general environment including streams and waterways against pollution.		
-	Contamination: If pollution occurs inform immediately, including to the appropriate Authorities and provide relevant information.		
350	PESTICIDES		
-	Use: Not permitted.		
360	NUISANCE		
-	Duty: Prevent nuisance from smoke, dust, rubbish, vermin and other causes.		
-	Surface water: Prevent hazardous build-up on site, in excavations and to surrounding areas and roads.		
370	ASBESTOS CONTAINING MATERIALS		
-	Duty: Report immediately any suspected materials discovered during execution of the Works.		
-	- Do not disturb.		
-	- Agree methods for safe removal or encapsulation.		
380	FIRE PREVENTION		
-	Duty: Prevent personal injury or death, and damage to the Works or other property from fire.		
-	Standard: Comply with Joint Code of Practice 'Fire Prevention on Construction Sites', published by the Construction Confederation and The Fire Protection Association (The 'Joint Fire Code').		
390	SMOKING ON SITE		
-	Smoking on site: Not permitted.		
400	BURNING ON SITE		
-	Burning on site: Not permitted.		
405	WATER: Prevent all damage from rain, storm and surface water.		
410	MOISTURE		
-	Wetness or dampness: Prevent, where this may cause damage to the Works.		
-	Drying out: Control humidity and the application of heat to prevent:		
-	- Blistering and failure of adhesion.		
-	- Damage due to trapped moisture.		
-	- Excessive movement.		
420	INFECTED TIMBER		
-	Removal: Where instructed to remove timber affected by fungal/ insect attack from the building, minimize the risk of infecting other parts of the building.		
1/29		To Collection	

		£	p
430	WASTE - Includes: Rubbish, debris, spoil, containers and surplus material. - Minimize: Keep the site and Works clean and tidy. - Remove: Frequently and dispose off site in a safe and competent manner: - Non-hazardous material: In a manner approved by the Waste Regulation Authority. - Hazardous material: As directed by the Waste Regulation Authority and in accordance with relevant regulations. - Voids and cavities in the construction: Remove rubbish, dirt and residues before closing in. - Waste transfer documentation: Retain on site.		
440	ELECTROMAGNETIC INTERFERENCE - Duty: Prevent excessive electromagnetic disturbance to apparatus outside the site.		
450	LASER EQUIPMENT - Construction laser equipment: Install, use and store in accordance with BS EN 60825-1 and the manufacturer's instructions. - Class 1 or Class 2 laser equipment: Ensure laser beam is not set at eye level and is terminated at the end of its useful path. - Class 3A and Class 3B laser equipment: Do not use without approval and subject to submission of a method statement on its safe use.		
	PROTECT THE FOLLOWING		
510	EXISTING SERVICES - Confirmation: Notify all service authorities, statutory undertakers and/ or adjacent owners of proposed works not less than one week before commencing site operations. - Identification: Before starting work, check and mark positions of mains/ services. Where positions are not shown on drawings obtain relevant details from service authorities, statutory undertakers or other owners. - Work adjacent to services: - Comply with service authority's/ statutory undertaker's recommendations. - Adequately protect, and prevent damage to services: Do not interfere with their operation without consent of service authorities/ statutory undertakers or other owners. - Identifying services: - Below ground: Use signboards, giving type and depth; - Overhead: Use headroom markers. - Damage to services: If any results from execution of the Works: - Immediately give notice and notify appropriate service authority/ statutory undertaker. - Make arrangements for the work to be made good without delay to the satisfaction of service authority/ statutory undertaker or other owner as appropriate. - Any measures taken to deal with an emergency will not affect the extent of the Contractor's liability. - Marker tapes or protective covers: Replace, if disturbed during site operations to service authority's/ statutory undertakers recommendations.		
		1/30	To Collection

		£	p
520	ROADS AND FOOTPATHS		
-	Duty: Maintain roads and footpaths within and adjacent to the site and keep clear of mud and debris.		
-	Damage caused by site traffic or otherwise consequent upon the Works: Make good to the satisfaction of the Employer, Local Authority or other owner.		
530	EXISTING TOPSOIL/ SUBSOIL		
-	Duty: Prevent over compaction of existing topsoil and subsoil in those areas which may be damaged by construction traffic, parking of vehicles, temporary site accommodation or storage of materials and which will require reinstatement prior to completion of the Works.		
-	Protection: Before starting work submit proposals for protective measures.		
540	RETAINED TREES/ SHRUBS/ GRASSED AREAS		
-	Protection: Preserve and prevent damage, except those not required.		
-	Replacement: Mature trees and shrubs if uprooted, destroyed, or damaged beyond reasonable chance of survival in their original shape, as a consequence of the Contractor's negligence, must be replaced with those of a similar type and age at the Contractor's expense.		
550	RETAINED TREES		
-	Protected area: Unless agreed otherwise do not:		
-	- Dump spoil or rubbish, excavate or disturb topsoil, park vehicles or plant, store materials or place temporary accommodation within an area which is the larger of the branch spread of the tree or an area with a radius of half the tree's height, measured from the trunk.		
-	- Sever roots exceeding 25 mm in diameter. If unintentionally severed give notice and seek advice.		
-	- Change level of ground within an area 3 m beyond branch spread.		
560	EXISTING FEATURES		
-	Protection: Prevent damage to existing buildings, fences, gates, walls, roads, paved areas and other site features, which are to remain in position during execution of the Works.		
570	EXISTING WORK		
-	Protection: Prevent damage to existing property undergoing alteration or extension.		
-	Removal: Minimum amount necessary.		
-	Replacement work: To match existing.		
580	BUILDING INTERIORS: Protect all building interiors in new and existing buildings exposed to the weather during the course of alteration work with temporary enclosures, coverings or membranes of sufficient size and durability to permit execution of the work and which will remain weathertight in all weather for the duration of the works.		
600	EXISTING FURNITURE, FITTINGS AND EQUIPMENT		
-	Protection: Prevent damage or move as necessary to enable the Works to be executed. Reinstall in original positions.		
1/31		To Collection	

		£	p
620	ADJOINING PROPERTY		
-	Permission: Obtain as necessary from owners if requiring to erect scaffolding on or otherwise use adjoining property.		
625	ADJOINING PROPERTY		
-	Precautions:		
-	- Prevent trespass of workpeople and take precautions to prevent damage to adjoining property.		
-	- Pay all charges.		
-	- Remove and make good on completion or when directed.		
-	Damage: Bear cost of repairing damage arising from execution of the Works.		
630	EXISTING STRUCTURES		
-	Duty: Check proposed methods of work for effects on adjacent structures inside and outside the site boundary.		
-	Supports: During execution of the Works:		
-	- Provide and maintain all incidental shoring, strutting, needling and other supports as may be necessary to preserve stability of existing structures on the site or adjoining, that may be endangered or affected by the Works.		
-	- Do not remove until new work is strong enough to support existing structure.		
-	- Prevent overstressing of completed work when removing supports.		
-	Adjacent structures: Monitor and immediately report excessive movement.		
-	Standard: Comply with BS 5975.		

		£	p
A35	SPECIFIC LIMITATIONS ON METHOD/SEQUENCE/TIMING		
140	ACCESS TO THE SITE: See section A12.		
150	USE OF THE SITE: See section A12.		
155	SCAFFOLDING: Ensure that standing scaffolding is erected early enough and/or dismantled late enough to suit the programmes of all subcontractors.		
170	USE OR DISPOSAL OF MATERIALS: Remove all surplus materials from site.		
190	WORKING HOURS: Normal working hours unless otherwise specified.		
210	COMPLETION IN SECTIONS OR PARTS:		
-	Where the Employer is to take possession of any Section or part of the Works and such Section or part will, after its practical completion, depend for its adequate functioning on work located elsewhere on the site, complete such other work in time to permit such possession to take place.		
-	During execution of the remainder of the Works ensure that completed Sections or parts of the Works have continuous and adequate provision of services, fire precautions, means of escape and safe access.		
1/33		To Collection	

		£	p
A36	FACILITIES/TEMPORARY WORK/SERVICES		
	ACCOMMODATION		
210	ROOM FOR MEETINGS: Provide suitable temporary accommodation for site meetings, adequately heated and lit, with table and chairs for 8 people. The room may be part of the Contractor's own site offices. Space within the Contractor's site offices must also be provided for the client's Clerk of Works.		
261	SANITARY ACCOMMODATION: Provide and maintain in a clean condition sanitary accommodation for the Employer's representatives, either separate or shared with the Contractor's supervisory staff.		
	TEMPORARY WORKS		
320	TEMPORARY FENCE(S): Provide Heras fencing to temporary access road and compound. All as indicated on the drawings.		
340	NAME BOARD: Obtain approval for and provide a suitable temporary name board displaying: - Title of project. - Name of Employer. - Names of Consultants as follows: Architect: ASTAM - If the Contractor wishes, names of Contractor and Subcontractors.		
	SERVICES AND FACILITIES		
410	LIGHTING: During finishing work and inspection provide temporary lighting, the intensity and direction of which closely resembles that provided by the permanent installation.		
422	LIGHTING AND POWER: Electricity supply from the employer's mains may be used for the works as follows: Provide an electric check meter for electricity supply. Agree readings with CA before use and on completion. Allow for and pay all charges calculated to the Employer.		
432	WATER: Provide a water check meter. Agree readings before use and on completion with Contract Administrator and allow for and pay all charges calculated to the Employer. Provide all necessary plumbing work and fittings. Maintain in good order free of leaks and drips.		
440	MOBILE TELEPHONES - Direct communication: As soon as practicable after the Date of Possession provide the Contractor's person in charge with a mobile telephone.		
470	E-MAIL FACILITY		

(

		£	p
	- Product details: Copies of manufacturers' current literature including COSHH dated data sheets and recommendations for cleaning, repair and maintenance. - Environmental and trafficking conditions: Details of those that may result in damage/disfigurement. - Fixtures and fittings: Schedules including manufacturer and product reference. - Guarantees, warranties and maintenance agreements: Obtain from suppliers, subcontractors and manufacturers. - Test certificates and reports required in the specification. - Copies of CA drawings amended by the Contractor to show 'as built' details which have been previously agreed with the CA.		
150	CONTENT OF THE BUILDING MANUAL PART 3: BUILDING SERVICES		
	- Description of the systems: - Ensure that the Employer's staff fully understand the scope and facilities provided. - List maximum loads, services capacity and restrictions. - Include limitations of any user performance. - Operation: - A description of the mode of operation of all systems. - Starting up, operating and shutting down instructions for all equipment and systems. - Control sequences for all systems. - Procedures for seasonal changeovers. - Procedures for fault finding. - Diagrammatic drawings: For each system, indicating principal items of plant, equipment, valves, etc. - Record drawings: Photo-reduced and with an index. Size: A3. - Identification of services: A legend for colour-coded services. - Schedules (system by system) of plant, equipment, valves, etc: Include locations, duties, performance figures and unique numbers cross-referenced to the record drawings, diagrammatic drawings and schedules. - Product details: - Name, address and telephone number of the manufacturer of every item of plant and equipment together with catalogue list numbers. - Manufacturers' technical literature for plant and equipment. Include detailed drawings, electrical circuit details and operating and maintenance instructions. - Instructions for dismantling and removing equipment and systems. - Test certificates (including but not limited to electrical circuit tests, corrosion tests, type tests, works tests, start and commissioning tests): For the plant, equipment, valves, etc., used in the installations. - Guarantees, warranties and maintenance agreements: Obtain from subcontractors and manufacturers. - Equipment settings: Schedules of fixed and variable equipment settings established during commissioning. - Preventive maintenance: Recommendations for frequency and procedures to be adopted to ensure the most efficient operation of the systems. - Lubrication: Schedules for lubricated items. - Consumables: A list of normal consumable items. - Spares: A list of recommended spares to be kept in stock by the Employer, being those items subject to wear or deterioration and which may involve the		
	1/37 To Collection		

		£	p
	Employer in extended deliveries when replacements are required at some future date. - Emergencies: Procedures, including telephone numbers for emergency services. - Copies of Engineer's drawings amended to show as built installations by the Contractor and/or sub-contractor.		
150	CONTENT OF THE BUILDING MANUAL PART 4: THE HEALTH AND SAFETY FILE - Preparation: The Health and safety File is to be prepared and produced by the Principal Contractor. - Content: obtain and provide the following, including all relevant details not included in other parts of the manual, including: - residual hazards and how they have been dealt with - hazardous materials used - information regarding the removal or dismantling of installed plant and equipment - health and safety information about equipment provided for cleaning or maintaining the structure; - the nature, location and markings of significant services, - information and as-built drawings of the structure, its plant and equipment. - Timescale for completion: 2 weeks prior to practical completion. - Submit to: CDM Co-ordinator.		
160	PRESENTATION OF BUILDING MANUAL - Format: A4 size, plastics covered, loose leaf, four-ring binders with hard covers, each indexed, divided and appropriately cover titled. - Selected drawings needed to illustrate or locate items mentioned in the Manual: Where larger than A4, to be folded and accommodated in the binders so that they may be unfolded without being detached from the rings. - As-built drawings: The main sets may form annexes to the Manual.		
220	TRAINING - Objective: Before practical completion, explain and demonstrate to Employer's maintenance staff the purpose, function and operation of the installations including all items and procedures listed in the Building Manual. - Operating time: Include a minimum of 2 days.		
230	SPARE PARTS - Details: At least two weeks before Practical Completion submit to the CA schedule of spare parts that the Contractor recommends should be obtained and kept in stock by the Employer for maintenance of the services installations. - Include in the priced schedule for: - Manufacturer's current prices, including packaging and delivery to site. - Checking receipt, marking and numbering in accordance with the schedule of spare parts. - Referencing to the plant and equipment list in Part 3 of the Building Manual. - Painting, greasing, etc. and packing to prevent deterioration during storage. - Latest date for submission: 2 weeks before the completion date stated in the contract.		
1/38		To Collection	

		£	p
250	TOOLS		
-	General: Provide tools and portable indicating instruments for the operation and maintenance of all services plant and equipment together with suitable means of identifying, storing and securing.		
-	Quantity: Two complete sets.		
-	Time of submission: At completion.		

		£	p
A4	CONTRACTOR'S GENERAL COST ITEMS		
A40	CONTRACTOR'S GENERAL COST ITEMS: MANAGEMENT AND STAFF		
110	MANAGEMENT AND STAFF		
A41	CONTRACTOR'S GENERAL COST ITEMS: SITE ACCOMMODATION For details of site accommodation required or made/not made available by the Employer see section A36.		
110	SITE ACCOMMODATION		
A42	CONTRACTOR'S GENERAL COST ITEMS: SERVICES AND FACILITIES For details of services and facilities required or made/not made available by the Employer see section A36.		
110	POWER		
120	LIGHTING		
130	FUELS (excluding fuels for testing and commissioning)		
140	WATER		
150	TELEPHONE AND ADMINISTRATION		
160	SAFETY, HEALTH AND WELFARE (see A34/170)		
170	STORAGE OF MATERIALS (see A33/150)		
180	RUBBISH DISPOSAL (see A34/290)		
190	CLEANING (see A33/610)		
200	DRYING OUT (see A34/280)		
210	PROTECTION OF WORK IN ALL SECTIONS (see A34/410 et seq)		
220	SECURITY (see A34/130)		
230	MAINTAIN PUBLIC AND PRIVATE ROADS (see A34/430)		
240	SMALL PLANT AND TOOLS		
301	GENERAL ATTENDANCE ON NAMED SUBCONTRACTORS		

1/40
To Collection

		£	p
310	ADDITIONAL SERVICES AND FACILITIES ITEMS: Insert below further cost items as may be required, with fixed charges and time related charges as appropriate:		
A43	CONTRACTOR'S GENERAL COST ITEMS: MECHANICAL PLANT		
110	CRANES		
120	HOISTS		
130	PERSONNEL TRANSPORT		
140	TRANSPORT		
150	EARTHMOVING PLANT		
160	CONCRETE PLANT		
170	PILING PLANT		
180	PAVING AND SURFACING PLANT		
250	ADDITIONAL MECHANICAL PLANT ITEMS: Insert below further cost items as may be required, with fixed charges and time related charges as required:		
A44	CONTRACTOR'S GENERAL COST ITEMS: TEMPORARY WORKS For details of temporary works required or made/not made available by the Employer see section A36.		
110	TEMPORARY ROADS		
120	TEMPORARY WALKWAYS		
130	ACCESS SCAFFOLDING		
140	SUPPORT SCAFFOLDING AND PROPPING		
150	HOARDINGS, FANS, FENCING, ETC.		
160	HARDSTANDING		
1/41		To Collection	

170	TRAFFIC REGULATIONS	£	p
250	ADDITIONAL TEMPORARY WORKS ITEMS: Insert below further cost items as may be required, with fixed charges and time related charges as required:		
1/42		To Collection	

		£	p
A54	PROVISIONAL WORK/ITEMS		
310	Tea Point fittings		
-	Include the Provisional Sum of £2,000.00	2,000.00	
-	Description: Include for the supply of the tea point fittings.		
311	External gates to the storage area		
-	Include the Provisional Sum of £4,000.00	4,000.00	
-	Description: Include for the supply of the tea point fittings.		
312	Notice boards		
-	Include the Provisional Sum of £1,500.00	1,500.00	
-	Description: Include for the supply of the tea point fittings.		
590	CONTINGENCIES:		
	Include the Provisional Sum of £35,000.00	35,000.00	
A55	DAYWORKS (as defined in clause A32/452)		
110	LABOUR: Include Provisional Sums for:		
-	Prime cost of labour incurred before the Final Completion Date: The sum of £1,000.00	1,000.00	
	Add for percentage addition to cover incidental costs, overheads and profit: _____%		
120	MATERIALS AND GOODS: For prime cost incurred at any time during the Contract include the Provisional Sum of £500.00	500.00	
	Add for percentage addition to cover incidental costs, overheads and profit: _____%		
130	PLANT: Include Provisional Sums for:		
	Prime cost of plant incurred before the Final Completion Date: The sum of £500.00	500.00	
	Add for percentage addition to cover incidental costs, overheads and profit: _____%		

COLLECTION		£	p
PAGE	1/1		
PAGE	1/2		
PAGE	1/3		
PAGE	1/4		
PAGE	1/5		
PAGE	1/6		
PAGE	1/7		
PAGE	1/8		
PAGE	1/9		
PAGE	1/10		
PAGE	1/11		
PAGE	1/12		
PAGE	1/13		
PAGE	1/14		
PAGE	1/15		
PAGE	1/16		
PAGE	1/17		
PAGE	1/18		
PAGE	1/19		
PAGE	1/20		
PAGE	1/21		
PAGE	1/22		
PAGE	1/23		
PAGE	1/24		
PAGE	1/25		
PAGE	1/26		
PAGE	1/27		
PAGE	1/28		
9947	1/44	To General Summary	

[illegible]

SECTION NO 3 – ARCHITECTS DRAWINGS AND SPECIFICATION

1 Drawings

1.1 Church Architectural Drawing Nos 10, 11, 13, 14, 15, 16, 17, 18, 19, 20, 22, 23 and 24 and the Door and Sanitaryware Schedules are included hereinafter

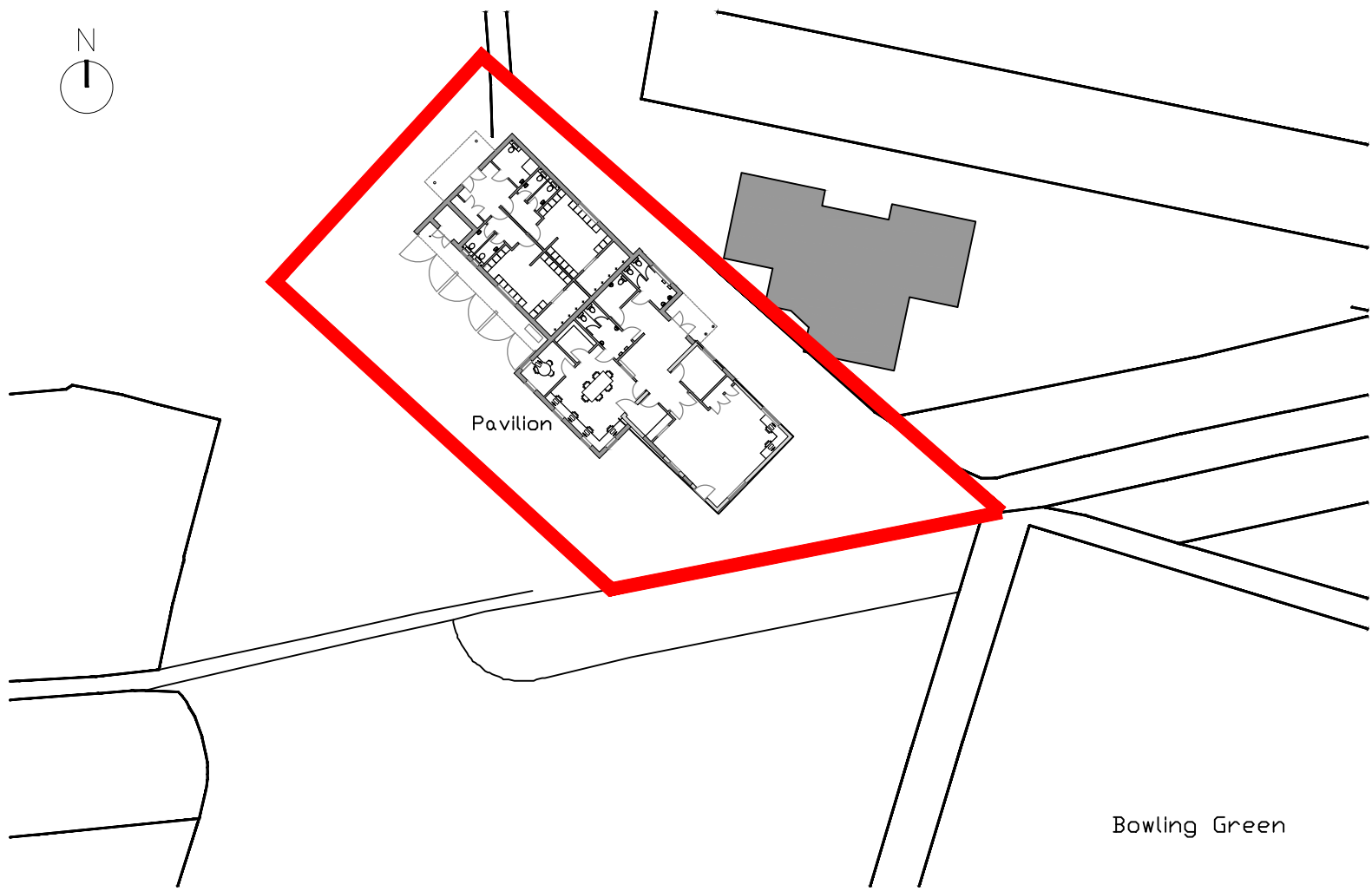
1.2 A revision to Drawing Nos 14 and 15 is required for the addition of 2Nr floor drains as included hereinafter

2 Specification

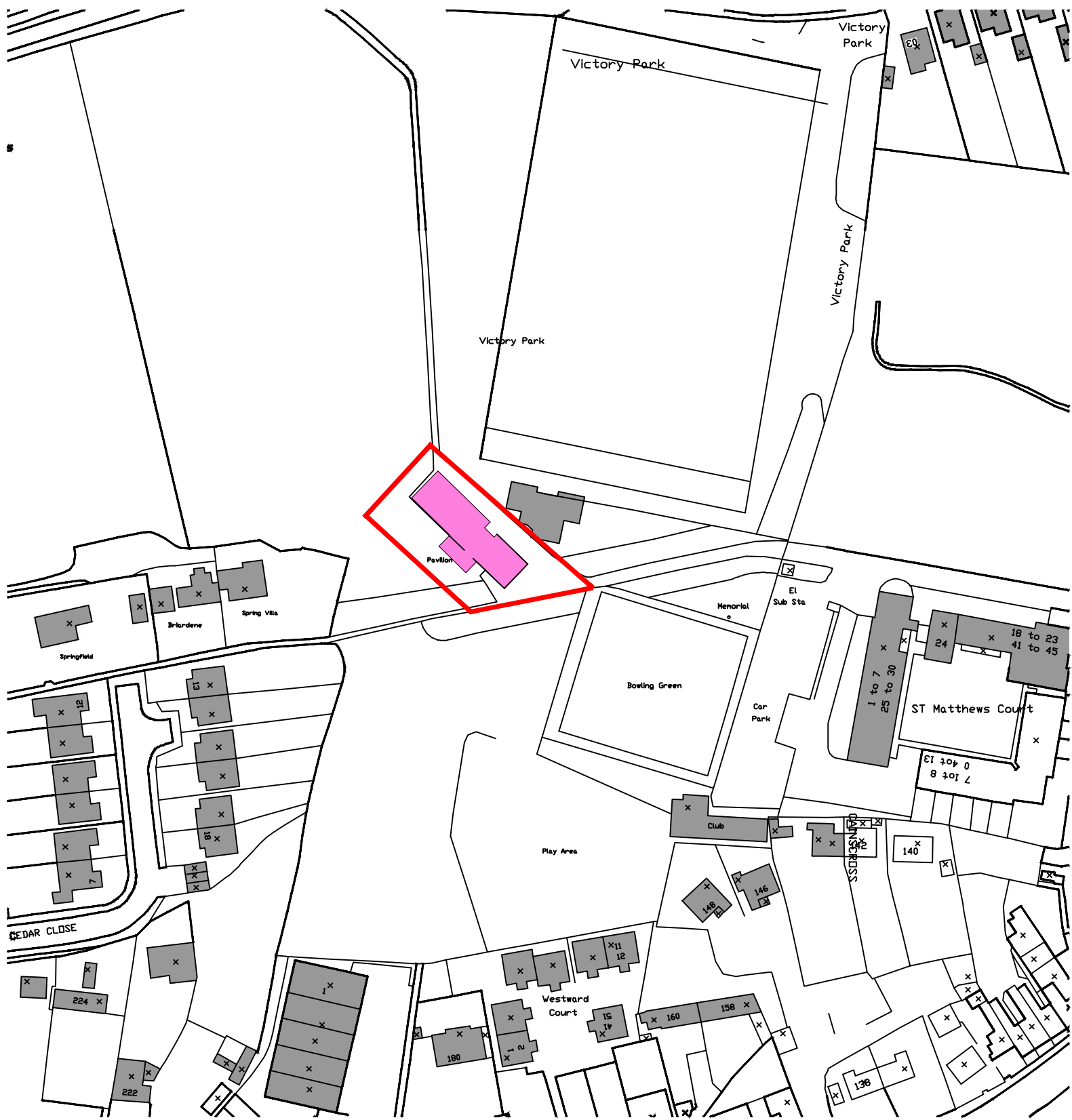
2.1 Church Architectural NBS Specification dated 14 February 2017 is included hereinafter

2.2 Brian Gay Tender Addendum in regard to the above mentioned NBS Specification is included hereinafter

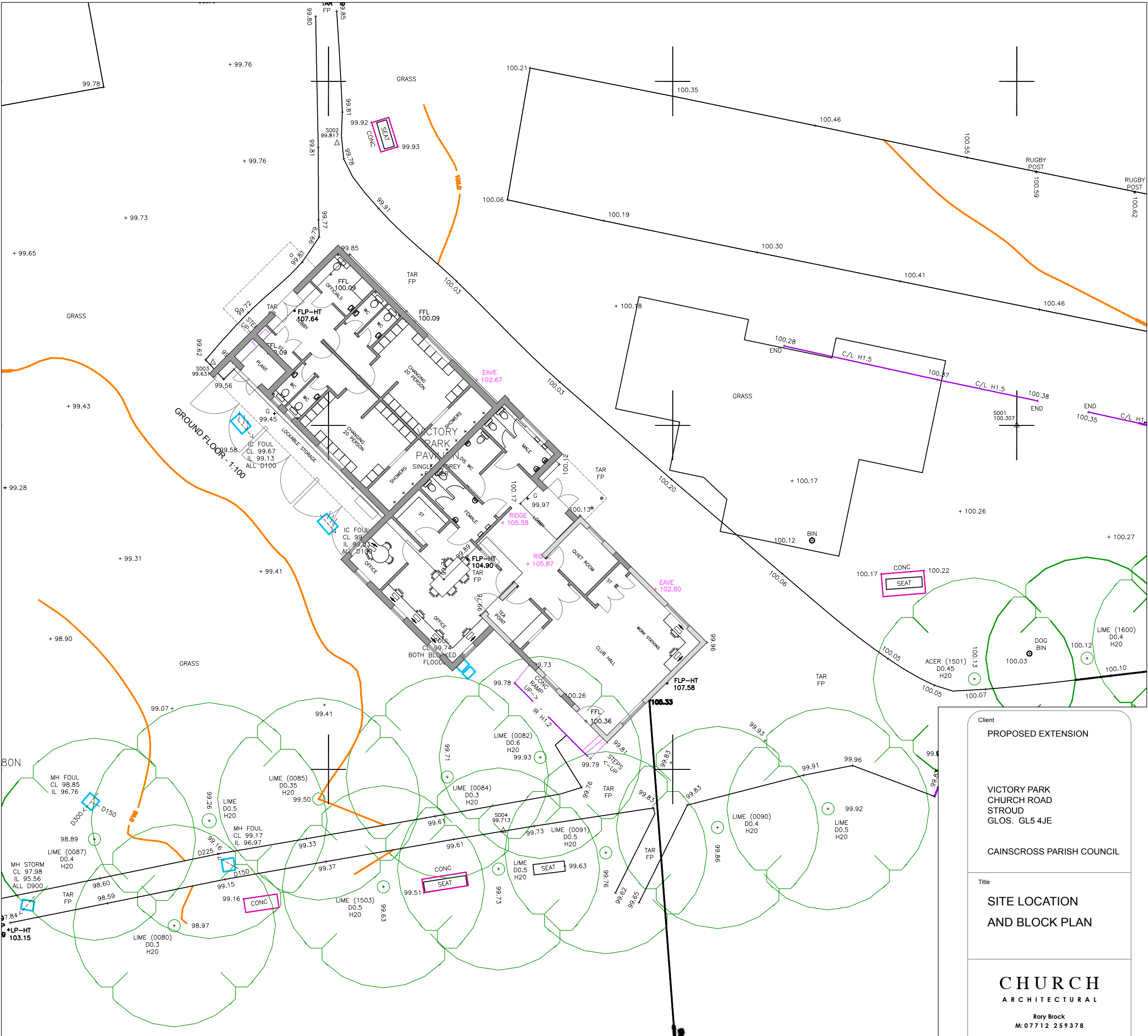
2.3 The Asbestos Refurbishment and Demolition Survey + Register is included in the Appendices hereinafter.



SITE PLAN 1:500



SITE LOCATION PLAN 1:1250



TOPOGRAHICAL PLAN 1:200

Client

PROPOSED EXTENSION

VICTORY PARK
CHURCH ROAD
STROUD
GLOS. GL5 4JE

CAINSCROSS PARISH COUNCIL

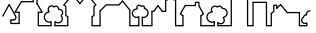
Title

SITE LOCATION
AND BLOCK PLAN

CHURCH
ARCHITECTURAL

Rory Brock
M: 07712 259378

April Church
M: 07979 541397


The Cube, Bath Road, Stroud, GL5 4RJ
E-mail - oprilandray@icloud.com

Drawn

RWB

Scale

AS STATED @ A2

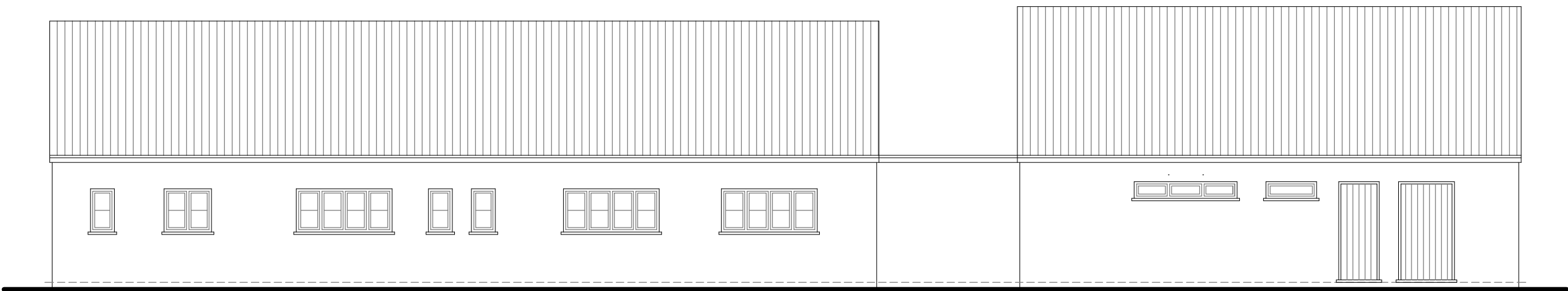
Date

APRIL 2015

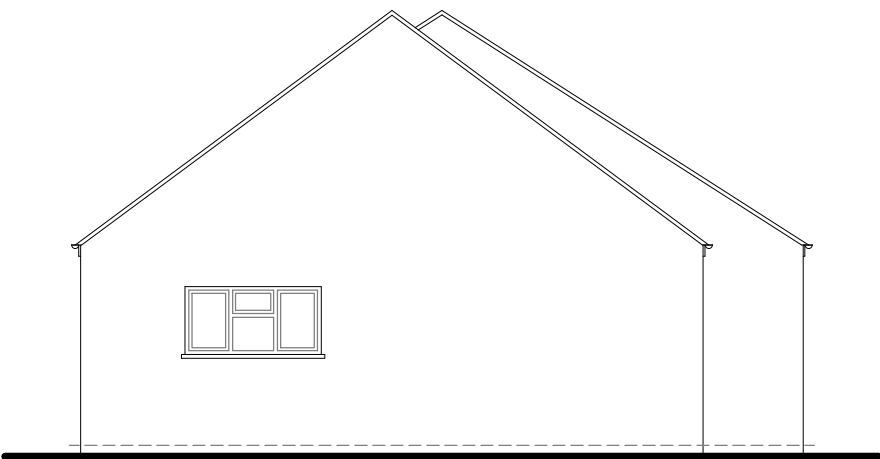
Drawing Number

10

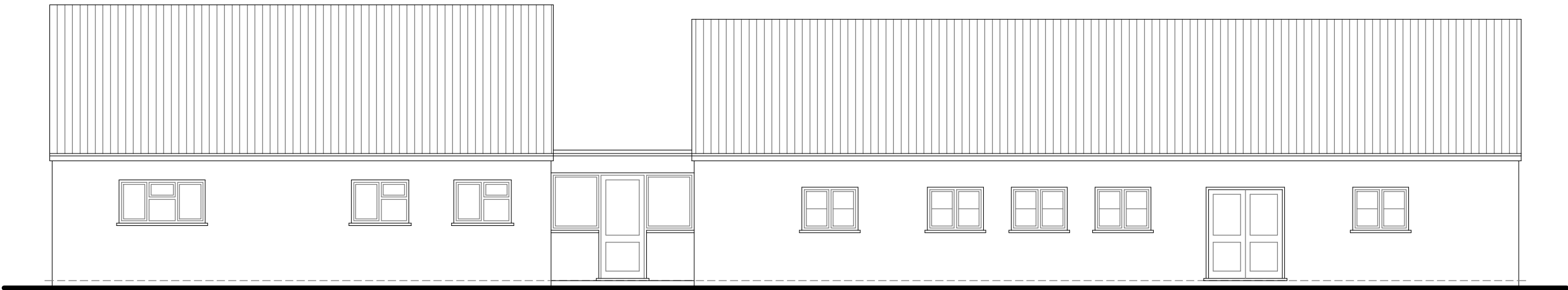
Revisions



SOUTH WEST (REAR) ELEVATION



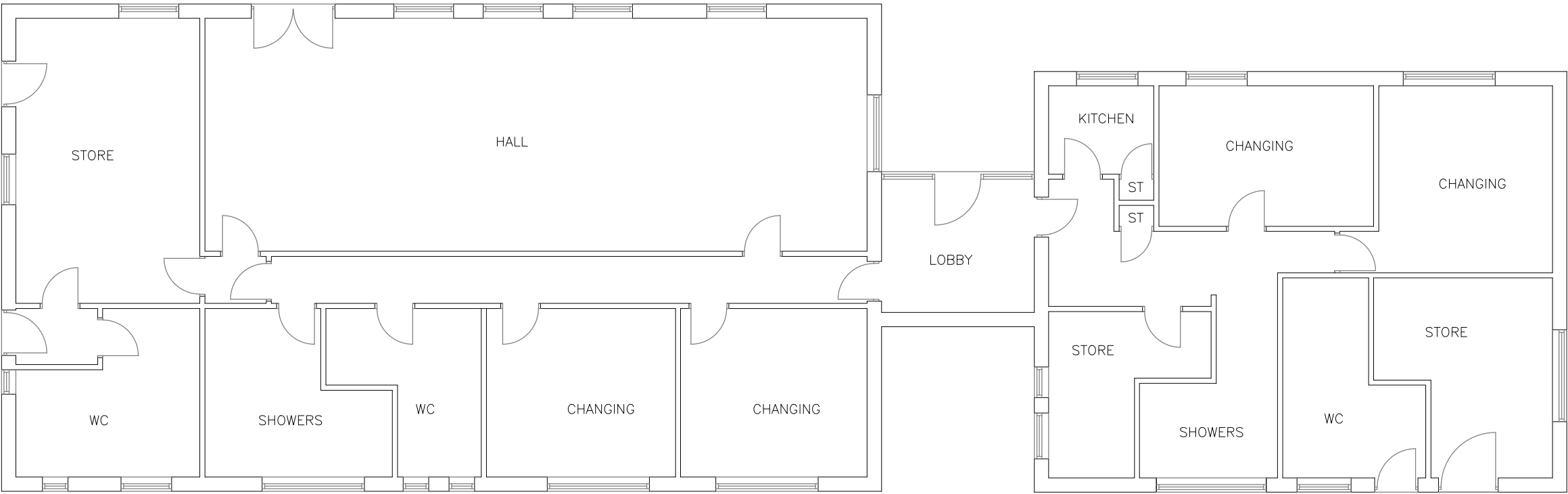
SOUTH EAST (SIDE) ELEVATION



NORTH EAST (FRONT) ELEVATION



NORTH WEST (SIDE) ELEVATION



GROUND FLOOR AS EXISTING - 1:100

Client

PROPOSED EXTENSION

VICTORY PARK
CHURCH ROAD
STROUD
GLOS. GL5 4JE

CAINSCROSS PARISH COUNCIL

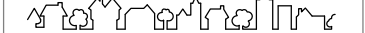
Title

PLAN & ELEVATIONS
AS EXISTING

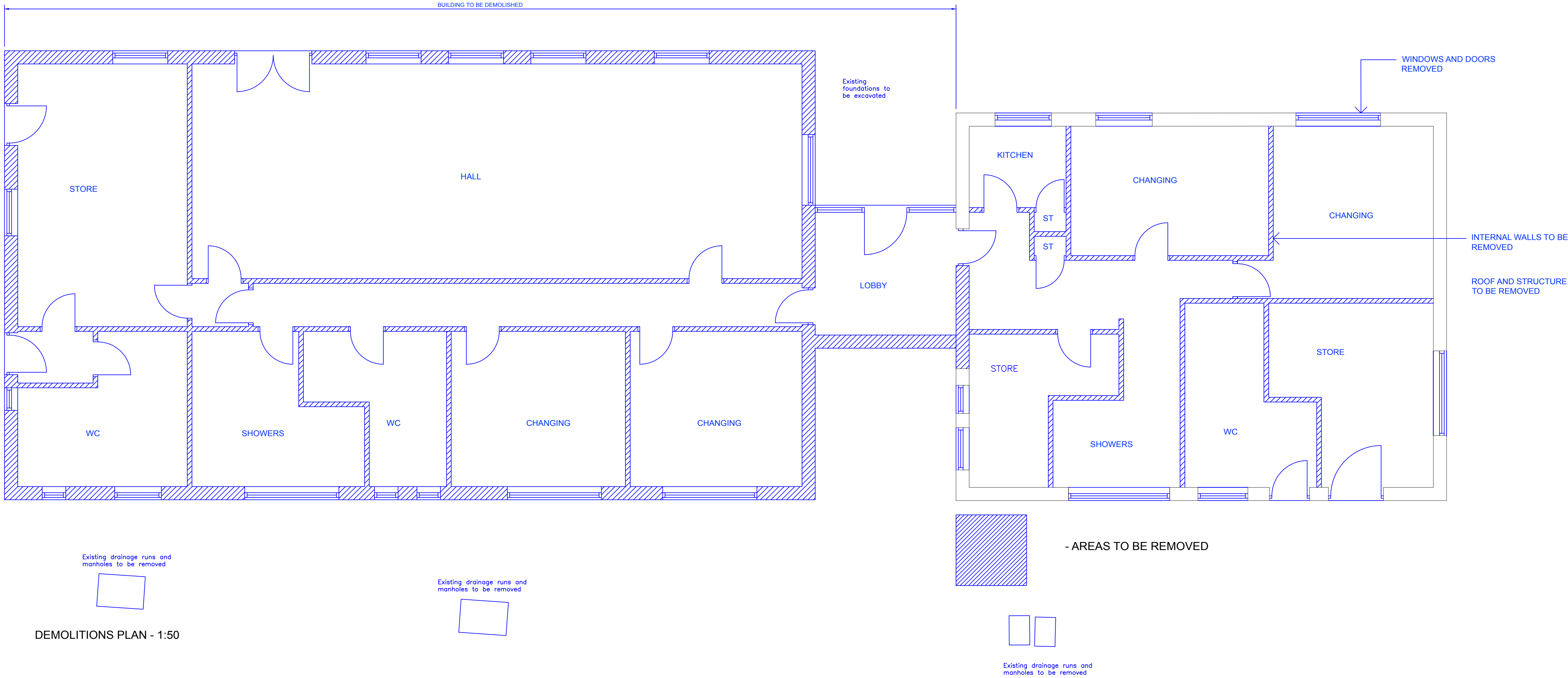
CHURCH
ARCHITECTURAL

Rory Brock
M: 07712 259378

April Church
M: 07979 541397


The Cube, Bath Road, Stroud, GL5 4BJ
E-mail - aprilandrory@icloud.com

Drawn	RWB
Scale	1:100 @ A2
Date	APRIL 2015
Drawing Number	11
Revisions	



DEMOLITIONS PLAN - 1:50

Client	
PROPOSED EXTENSION	
VICTORY PARK CHURCH ROAD STROUD GLOS. GL5 4JE	
CAINSCROSS PARISH COUNCIL	
Title	
DEMOLITIONS AS PROPOSED	
CHURCH ARCHITECTURAL	
Amy Brock M. 07712 259378	
April Church M. 07797 541397	
1 Caxgale, Chapel Fields, Bondwicks, Stroud, G16 8HR E-mail - april@churcharchitectural.co.uk	
Drawn	RWB
Scale	1:50 @ A1
Date	DEC 2015
Drawing Number	
13	
Revisions	



FOUNDATIONS
 Concrete trench fill foundations below all external cavity walls to be minimum 1.0m deep in grade C30 concrete to BS 8110 part 1 1975. Depth and size to suit site conditions and Local Authority approval.

CONCRETE SPECIFICATION AS NBS/E10/110.
 FOUL WATER DRAINAGE ABOVE GROUND AS NBS/R10
 FOUL WATER DRAINAGE BELOW GROUND AS NBS/R12
 STORM WATER DRAINAGE AS NBS/R11

FOUNDATION TRENCHES TO EXTERNAL
AND INTERNAL WALLS TO BE 600MM
WIDE

PROPOSED EXTENSION

VICTORY PARK
CHURCH ROAD
STROUD
GLOS. GL5 4JE

CAINSCROSS PARISH COUNCIL

FOUNDATION PLAN
AS PROPOSED

CHURCH
ARCHITECTURAL

Rory Brock

April Church

The Cube, Bath Road, Stroud, GL5 4B
E-mail - aprilandoroy@icloud.com

Argwn	RWB
Scale	1:50 @ A1
Date	DEC 2015

14

Revision

Roof pitch to be 17.5 degrees. Roof covering to be Single Ply membrane as NBS/J42. 150mm thick rigid insulation as NBS/J42 on 18mm WBP plywood fixed to trussed rafters (designed by sub-contractor) at nominal 600mm ccs as NBS/G20/350. Ceilings faced internally with 15mm Duraline board as NBS/K10/240. Provide nogginns as necessary to provide end support to plasterboard between trusses. Roof to achieve U values of 0.11 W/m²K.

STRAPS
Provide vertical restraint straps as NBS/G20/820 at 1.25m ccs. to fix wallplates to walls. To be Expanmet BAT standard straps 30 x 3mm x 1000mm long spiked to walls at 75mm ccs. Provide lateral restraint straps NBS/G20/830 at max. 1.2m ccs. to rafters/ceiling joists at gable ends. Straps to be fixed across 2 no. rafters/ceiling joists complete with solid blocking under each strap. Straps to be Expanmet BAT M305 HD 30 x 3mm x 1200mm long

For Mechanical ventilation, refer to Mechanical specification and drawings.

External cavity wall to be 340mm thick. External leaf brick (NBS/F10/110) and blockwork (NBS/F10/355A) 100mm cavity with 97mm thick Celotex CF5097 full fill insulation batts NBS/F30/150A against Masonry internal leaf system comprising 140mm thick blocks NBS/F10/355 & F10/355A. Cavity batts to be laid strictly in accordance with manufacturers instructions. Plaster finish walls to be faced internally with 11mm British Gypsum Thistle Durafinish undercoat and 2mm and British Gypsum Thistle Durafinish skim coat. Walls to achieve U value of 0.28 W/m²K.

All blocks above and below dpc level to be min. 7.3N/mm². Bricks to be type FL or FN quality. Mortar mix above dpc to be 1:1:6 cement:lime:sand, below dpc 1:1:4-5 cement:lime:sand.

All blocks above and below dpc level to be min. 7.3N/mm². Bricks to be type FL or FN quality. Mortar mix above dpc to be 1:1:6 cement:lime:sand, below dpc 1:1:4-5 cement:lime:sand.

Windows and doors to be A rated UPVC to match existing. All window and door opening lights to be fitted with proprietary draught proofing. Glazing to be double glazed sealed units fitted with 6mm toughened glass to BS 6206 1981 to all glazing within 800mm of FFL. Double glazing units to provide 16mm air gap filled with argon and be fitted with Pilkington Low E glass with a value of $en=0.05$. NBS/L10/330A & NBS/L20/280A. Windows to achieve a U-value of 1.6 W/m²K and glazed doors to achieve a U value of 1.8 W/m²K.

LINTELS - STEEL as NBS/F30/755 , CONCRETE as NBS/F30/735, SHUTTER LINTELS as NBS/L200/610A. Steel Lintels in external walls to be IG Lintels type L1/S 100 WML. Lintels to internal blockwork walls to be Naylor Limited 125x100mm reinforced pre-stressed pre-cast concrete fair faced linteils. All linteils to be fitted in accordance with manufacturers instructions.

CAVITY TRAYS as NBS/F30/370A, F30/370B & F30/385A
Cavity trays to be preformed by Cavity Trays Limited and provided
over all external lintels, over ground floor dpc and above lead
flashings at abutments. Provide weepholes in perpend at 900mm
ccs, immediately above base of cavity.

TIMBER STUD PARTITION SYSTEM As NBS G20/270
125x50 Softwood timber framing filled with 100mm of Knauf
insulation limited Earthwool flexible slab NBS/P10/220A

MASONRY INTERNAL BLOCKWORK WALLS As F10/355 (Point Grade) & F10/355 (Standard Finish) 140mm thick Forterra Hanson Fencilite 1500 or Evalite Point Grade blocks. Fencilite 1500 blocks to receive 13mm plaster and skim finish NBS/M20/210.

Ground floor slab to comprise of unbonded screed system as NBS/M10/115A to be 75mm on 500 gauge Visqueen Ecomembrane separating membrane as NBS/M10/290 on 150mm Celotex FL5000 insulation as NBS/M10/290 on 150mm insitu-concrete slab system as NBS/E10/111 on 1200 gauge Visqueen Ecomembrane dpm dressed up walls and taped to Hylocl dpc as NBS/J40/120A on 150mm thick sand blinded and consolidated hardcore.
Floors to achieve a U-value 0.13 W/m².K

All new internal doors at ground floor level to have a minimum clear opening width of 775mm. Corridor widths at ground floor level to be minimum 900mm wide.

Electric switches and socket outlets to be provided between 450mm and 1200mm from FFL.

All construction details to be accredited construction details and to be built in accordance with SBEM Robust Details for Masonry Cavity Walls

WASTES as NBS/R11 and the Mechanical Specification and Drawings. All waste fittings to have a minimum 75mm deep seal trap. Waste sizes to be Sinks - 40mm discharging to foul drain via, back inlet gulleys. Interconnected wastes to be minimum 50mm dia. and have rodding access at salient angles.

Foul and surface water drainage to be laid in 100mm dia. Hepworth plastic pipework with all necessary fittings bedded and surrounded in granular material in accordance with manufacturers recommendations. Pipework passing through external walls to be sleeved and linted over. All pipes, fittings etc. to be completely free of any super imposed loads either from foundations, walls or other loads and flexibly jointed to preclude shearing where differential settlement may occur.

All drainage runs to be installed to falls to achieve self cleaning velocities. Minimum gradient 1:60

Inspection chambers to be constructed with Hepworth PPIC 100 GRP type with light duty cover and frame in paved and landscaped areas and medium duty to driveways installed strictly in accordance with manufacturers recommendations.

Surface water drains to be connected in to the existing storm water drainage system.

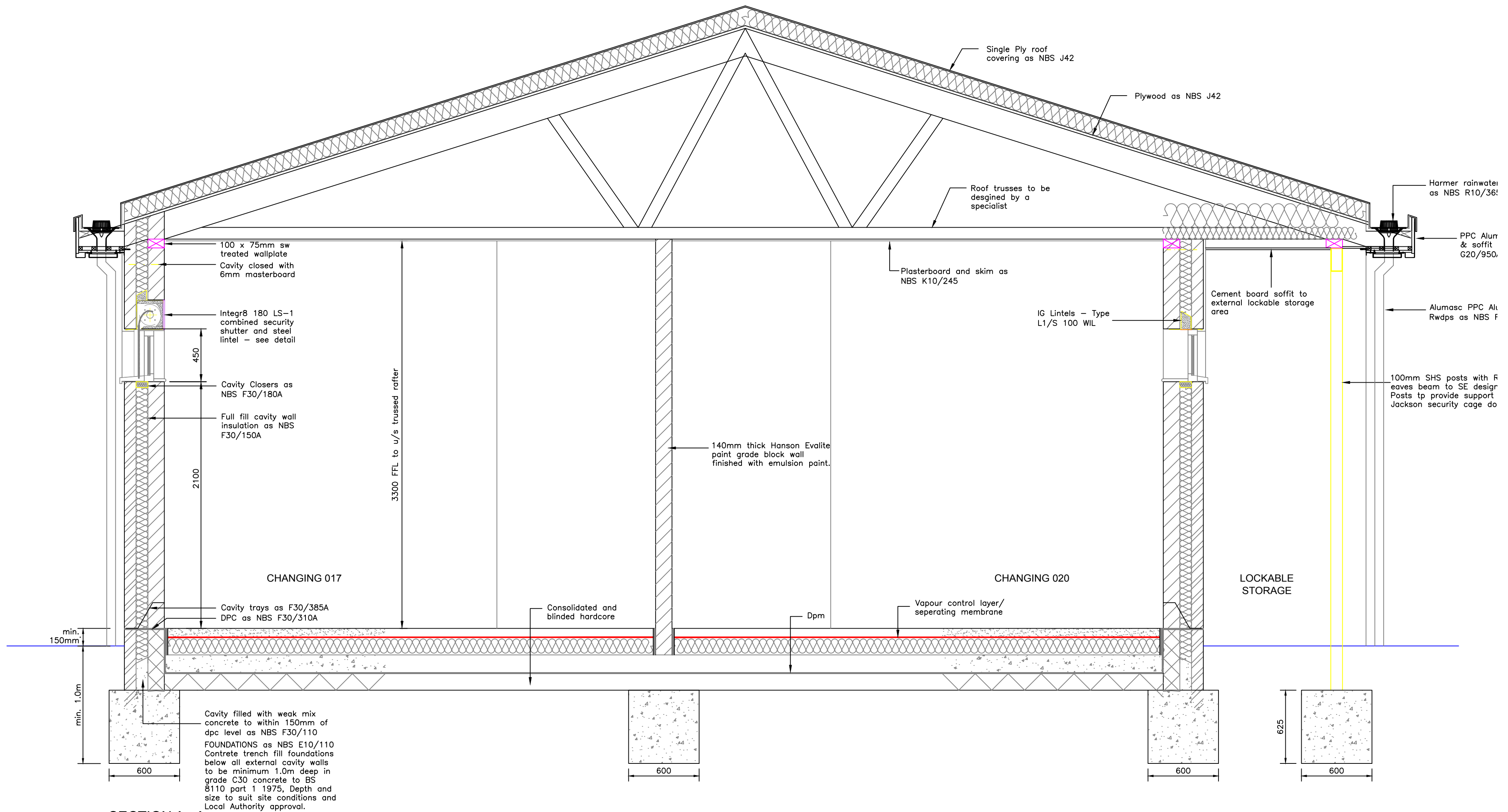
Where drains runs pass under floor slab within 300mm of the underside of the slab drain to be encased in minimum 150mm of concrete.

All drainage works to be carried out to Local Authority and Water Authority approval.

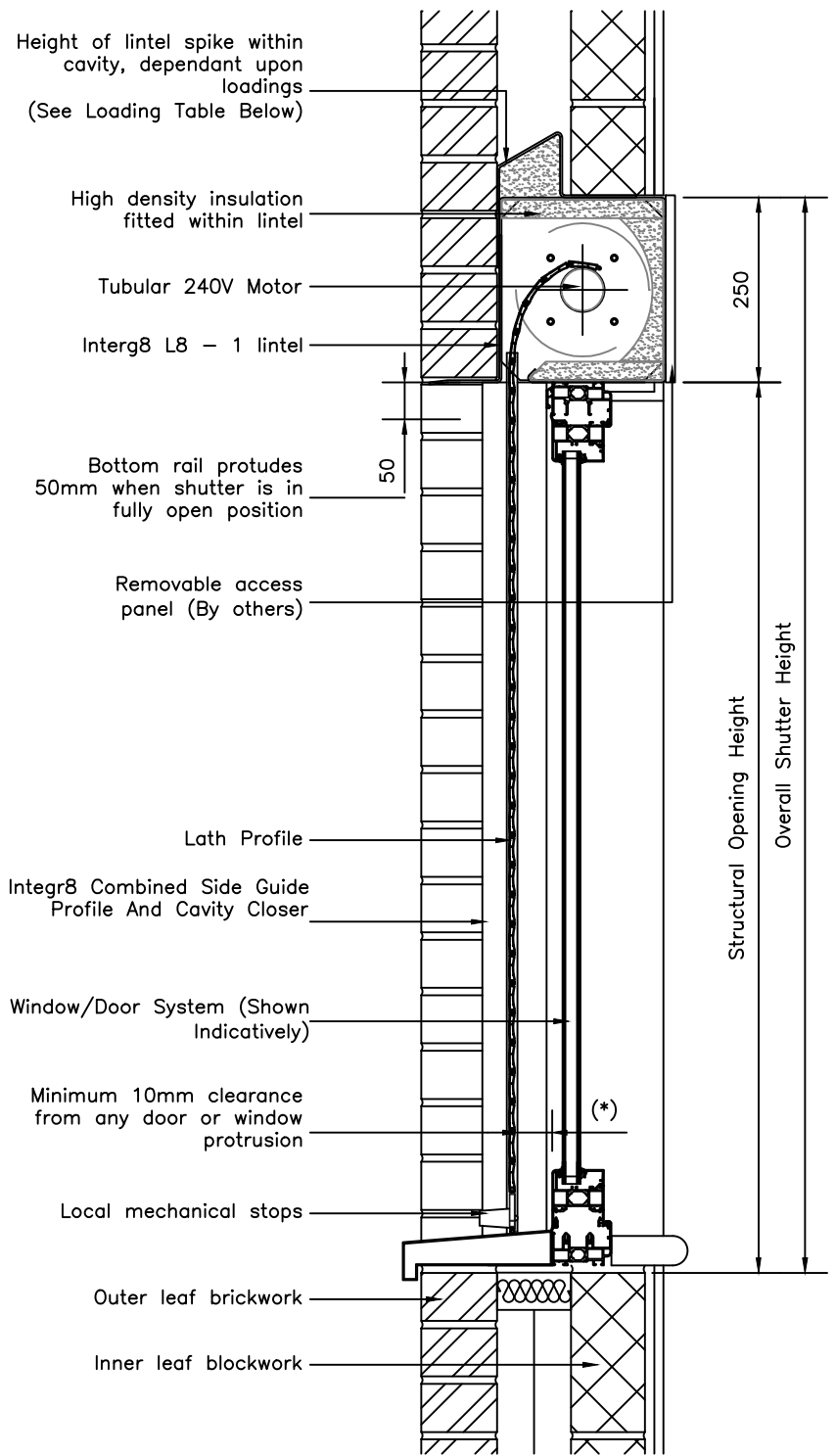
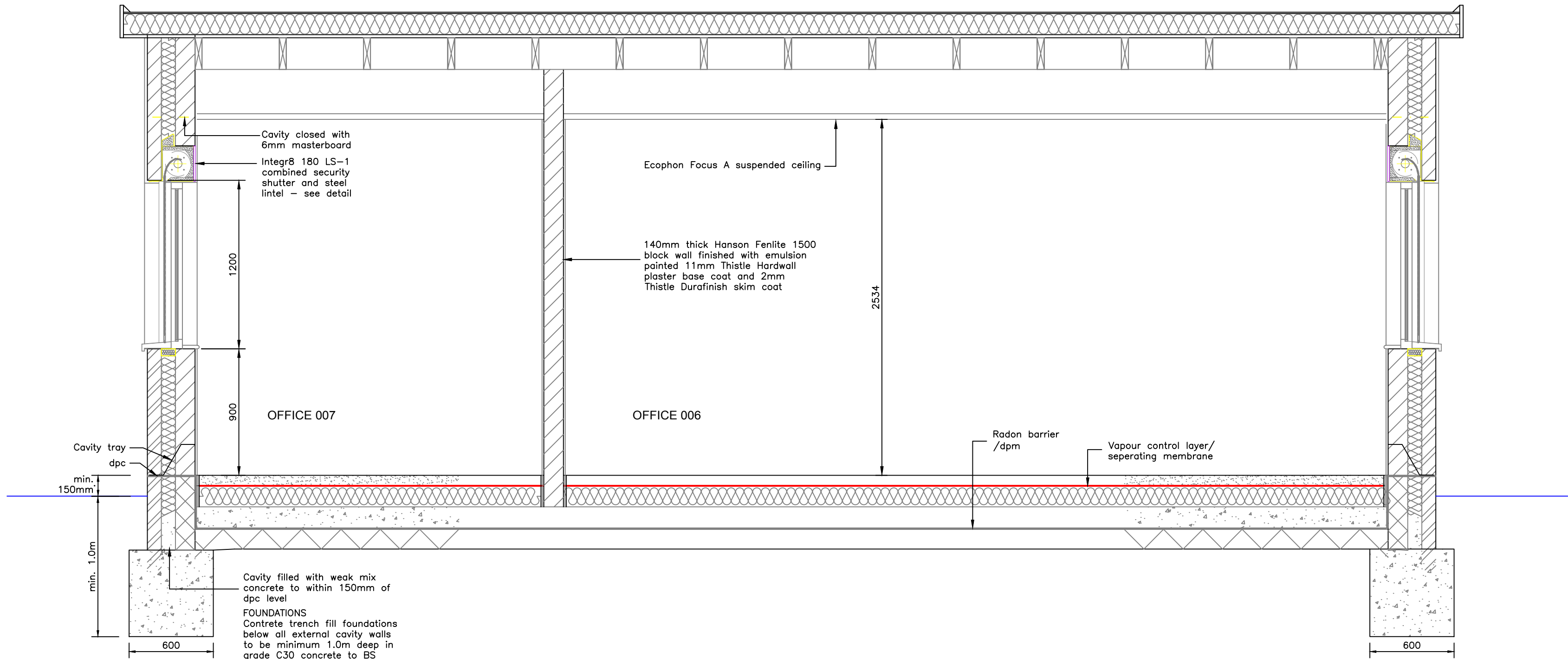


NOTE: Wall to achieve U value of 0.28 W/m²K

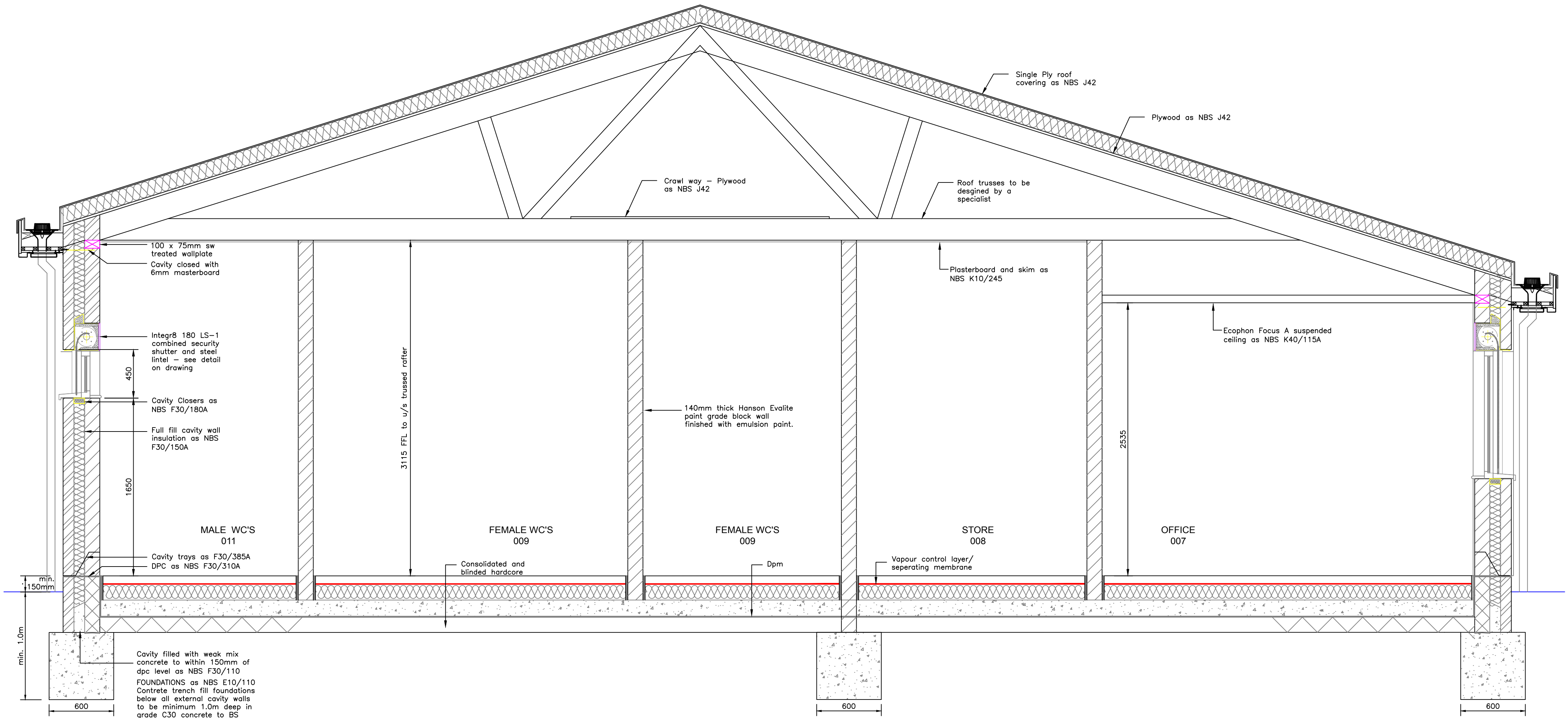
[illegible]



Client	PROPOSED EXTENSION
	VICTORY PARK CHURCH ROAD STROUD GLOS. GL5 4JE
	CAINSCROSS PARISH COUNCIL
Title	SECTION A-A AS PROPOSED
	CHURCH ARCHITECTURAL Rory Brock M: 07712 259378 April Church M: 07979 541397  The Cube, Bath Road, Stroud, GL5 4RJ E-mail - aprilandrory@icloud.com
Drawn	RWB
Scale	1:25 @ A2
Date	DEC 2015
Drawing Number	16
Revisions	

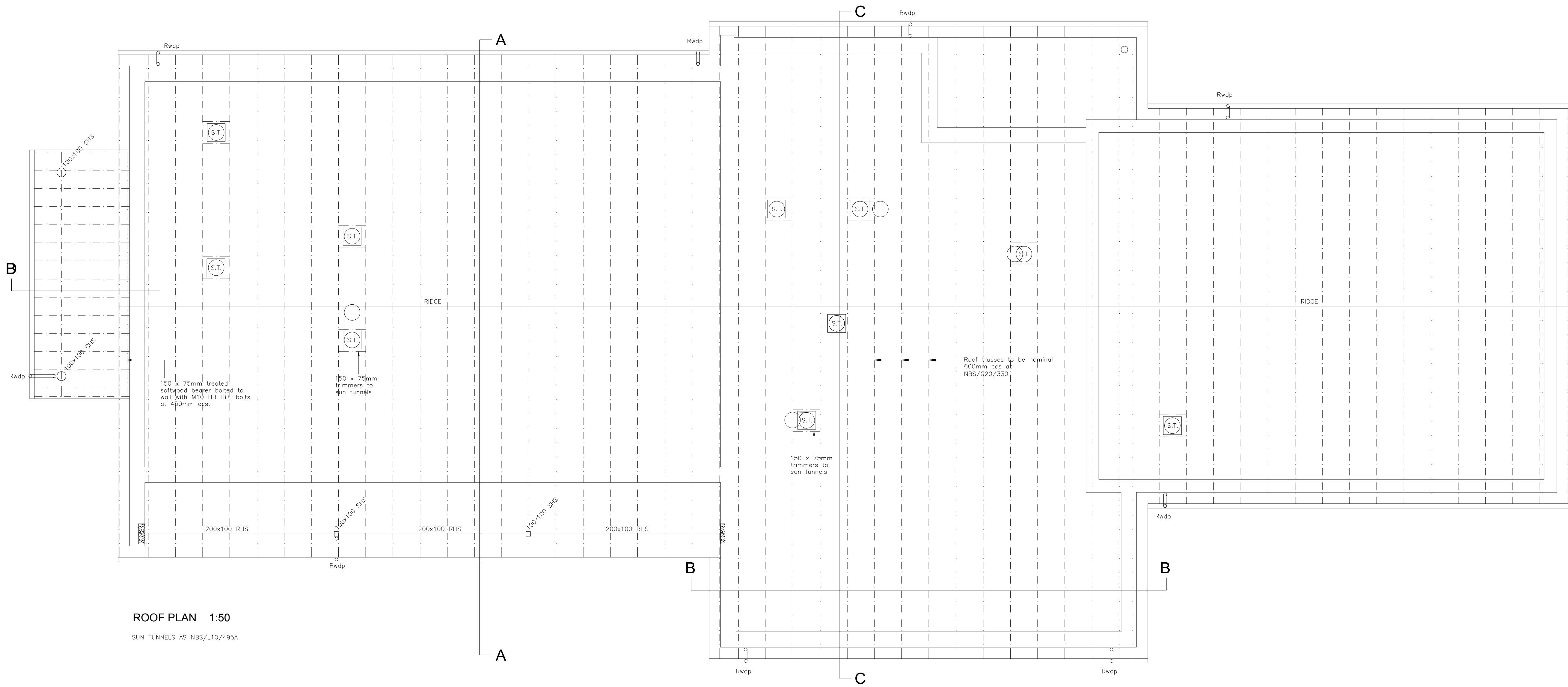


Client	
PROPOSED EXTENSION	
VICTORY PARK CHURCH ROAD STROUD GLOS. GL5 4JE	
CAINSCROSS PARISH COUNCIL	
Title	
SECTION B-B AS PROPOSED	
CHURCH ARCHITECTURAL	
Rory Brock M: 07712 259378	
April Church M: 07979 541397	
The Cube, Bath Road, Stroud, GL5 4RJ E-mail - aprilandrory@icloud.com	
Drawn	RWB
Scale	1:25 @ A2
Date	DEC 2015
Drawing Number	
17	
Revisions	



SECTION C - C

Client	PROPOSED EXTENSION	Title	SECTION C-C AS PROPOSED	CHURCH ARCHITECTURAL Roy Beck M.07712 253378 And Church M.07979 541397 1 Cragate, Chapel Fields, Kendrick, Stroud, G16 6HR E-mail - apt@andreyjellard.com	Drawn	RWB	Scale	1:25 @ A2	Date	DEC 2016	Drawing Number	18	Revisions	
	VICTORY PARK CHURCH ROAD STROUD GLOS. GL5 4JE CAINSCROSS PARISH COUNCIL													



ROOF PLAN 1:50
SUN TUNNELS AS NBS/L10/495A

Client

PROPOSED EXTENSION

VICTORY PARK
CHURCH ROAD
STROUD
GLOS. GL5 4JE

CAINSCROSS PARISH COUNCIL

Title

ROOF PLAN
AS PROPOSED

CHURCH
ARCHITECTURAL

Rory Brock
M:07712 251378

April Church
M:07979 541397


The Cube, Bath Road, Stroud, GL5 4RJ
E-mail - april@churcharchitectural.co.uk

Drawn

RWB

Scale

1:50 @ A1

Date

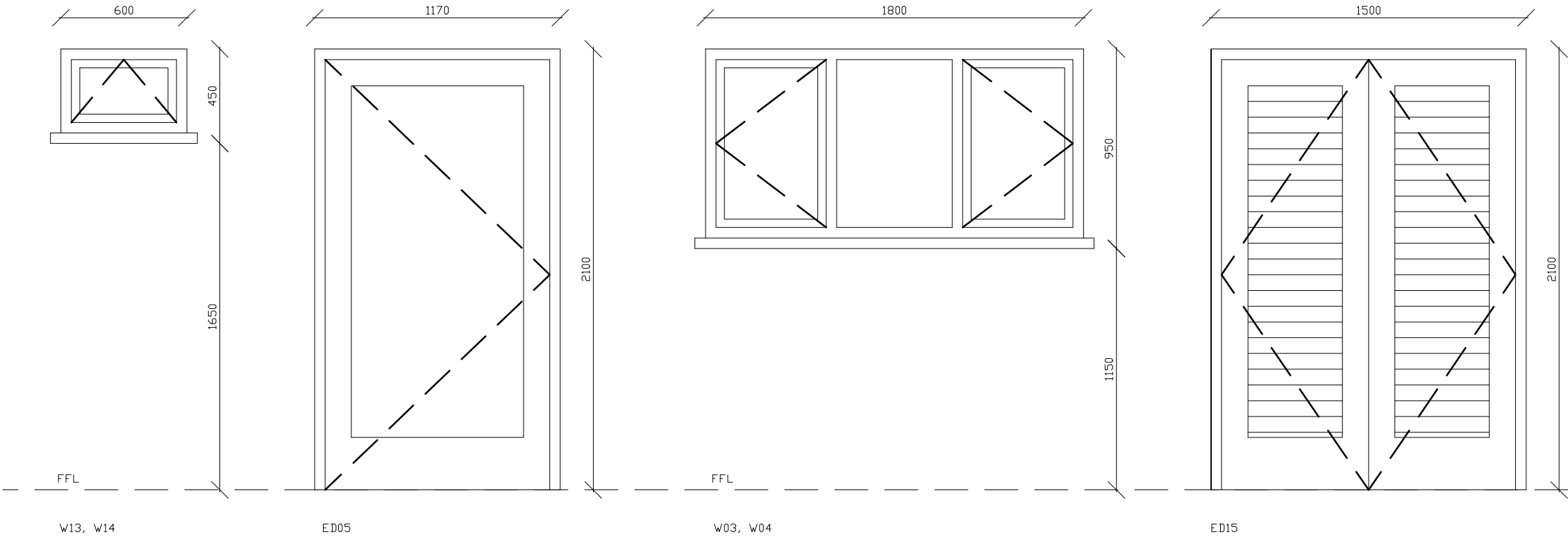
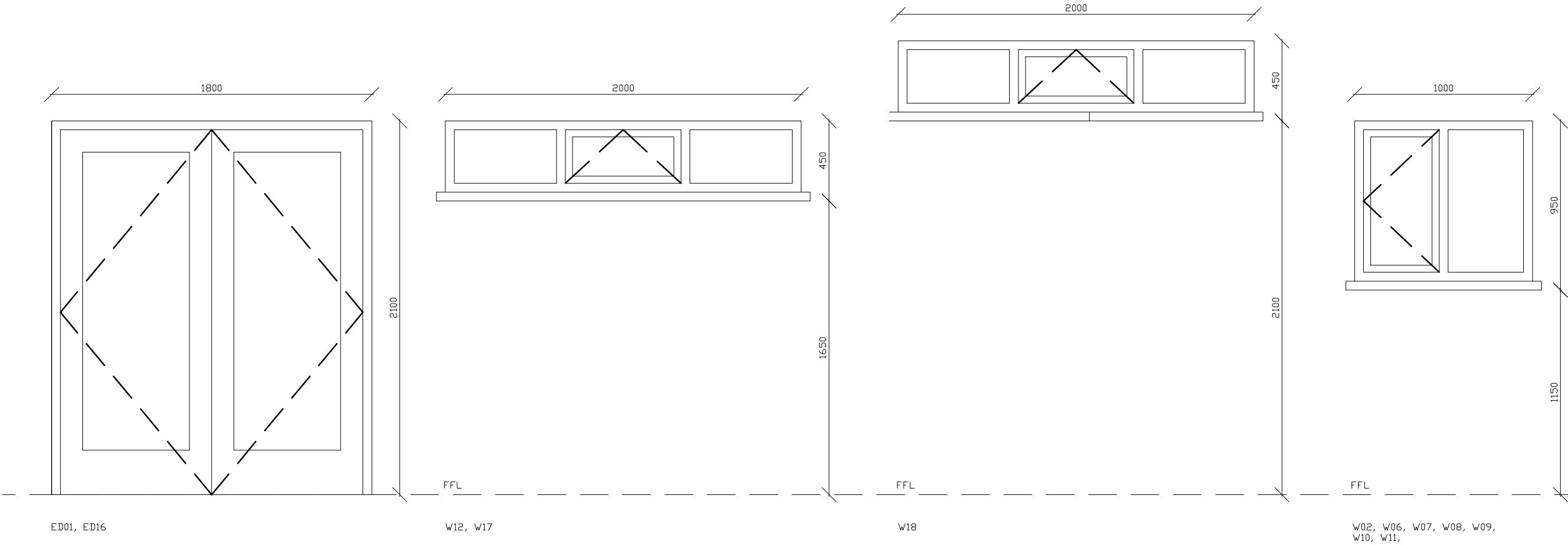
DEC 2016

Drawing Number

19

Revisions





NOTE
ALL DIMENSIONS ARE
SHOWN AS STRUCTURAL
OPENINGS

ALL GLASS IN WINDOWS
UP TO A HEIGHT OF 800mm
ABOVE FLOOR LEVEL &
ALL DOORS UP TO A
HEIGHT OF 1500mm HEIGHT
ABOVE FLOOR LEVEL TO
BE TOUGHENED OR
LAMINATED SAFETY GLASS
TO BS6206

FOR FULL WINDOW SPECIFICATION
SEE NBS CLAUSE L10

WINDOWS TO EN-SUITE TO
INCLUDE OBSCURE GLAZING

ALL WINDOWS TO ACHIEVE A
U-VALUE OF 1.67W/m²K OR
BETTER

WINDOWS TO INCLUDE TRICKLE
VENTS

WINDOWS TO COMPLY WITH
BUILDING REGULATIONS PART L2A
AND PART M

ALL GLAZING TO BE
HERMETICALLY SEALED
DOUBLE-GLAZED 28mm UNITS.
6.4mm LAMINATED LOW-E CLEAR
GLASS INNER PANE, WARM EDGED
ARGON FILLED CAVITY, 4mm
TOUGHENED CLEAR GLASS
EXTERNALLY.

Client

PROPOSED EXTENSION

VICTORY PARK
CHURCH ROAD
STROUD
GLOS. GL5 4JE

CAINSCROSS PARISH COUNCIL

Title

WINDOW SCHEDULE
AS PROPOSED

CHURCH
ARCHITECTURAL

Rory Brock
M: 07712 259378

April Church
M: 07979 541397


The Cube, Bath Road, Stroud, GL5 4RJ
E-mail - aprilandrory@icloud.com

Drawn	RWB
Scale	1:25 @ A3
Date	DEC 2016

Drawing Number

22

Revisions						

Lintel Schedule					
Lintel Reference	Location Reference	Number of Lintels	Manufacture	Size (incuding bearing)	Notes
L1	Entrance Lobby 001	1	Integr8 L8-1	2100mm	Shutter supplied with lintel
L2	Quite Room 002		Existing Lintel - Allow for external shutter.		
L3	Club Hall 003		Existing Lintel - Allow for external shutter.		
L4	Club Hall 003		Existing Lintel - Allow for external shutter.		
L5	Club Hall 003		Existing Lintel - Allow for external shutter.		
L6	Club Hall 003		Existing Lintel - Allow for external shutter.		
L7	Office 006	1	Integr8 L8-1	1300mm	Shutter supplied with lintel
L8	Office 006	1	Integr8 L8-1	1300mm	Shutter supplied with lintel
L9	Office 006	1	Integr8 L8-1	1300mm	Shutter supplied with lintel
L10	Office 007	1	Integr8 L8-1	1300mm	Shutter supplied with lintel
L11	Office 007	1	Integr8 L8-1	1300mm	Shutter supplied with lintel
L12	Office 007	1	Naylor 140mm PS-PC	1300mm	
L13	Store 008	1	Naylor 140mm PS-PC	1300mm	
L14	Office 006	1	Naylor 140mm PS-PC	1300mm	
L15	Office 006	1	Naylor 140mm PS-PC	1600mm	
L16	Office 006	1	Naylor 140mm PS-PC	1300mm	
L17	Office 006		Existing Lintel		
L18	Entrance 001	2	Naylor 140mm PS-PC	2600mm	
L19	Female WC 009	1	Naylor 140mm PS-PC	1300mm	
L20	DDA WC 010	1	Naylor 140mm PS-PC	1300mm	
L21	Male WC 011	1	Naylor 140mm PS-PC	1300mm	
L22	Male WC 011	1	Integr8 L8-1	2300mm	Shutter supplied with lintel
L23	Changing 020	1	IG L1/S 100	2300mm	
L24	WC 022	1	IG L1/S 100	900mm	
L25	WC 023	1	IG L1/S 100	900mm	
L26	Plant Room 025	1	IG L1/S 100	1800mm	
L27	Entrance Lobby 012	1	Integr8 L8-1	2100mm	Shutter supplied with lintel
L28	Store 024	1	Naylor 140mm PS-PC	1400mm	
L29	Lobby 019	1	Naylor 140mm PS-PC	1200mm	
L30	WC 023	1	Naylor 140mm PS-PC	2300mm	
L31	WC 022	1	As above	As above	
L32	Changing 020	1	Naylor 140mm PS-PC	1200mm	
L33	Showers 021	1	Naylor 140mm PS-PC	1700mm	
L34	Showers 018	1	Naylor 140mm PS-PC	1700mm	
L35	Changing 017	1	Naylor 140mm PS-PC	1200mm	
L36	WC 016	1	Naylor 140mm PS-PC	2300mm	
L37	WC 015	1	As above	As above	
L38	Lobby 014	1	Naylor 140mm PS-PC	1200mm	
L39	Chaning 013	1	Naylor 140mm PS-PC	1200mm	
L40	Chaning 017	1	Integr8 L8-1	2300mm	Shutter supplied with lintel

Client

PROPOSED EXTENSION

VICTORY PARK
CHURCH ROAD
STROUD
GLOS. GL5 4JE

CAINSCROSS PARISH COUNCIL

Title

LINTEL SCHEDULE
AS PROPOSED

CHURCH
ARCHITECTURAL

Rory Brock
M: 07712 259378

April Church
M: 07979 541397


The Cube, Bath Road, Stroud, GL5 4RJ
E-mail - aprilandrory@icloud.com

Drawn

RWB

Scale

NTS @ A3

Date

DEC 2016

Drawing Number

23

Revisions

Finishes Schedule							
Room Name/ Reference	Flooring	Walls		Ceiling	Timber finishes		Notes
		Finish	Colour		Skirting Boards	Architraves	
Entrance Lobby 001	Kircman and Dolman LTD - Stride Luxury vinyl tile	12.5mm Plaster & Skim	Vinyl Silk - Colour TBC	Ecophon Focus Dg Semi concealed 600x600x20 White with connect Grey grid	MDF 125mm pencil round	MDF 63mm pencil round	Barrier Matting
Quiet Room 002	Kircman and Dolman LTD - Renaissance Linear	12.5mm Plaster & Skim	Vinyl Silk - Colour TBC	Ecophon Focus Dg Semi concealed 600x600x20 White with connect Grey grid	MDF 125mm pencil round	MDF 63mm pencil round	
Club Hall 003	Kircman and Dolman LTD - Stride Luxury vinyl tile	12.5mm Plaster & Skim	Vinyl Silk - Colour TBC	Ecophon Focus Dg Semi concealed 600x600x20 White with connect Grey grid	MDF 125mm pencil round	MDF 63mm pencil round	Altro White Rock splash back behind all wet areas at 50mm high.
Store 004	Kircman and Dolman LTD - Stride Luxury vinyl tile	12.5mm Plaster & Skim	Vinyl Silk - Colour TBC	12.5mm Plasterboard and skim	MDF 125mm pencil round	MDF 63mm pencil round	
Store 004A	Kircman and Dolman LTD - Stride Luxury vinyl tile	12.5mm Plaster & skim	Vinyl Silk - Colour TBC	12.5mm Plasterboard and skim	MDF 125mm pencil round	MDF 63mm pencil round	
Tea point 005	Kircman and Dolman LTD - Stride Luxury vinyl tile	12.5mm Plaster & Skim	Vinyl Silk - Colour TBC	Ecophon Focus Dg Semi concealed 600x600x20 White with connect Grey grid	MDF 125mm pencil round	MDF 63mm pencil round	Altro White Rock splash back behind all wet areas at 50mm high.
Office 006	Kircman and Dolman LTD - Renaissance Linear	12.5mm Plaster & Skim	Vinyl Silk - Colour TBC	Ecophon Focus Dg Semi concealed 600x600x20 White with connect Grey grid	MDF 125mm pencil round	MDF 63mm pencil round	
Office 007	Kircman and Dolman LTD - Renaissance Linear	12.5mm Plaster & Skim	Vinyl Silk - Colour TBC	Ecophon Focus Dg Semi concealed 600x600x20 White with connect Grey grid	MDF 125mm pencil round	MDF 63mm pencil round	
Store 008	Kircman and Dolman LTD - Renaissance Linear	12.5mm Plaster & Skim	Vinyl Silk - Colour TBC	12.5mm Plaster and skim	MDF 125mm pencil round	MDF 63mm pencil round	
Female EC 009	Altro Classic 25	12.5mm Plaster & Skim	Vinyl Silk - Colour TBC	Ecophon Focus Dg Semi concealed 600x600x20 White with connect Grey grid	MDF 125mm pencil round	MDF 63mm pencil round	Altro White Rock splash back behind all wet areas at 50mm high.
DDA WC 010	Altro Classic 25	12.5mm Plaster & Skim	Vinyl Silk - Colour TBC	Ecophon Focus Dg Semi concealed 600x600x20 White with connect Grey grid	MDF 125mm pencil round	MDF 63mm pencil round	Altro White Rock splash back behind all wet areas at 50mm high.
Male WC 011	Altro Classic 25	12.5mm Plaster & Skim	Vinyl Silk - Colour TBC	Ecophon Focus Dg Semi concealed 600x600x20 White with connect Grey grid	MDF 125mm pencil round	MDF 63mm pencil round	Altro White Rock splash back behind all wet areas at 50mm high.
Entrance Lobby 012	Altro Classic 25	Finish grade blockwork	Vinyl Silk - Colour TBC	12.5mm Plasterboard and skim	Coved skirting	MDF 63mm pencil round	
Chaning 013	Altro Marine 20	Finish grade blockwork	Vinyl Silk - Colour TBC	12.5mm Plasterboard and skim	Coved skirting	MDF 63mm pencil round	Altro White Rock splash back behind all wet areas at 50mm high.
Lobby 014	Altro Classic 25	Finish grade blockwork	Vinyl Silk - Colour TBC	12.5mm Plasterboard and skim	Coved skirting	MDF 63mm pencil round	
WC 015	Altro Classic 25	Finish grade blockwork	Vinyl Silk - Colour TBC	12.5mm Plasterboard and skim	Coved skirting	MDF 63mm pencil round	Altro White Rock splash back behind all wet areas at 50mm high.
WC 016	Altro Classic 25	Finish grade blockwork	Vinyl Silk - Colour TBC	12.5mm Plasterboard and skim	Coved skirting	MDF 63mm pencil round	Altro White Rock splash back behind all wet areas at 50mm high.
Changing 017	Altro Classic 25	Finish grade blockwork	Vinyl Silk - Colour TBC	12.5mm Plasterboard and skim	Coved skirting	MDF 63mm pencil round	
Showers 018	Altro Marine 20	Altro White Rock	White	12.5mm Plasterboard and skim	Coved skirting	MDF 63mm pencil round	
Lobby 019	Altro Classic 25	Finish grade blockwork	Vinyl Silk - Colour TBC	12.5mm Plasterboard and skim	Coved skirting	MDF 63mm pencil round	
Changing 020	Altro Classic 25	Finish grade blockwork	Vinyl Silk - Colour TBC	12.5mm Plasterboard and skim	Coved skirting	MDF 63mm pencil round	
Showers 021	Altro Marine 20	Altro White Rock	White	12.5mm Plasterboard and skim	Coved skirting	MDF 63mm pencil round	
WC 022	Altro Classic 25	Finish grade blockwork	Vinyl Silk - Colour TBC	12.5mm Plasterboard and skim	Coved skirting	MDF 63mm pencil round	Altro White Rock splash back behind all wet areas at 50mm high.
WC 023	Altro Classic 25	Finish grade blockwork	Vinyl Silk - Colour TBC	12.5mm Plasterboard and skim	Coved skirting	MDF 63mm pencil round	Altro White Rock splash back behind all wet areas at 50mm high.
Store 024	Altro Classic 25	Finish grade blockwork	Vinyl Silk - Colour TBC	12.5mm Plasterboard and skim	Coved skirting	MDF 63mm pencil round	
Plant Room 025				12.5mm Plasterboard and skim			

Client

PROPOSED EXTENSION

VICTORY PARK
CHURCH ROAD
STROUD
GLOS. GL5 4JE

CAINSCROSS PARISH COUNCIL

Title

FINISHES SCHEDULE
AS PROPOSED

CHURCH
ARCHITECTURAL

Rory Brock
M: 07712 259378

April Church
M: 07979 541397


The Cube, Bath Road, Stroud, GL5 4RJ
E-mail - aprilandrory@icloud.com

Drawn

RWB

Scale

NTS @ A3

Date

DEC 2016

Drawing Number

24

Revisions

GENERAL		DOOR						CARPENTRY				VISION PANEL			IRONMONGERY & ACCESSORIES																					NOTES									
REF	LOCATION	MANUFACTURE & TYPE		HEIGHT (mm)	WIDTH (mm)	THICK (mm)	FINISH	FIRE RATING	FRAME / LINING	DOOR STOPS	ARCHITRAVES	PUNTH BLOCKS	REQ	APERTURES	GLAZING	SMOKE SEALS	INTUMESCENT STRIPS	LEVER HANDLES	PULL HANDLES	FLUSH PLATES	KICK PLATES	H&F PAIR HINGES	FINGER GUARDS	SELF CLOSING DEVICE	MORTICE LOCK	MORTICE LATCH	NIGHT LATCH	FLUSH BOLTS	LOCK	THUMB TURN	BATHROOM INDICATOR DOOR	ESCAPE FURNITURE	DOOR STOP	ACCESS POINTS	WOUND OPEN DEVICE		ELECTRIC STRIKE	ROOM NAME / NUMBER	PICTOGRAM	FD - KEEP SHUT LOCKED					
GROUND AND FIRST FLOOR																																													
D01	QUIET ROOM	FLUSH DOOR		2040	925	44	PRIMED	FD30S	112 x 32mm FS HARDWOOD FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING		✓	PREMDOR 16G	CLEAR GLASS	✓	✓	✓																									DOOR HANDLES, LOCKS & LATCHES TO BE 950mm ABOVE FLOOR LEVEL		
D02	CLUB HALL	FLUSH DOOR		2040	2X926	44	PRIMED	FD30S	112 x 32mm FS HARDWOOD FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING		✓	PREMDOR 16G	CLEAR GLASS	✓	✓	✓																									DOOR HANDLES, LOCKS & LATCHES TO BE 950mm ABOVE FLOOR LEVEL		
D03	STORE	FLUSH DOOR		2040	2X626	44	PRIMED	N / A	112 x 32mm SW PAINTED FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm WHITE TO MATCH EXISTING								✓																								DOOR HANDLES, LOCKS & LATCHES TO BE 950mm ABOVE FLOOR LEVEL		
D04	STORE	FLUSH DOOR		2040	926	44	PRIMED	N / A	112 x 32mm SW PAINTED FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING								✓																								DOOR HANDLES, LOCKS & LATCHES TO BE 950mm ABOVE FLOOR LEVEL		
D05	TEA POINT	FLUSH DOOR		2040	926	44	PRIMED	FD30S	112 x 32mm FS HARDWOOD FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING		✓	PREMDOR 16G	CLEAR GLASS	✓	✓	✓																										DOOR HANDLES, LOCKS & LATCHES TO BE 950mm ABOVE FLOOR LEVEL	
D06	OFFICE	FLUSH DOOR		2040	926	44	PRIMED	FD30S	112 x 32mm FS HARDWOOD FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING		✓	PREMDOR 16G	CLEAR GLASS	✓	✓	✓																										PELMET INCLUDED	
D07	OFFICE	FLUSH DOOR		2040	926	44	PRIMED	FD30S	112 x 32mm FS HARDWOOD FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING		✓	PREMDOR 16G	CLEAR GLASS	✓	✓	✓																										DOOR HANDLES, LOCKS & LATCHES TO BE 950mm ABOVE FLOOR LEVEL	
D08	OFFICE	FLUSH DOOR		2040	926	44	PRIMED	FD30S	112 x 32mm FS HARDWOOD FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING		✓	PREMDOR 16G	CLEAR GLASS	✓	✓	✓																										PELMET INCLUDED	
D09	STORE	FLUSH DOOR		2040	926	44	PRIMED	N / A	112 x 32mm SW PAINTED FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING								✓																								DOOR HANDLES, LOCKS & LATCHES TO BE 950mm ABOVE FLOOR LEVEL		
D10	FEMALE WC	FLUSH DOOR		2040	926	44	PRIMED	FD30S	112 x 32mm FS HARDWOOD FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING							✓	✓	✓																								DOOR HANDLES, LOCKS & LATCHES TO BE 950mm ABOVE FLOOR LEVEL	
D11	FEMALE WC	FLUSH DOOR		2040	926	44	PRIMED	FD30S	112 x 32mm FS HARDWOOD FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING							✓	✓	✓																								DOOR HANDLES, LOCKS & LATCHES TO BE 950mm ABOVE FLOOR LEVEL	
D12	DISABLED WC	FLUSH DOOR		2040	926	44	PRIMED	FD30S	112 x 32mm FS HARDWOOD FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING							✓	✓	✓																								PELMET INCLUDED	
D13	MALE WC	FLUSH DOOR		2040	926	44	PRIMED	FD30S	112 x 32mm FS HARDWOOD FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING							✓	✓	✓																								DOOR HANDLES, LOCKS & LATCHES TO BE 950mm ABOVE FLOOR LEVEL	
D14	OFFICALS CHANGING	FLUSH DOOR		2040	926	44	PRIMED	FD30S	112 x 32mm FS HARDWOOD FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING							✓	✓	✓																								PELMET INCLUDED	
D15	LOBBY	FLUSH DOOR		2040	926	44	PRIMED	FD30S	112 x 32mm FS HARDWOOD FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING							✓	✓	✓																								DOOR HANDLES, LOCKS & LATCHES TO BE 950mm ABOVE FLOOR LEVEL	
D16	WC	FLUSH DOOR		2040	926	44	PRIMED	FD30S	112 x 32mm FS HARDWOOD FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING							✓	✓	✓																								PELMET INCLUDED	
D17	WC	FLUSH DOOR		2040	926	44	PRIMED	FD30S	112 x 32mm FS HARDWOOD FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING							✓	✓	✓																								DOOR HANDLES, LOCKS & LATCHES TO BE 950mm ABOVE FLOOR LEVEL	
D18	CHANGING	FLUSH DOOR		2040	926	44	PRIMED	FD30S	112 x 32mm FS HARDWOOD FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING							✓	✓	✓																								PELMET INCLUDED	
D19	CHANGING	FLUSH DOOR		2040	926	44	PRIMED	FD30S	112 x 32mm FS HARDWOOD FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING							✓	✓	✓																								DOOR HANDLES, LOCKS & LATCHES TO BE 950mm ABOVE FLOOR LEVEL	
D20	WC	FLUSH DOOR		2040	926	44	PRIMED	FD30S	112 x 32mm FS HARDWOOD FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING							✓	✓	✓																								DOOR HANDLES, LOCKS & LATCHES TO BE 950mm ABOVE FLOOR LEVEL	
D21	WC	FLUSH DOOR		2040	926	44	PRIMED	FD30S	112 x 32mm FS HARDWOOD FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING							✓	✓	✓																								DOOR HANDLES, LOCKS & LATCHES TO BE 950mm ABOVE FLOOR LEVEL	
D22	LOBBY	FLUSH DOOR		2040	926	44	PRIMED	FD30S	112 x 32mm FS HARDWOOD FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING							✓	✓	✓																								DOOR HANDLES, LOCKS & LATCHES TO BE 950mm ABOVE FLOOR LEVEL	
D23	STORE	FLUSH DOOR		2040	2x500	44	PRIMED	N / A	112 x 32mm SW PAINTED FRAME	25 x 45mm REBATED IN FRAME	96 x 25mm OAK TO MATCH EXISTING								✓																								DOOR HANDLES, LOCKS & LATCHES TO BE 950mm ABOVE FLOOR LEVEL		
																							</																						



Report Name: Image Scheduled Report

Project no: 07712259378

Report generated: 02/04/2017 11:46

Project title: Football Pavilion

Author: Rory Brock

Please check the information contained within this specification carefully as it is your responsibility to ensure it is accurate. Any supply of product would of course be in accordance with our Standard Terms and Conditions of Sale. All references below are from Ideal Standard and Armitage Shanks unless otherwise stated.

Ideal Standard Ltd.
The Bathroom Works
National Avenue
Kingston Upon Hull
HU5 4HS

Armitage Shanks
Old Road
Armitage
Rugeley
Staffordshire
WS15 4BT

Tel. 01482 346461

Tel. 01543 490253

Produced using IdealSpec please visit www.idealspec.co.uk to view the catalogue or sign in and gain access to the comprehensive specification tools, including Totals reports and Prime Cost sum guide prices.

Area: Changing Rooms

Room	Image	Item type / description	SAP code	Finish	Qty	Unit price	Room price
Officials Changing / WC		WC pan Contour 21 close coupled raised height WC pan, 75cm projection with floor fixing kit	S3054	01	1	£498.06	£498.06
		Washbasin Concept Cube 50cm short projection semi countertop washbasin, glazed back edge, 1 right hand taphole with overflow	E7799	01	1	£211.90	£211.90
		Shower head Anti vandal shower head, back inlet, solid wall fixing, demountable for easy cleaning	A4672	AA	1	£115.01	£115.01
		Shower valve Avon 21 self closing push button shower valve with concealing plate, non mixing	B8266	AA	1	£115.82	£115.82

Room total: £940.79

Wc's (015)		WC pan Contour 21 close coupled raised height WC pan, 75cm projection with floor fixing kit	S3054	01	1	£498.06	£498.06
		Washbasin Concept Cube 50cm short projection semi countertop washbasin, glazed back edge, 1 right hand taphole with overflow	E7799	01	1	£211.90	£211.90

Room total: £709.96

Wc's
(016)



WC pan
Contour 21 close coupled
raised height WC pan,
75cm projection with floor
fixing kit

S3054

01

1

£498.06

£498.06



Washbasin
Concept Cube 50cm short
projection semi countertop
washbasin, glazed back
edge, 1 right hand taphole
with overflow

E7799

01

1

£211.90

£211.90

Room total: £709.96

Showers
in
changing
rooms
(018)



Shower head
Anti vandal shower head,
back inlet, solid wall fixing,
demountable for easy
cleaning

A4672

AA

5

£115.01

£575.05



Shower valve
Avon 21 self closing push
button shower valve with
concealing plate, non
mixing

B8266

AA

5

£115.82

£579.10

Room total: £1,154.15

Showers
in
changing
rooms
(021)



Shower head
Anti vandal shower head,
back inlet, solid wall fixing,
demountable for easy
cleaning

A4672

AA

5

£115.01

£575.05



Shower valve
Avon 21 self closing push
button shower valve with
concealing plate, non
mixing

B8266

AA

5

£115.82

£579.10

Room total: £1,154.15

Wc's (022)		WC pan Contour 21 close coupled raised height WC pan, 75cm projection with floor fixing kit	S3054	01	1	£498.06	£498.06
		Washbasin Concept Cube 50cm short projection semi countertop washbasin, glazed back edge, 1 right hand taphole with overflow	E7799	01	1	£211.90	£211.90

Room total: £709.96

Wc's (023)		WC pan Contour 21 close coupled raised height WC pan, 75cm projection with floor fixing kit	S3054	01	1	£498.06	£498.06
		Washbasin Concept Cube 50cm short projection semi countertop washbasin, glazed back edge, 1 right hand taphole with overflow	E7799	01	1	£211.90	£211.90

Room total: £709.96

Area: Youth / Office

Room	Image	Item type / description	SAP code	Finish	Qty	Unit price	Room price
Female Wc's (009)		WC pan Contour 21 close coupled raised height WC pan, 75cm projection with floor fixing kit	S3054	01	2	£498.06	£996.12



Washbasin	E7799	01	2	£211.90	£423.80
Concept Cube 50cm short projection semi countertop washbasin, glazed back edge, 1 right hand taphole with overflow					

Room total: £1,419.92

Disable
WC (010)



Doc M pack	S6984	AC	1	£820.91	£820.91
Doc M Standard low level left hand corner pack, WC with spacer box low level cistern, grab rails, hinged support rail with toilet roll holder, seat no cover with retaining buffers					

Room total: £820.91

Male
Wc's
(011)



WC pan	S3054	01	2	£498.06	£996.12
Contour 21 close coupled raised height WC pan, 75cm projection with floor fixing kit					



Washbasin	E7799	01	2	£211.90	£423.80
Concept Cube 50cm short projection semi countertop washbasin, glazed back edge, 1 right hand taphole with overflow					

Room total: £1,419.92

Grand total £9,749.68

Finish Key

Code	Description
01	White
AA	Chromium plated
AC	White

Football Pavilion

14 February 2017

Table of Contents

Title	Page
C20	Demolition
E05	In situ concrete construction generally
E10	Mixing/casting/curing in situ concrete
E20	Formwork for in situ concrete
E41	Worked finishes to in situ concrete
F10	Brick/ block walling
F30	Accessories/ sundry items for brick/ block/ stone walling
G12	Isolated structural metal members
G20	Carpentry/ timber framing/ first fixing
J40	Flexible sheet waterproofing/ damp proofing
J42	Single layer polymeric sheet roof coverings
K10	Plasterboard dry linings/ partitions/ ceilings
K11	Rigid sheet flooring/ sheathing/ decking/ sarking/ linings/ casings
K32	Panel cubicles/ duct and wall linings/ screens
K40	Demountable suspended ceilings
L10	Windows/ Rooflights/ Screens/ Louvres
L20	Doors/ shutters/ hatches
L30	Stairs/ ladders/ walkways/ handrails/ balustrades
M10	Cement based levelling/ wearing screeds
M20	Plastered/ Rendered/ Roughcast coatings
M50	Rubber/ plastics/ cork/ lino/ carpet tiling/ sheeting
M60	Painting/ clear finishing
N10	General fixtures/ furnishings/ equipment
N11	Domestic kitchen fittings, furnishings and equipment
N13	Sanitary appliances and fittings
N17	Portable fire fighting systems

P10	Sundry insulation/ proofing work	83
P12	Fire stopping systems	84
P20	Unframed isolated trims/ skirtings/ sundry items	86
P30	Trenches, pipeways and pits for buried engineering services	87
P31	Holes, chases, covers and supports for services	91
Q10	Kerbs/ edgings/ channels/ paving accessories	93
Q20	Granular sub-bases to roads/ pavings	95
Q22	Asphalt roads/ pavings	97
Q30	Seeding/ turfing	98
Q40	Fencing	101
R10	Rainwater drainage systems	103
R11	Above ground foul drainage systems	106
R12	Below ground drainage systems	108
Z10	Purpose made joinery	116
Z11	Purpose made metalwork	117
Z12	Preservative/ fire retardant treatment	118
Z20	Fixings and adhesives	120
Z21	Mortars	122
Z22	Sealants	124
Z31	Powder coatings	125

C20 Demolition

To be read with Preliminaries/ General conditions

GENERAL REQUIREMENTS

110 DESK STUDY/ SURVEY

- Scope: Before starting deconstruction/ demolition work, examine available information, and carry out a survey of:
 - the structure or structures to be deconstructed/ demolished,
 - the site on which the structure or structures stand, and
 - the surrounding area.
- Report and method statements: Submit, describing:
 - Form, condition and details of the structure or structures, the site, and the surrounding area.
Extent: As drawing 13 .
 - Type, location and condition of features of historical, archaeological, geological or ecological importance.
 - Type, location and condition of adjoining or surrounding premises that might be adversely affected by removal of the structure or structures, or by noise, vibration and/ or dust generated during deconstruction/ demolition.
 - Identity and location of services above and below ground, including those required for the Contractor's use, and arrangements for their disconnection and removal.
 - Form and location of flammable, toxic or hazardous materials, including lead-based paint, and proposed methods for their removal and disposal.
 - Form and location of materials identified for reuse or recycling, and proposed methods for removal and temporary storage.
 - Proposed programme of work, including sequence and methods of deconstruction/ demolition.
 - Details of specific pre-weakening required.
 - Arrangements for protection of personnel and the general public, including exclusion of unauthorized persons.
 - Arrangements for control of site transport and traffic.
 - Special requirements:
 - Details of services supplied by the Statutory Authority;
 - Disposal methods for gypsum-based products;
 - Results of tests to determine the precise nature of hazardous materials; and - Site waste management plan development and proposals .
- Format of report: Electronic .

120 EXTENT OF DECONSTRUCTION/ DEMOLITION

- General: Subject to retention requirements specified elsewhere, deconstruct/ demolish structures down to foundation level: Break up and dig out foundations.

130 GROUNDWORKS

- Old foundations, slabs and the like: Break out in locations and to the extents stated.
- Contaminated material: Remove, and carry out remediation required by the Enforcing Authority.

140 BENCH MARKS

- Unrecorded bench marks and other survey information: Give notice when found. Do not remove marks or destroy the fabric on which they are found.

150 FEATURES TO BE RETAINED

- General: Keep in place and protect the following: Trees noted on drawings; protect in accordance with BS 5837.

SERVICES AFFECTED BY DECONSTRUCTION/ DEMOLITION

210 SERVICES REGULATIONS

- Work carried out to or affecting new and/ or existing services: Carry out in accordance with the byelaws and/ or regulations of the relevant Statutory Authority.

220 LOCATION OF SERVICES

- Services affected by deconstruction/ demolition work: Locate and mark positions.
- Mains services marking: Arrange with the appropriate authorities for services to be located and marked.
 - Marking standard: In accordance with National Joint Utilities Group 'Guidelines on the positioning and colour coding of underground utilities' apparatus'.

230 SERVICES DISCONNECTION ARRANGED BY CONTRACTOR

- General: Arrange with the appropriate authorities for disconnection of services and removal of fittings and equipment owned by those authorities prior to starting deconstruction/ demolition.

240 DISCONNECTION OF DRAINS

- General: Locate, disconnect and seal disused foul and surface water drains.
- Sealing: Permanent, and within the site.

250 LIVE FOUL AND SURFACE WATER DRAINS

- Drains and associated manholes, inspection chambers, gullies, vent pipes and fittings:
 - Protect; maintain normal flow during deconstruction/ demolition.
 - Make good any damage arising from deconstruction/ demolition work.
 - Leave clean and in working order at completion of deconstruction/ demolition work.
- Other requirements: None.

260 SERVICE BYPASS CONNECTIONS

- General: Provide as necessary to maintain continuity of services to occupied areas of the site on which the deconstruction/ demolition is taking place and to adjoining sites/ properties.
- Minimum notice to adjoining owners and all affected occupiers: 72 hours, if shutdown is necessary during changeover.

270 SERVICES TO BE RETAINED

- Damage to services: Give notice, and notify relevant service authorities and/ or owner/ occupier regarding damage arising from deconstruction/ demolition.
- Repairs to services: Complete as directed, and to the satisfaction of the service authority or owner.

DECONSTRUCTION/ DEMOLITION WORK

- 310 WORKMANSHIP
- Standard: Demolish structures in accordance with BS 6187.
 - Operatives:
 - Appropriately skilled and experienced for the type of work.
 - Holding, or in training to obtain, relevant CITB Certificates of Competence.
 - Site staff responsible for supervision and control of work: Experienced in the assessment of risks involved and methods of deconstruction/ demolition to be used.
- 320 GAS OR VAPOUR RISKS
- Precautions: Prevent fire and/ or explosion caused by gas and/ or vapour from tanks, pipes, etc.
- 330 DUST CONTROL
- General: Reduce airborne dust by periodically spraying deconstruction/ demolition works with an appropriate wetting agent. Keep public roadways and footpaths clear of mud and debris.
 - Lead dust: Submit method statement for control, containment and clean-up regimes.
- 340 HEALTH HAZARDS
- Precautions: Protect site operatives and general public from hazards associated with vibration, dangerous fumes and dust arising during the course of the Works.
- 350 ADJOINING PROPERTY
- Temporary support and protection: Provide. Maintain and alter, as necessary, as work proceeds. Do not leave unnecessary or unstable projections.
 - Defects: Report immediately on discovery.
 - Damage: Minimize. Repair promptly to ensure safety, stability, weather protection and security.
 - Support to foundations: Do not disturb.
- 360 STRUCTURES TO BE RETAINED
- Extent: As drawing 13.
 - Parts which are to be kept in place: Protect.
 - Interface between retained structures and deconstruction/ demolition: Cut away and strip out with care to minimize making good.
- 370 PARTLY DEMOLISHED STRUCTURES
- General: Leave in a stable condition, with adequate temporary support at each stage to prevent risk of uncontrolled collapse. Make secure outside working hours.
 - Temporary works: Prevent overloading due to debris.
 - Access: Prevent access by unauthorized persons.
- 380 DANGEROUS OPENINGS
- General: Provide guarding at all times, including outside of working hours. Illuminate during hours of darkness.
 - Access: Prevent access by unauthorized persons.

390 ASBESTOS-CONTAINING MATERIALS – KNOWN OCCURRENCES

- General: Materials containing asbestos are known to be present in: Roof.
- Removal: By contractor licensed by the Health and Safety Executive, and prior to other works starting in these locations.

391 ASBESTOS-CONTAINING MATERIALS – UNKNOWN OCCURRENCES

- Discovery: Give notice immediately of suspected asbestos-containing materials when discovered during deconstruction/ demolition work. Avoid disturbing such materials.
- Removal: Submit statutory risk assessments and details of proposed methods for safe removal.

410 UNFORESEEN HAZARDS

- Discovery: Give notice immediately when hazards such as unrecorded voids, tanks, chemicals, are discovered during deconstruction/ demolition.
- Removal: Submit details of proposed methods for filling, removal, etc.

442 SITE SURFACE AT COMPLETION

- Levels: Grade the site to follow the levels of adjacent areas.
- Temporary surface: Cover the site with 150mm hardcore.

450 SITE CONDITION AT COMPLETION

- Debris: Clear away and leave the site in a tidy condition.
- Other requirements: None.

MATERIALS ARISING

510 CONTRACTOR'S PROPERTY

- Components and materials arising from the deconstruction/ demolition work: Property of the Contractor except where otherwise provided.
- Action: Remove from site as work proceeds where not to be reused or recycled for site use.

520 RECYCLED MATERIALS

- Materials arising from deconstruction/ demolition work: Can be recycled or reused elsewhere in the project, subject to compliance with the appropriate specification and in accordance with any site waste management plan.
- Evidence of compliance: Submit full details and supporting documentation.
 - Verification: Allow adequate time in programme for verification of compliance.

E05 In situ concrete construction generally

To be read with Preliminaries/General conditions.

290 ACCURACY OF CONSTRUCTION

- Setting out: To BS 5964-1.
- Geometrical tolerances: To BS EN 13670, Tolerance Class 1.
 - Conflicts: Notwithstanding tolerances specified elsewhere, do not exceed requirements for compliance with the designated code of practice.
 - Substitution of alternative requirements: None.

300 LEVELS OF STRUCTURAL CONCRETE FLOORS

- Tolerances (maximum):
- Level of floor: ± 10 mm as measured from nearest temporary bench mark.
- Steps in floor level: Not applicable.

310 SURFACE REGULARITY OF CONCRETE FLOORS TO BS 8204 - GENERAL

- Standard: To BS 8204-1 or -2.
- Measurement: From underside of a 2 m straightedge (between points of contact) placed anywhere on surface and using a slip gauge.

410 IN SITU CONCRETE CONSTRUCTION - SUPERVISION/ CHECKING

- Standard: To BS EN 13670, Execution Class 2.

E10 Mixing/casting/curing in situ concrete

To be read with Preliminaries/General conditions.

CONCRETE MIXES

- 101 SPECIFICATION
 - Concrete generally: To BS 8500-2.
 - Exchange of information: Provide concrete producer with information required by BS 8500-1, clauses 4 and 5.
- 110 BASIC DESIGNATED CONCRETE FOUNDATIONS
 - Designation: GEN1.
 - Coarse recycled aggregates: Not permitted.
 - Consistence class: S4.
 - Additional requirements: Submit proposals.
- 111 BASIC DESIGNATED CONCRETE FLOOR SLABS
 - Designation: RC25/30.
 - Coarse recycled aggregates: Not permitted.
 - Consistence class: S3.
 - Additional requirements: Submit proposals.

MATERIALS, BATCHING AND MIXING

- 215 READY-MIXED CONCRETE
 - Production plant: Currently certified by a body accredited by UKAS to BS EN ISO/IEC 17065 for product conformity certification of ready-mixed concrete.
 - Source of ready-mixed concrete: Obtain from one source if possible. Otherwise, submit proposals.
 - Name and address of depot: Submit before any concrete is delivered.
 - Delivery notes: Retain for inspection.
 - Declarations of nonconformity from concrete producer: Notify immediately.
- 225 CHANGES TO SPECIFICATION
 - Changes to specification of fresh concrete (outside concrete producer's responsibility): Prohibited .
- 415 ADMIXTURES
 - Calcium chloride and admixtures containing calcium chloride: Do not use.

PROJECT TESTING/ CERTIFICATION

505 PROJECT TESTING OF CONCRETE - GENERAL

- Testing: To BS EN 206, Annex B.
 - Nonconformity: Obtain instructions immediately.
- Recording: Maintain complete correlated records including:
 - Concrete designation.
 - Sampling, site tests, and identification numbers of specimens tested in the laboratory.
 - Location of the parts of the structure represented by each sample.
 - Location in the structure of the batch from which each sample is taken.

530 TESTS RESULTS

- Submission of reports: Within one day of completion of each test.
 - Number of copies: Three.
- Reports on site: A complete set, available for inspection.

PLACING/ COMPACTION/ CURING AND PROTECTION

630 PREMATURE WATER LOSS

- Requirement: Prevent water loss from concrete laid on absorbent substrates.
 - Underlay: Select from:
 - Polyethylene sheet: 250 micrometres thick.
 - Building paper: To BS 1521, grade B1F.
 - Installation: Lap edges 150 mm.

650 SURFACES TO RECEIVE CONCRETE

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

680 PLACING

- Records: Maintain for time, date and location of all pours.
- Timing: Place as soon as practicable after mixing and while sufficiently plastic for full compaction.
- Temperature limitations for concrete: 30°C (maximum) and 5°C (minimum), unless otherwise specified. Do not place against frozen or frost covered surfaces.
- Continuity of pours: Place in final position in one continuous operation up to construction joints. Avoid formation of cold joints.
- Discharging concrete: Prevent uneven dispersal, segregation or loss of ingredients or any adverse effect on the formwork or formed finishes.
- Thickness of layers: To suit methods of compaction and achieve efficient amalgamation during compaction.
- Poker vibrators: Do not use to make concrete flow horizontally into position, except where necessary to achieve full compaction under void formers and cast-in accessories and at vertical joints.

690 COMPACTING

- General: Fully compact concrete to full depth to remove entrapped air. Continue until air bubbles cease to appear on the top surface.
 - Areas for particular attention: Around reinforcement, under void formers, cast-in accessories, into corners of formwork and at joints.
- Consecutive batches of concrete: Amalgamate without damaging adjacent partly hardened concrete.
- Methods of compaction: To suit consistence class and use of concrete.

810 CURING GENERALLY

- Evaporation from surfaces of concrete: Prevent, including from perimeters and abutments, throughout curing period.
 - Surfaces covered by formwork: Retain formwork in position and, where necessary to satisfy curing period, cover surfaces immediately after striking.
 - Top surfaces: Cover immediately after placing and compacting. If covering is removed for finishing operations, replace it immediately afterwards.
- Surface temperature: Maintain above 5°C throughout the specified curing period or four days, whichever is longer.
- Records: Maintain details of location and timing of casting of individual batches, removal of formwork and removal of coverings. Keep records on site, available for inspection.

811 COVERINGS FOR CURING

- Sheet coverings: Suitable impervious material.
- Curing compounds: Selection criteria:
 - Curing efficiency: Not less than 75% or for surfaces exposed to abrasion 90%.
 - Colouring: Fugitive dye.
 - Application to concrete exposed in the finished work: Readily removable without disfiguring the surface.
 - Application to concrete to receive bonded construction/ finish: No impediment to subsequent bonding.
- Interim covering to top surfaces of concrete: Until surfaces are in a suitable state to receive coverings in direct contact, cover with impervious sheeting held clear of the surface and sealed against draughts at perimeters and junctions.

818 CURING PERIODS GENERALLY

- Minimum periods: When not otherwise indicated, to BS EN 13670, Annex F.8.5.

840 PROTECTION

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

E20 Formwork for in situ concrete

To be read with Preliminaries/ General conditions.

GENERALLY/ PREPARATION

110 LOADINGS

- Requirement: Design and construct formwork to withstand the worst combination of the following:
 - Total weight of formwork, reinforcement and concrete.
 - Construction loads including dynamic effects of placing, compacting and construction traffic.
 - Wind and snow loads.

170 WORK BELOW GROUND - FOUNDATIONS

- Casting vertical faces against faces of excavation: Permitted provided face of excavation is stable.
 - Requirements: Submit proposals for maintaining stability of excavated faces and preventing contamination of concrete by loose soil.

CONSTRUCTION

310 ACCURACY

- General requirement for formwork: Accurately and robustly constructed to produce finished concrete in the required positions and to the required dimensions.
- Formed surfaces: Free from twist and bow (other than any required cambers).
- Intersections, lines and angles: Square, plumb and true.

315 SUBSTRUCTURE FORMWORK AND UNDERSLAB INSULATION

- Cutting: Neat and accurate to edges, and around penetrations and downstands.
- Laying: Tightly butted and fully supported on firm, even substrate.
- Vertical faces: Stiffen as necessary to act as shutter.
- Formwork/ insulation surfaces: Protect from indentation by spacers and other items.
- Joints in formwork/ insulation and with edge structure and penetrations: Seal to prevent penetration of concrete.
- Concrete placement: Restrain formwork/ insulation against movement.

320 JOINTS IN FORMS

- Requirements including joints in form linings and between forms and completed work:
 - Prevent loss of grout, using seals where necessary.
 - Prevent formation of steps. Secure formwork tight against adjacent concrete.

330 INSERTS, HOLES AND CHASES

- Positions and details:
 - Dimensioned on drawings provided on behalf of the Employer: Do not change without consent.
 - Undimensioned or from other sources: Submit proposals.
- Positioning relative to reinforcement: Give notice of any conflicts well in advance of placing concrete.
- Method of forming: Fix inserts or box out as required. Do not cut hardened concrete without approval.

STRIKING

510 STRIKING FORMWORK

- Timing: Prevent any disturbance, damage or overloading of the permanent structure.

FORMED FINISHES

610 BASIC FINISH

- Location: Faces below ground level.
- Finish: Faces fully compacted and cover to reinforcement provided.

E41 Worked finishes to in situ concrete

To be read with Preliminaries/ General conditions.

150 FINISHING

- Timing: Carry out at optimum times in relation to setting and hardening of concrete.
- Prohibited treatments to concrete surfaces:
 - Wetting to assist surface working.
 - Sprinkling cement.

320 TROWELLED FINISH

- Surface on completion: Uniform, smooth but not polished, free from trowel marks and blemishes, and suitable to receive specified flooring material.

F10 Brick/ block walling

To be read with Preliminaries/ General conditions.

TYPES OF WALLING

110 CLAY FACING BRICKWORK TO EXTERNAL WALLS

- Bricks: To BS EN 771-1.
 - Manufacturer: Ibstock.
 - Product reference: TBA.
 - Recycled content: Not applicable.
 - Special shapes: None.
- Mortar: As section Z21.
 - Standard: To BS EN 998-2.
 - Mix: 1:1:6 cement:lime:sand above dpc .
 - Additional requirements: None.
- Bond: Half lap stretcher.
- Joints: Bucket handle.
- Features: None

Other Requirements: Allow PC sum of £550.00 per 1000 for facing bricks .

355 CONCRETE COMMON BLOCKWORK TO INTERNAL LEAF OF CAVITY WALL & MASONRY INTERNAL PARTITIONS ABOVE DPC

- Blocks: To BS EN 771-3.
 - Manufacturer: Forterra.
 - Product reference: Evalite Paint Grade Aggregate Block.
 - Configuration: Group 1.
 - Compressive strength:
 - Mean value: 7.3 N/mm².
 - Characteristic value: Not applicable.
 - Category: -.
 - Freeze/ Thaw resistance: Not applicable.
 - Thermal properties: Thermal conductivity: 0.47 W/mK.
 - Recycled content: Not applicable
 - Work sizes (length x width x height): 440 x 140 x 215 mm.
 - Tolerance category: D1.
 - Special shapes: None.
 - Additional requirements: None.
- Mortar: As section Z21.
 - Standard: To BS EN 998-2.
 - Mix: 1:1:6 cement:lime:sand above dpc.
 - Additional requirements: Density: 1450 kg/m³.
- Bond: Half lap stretcher.

355A CONCRETE COMMON BLOCKWORK TO INTERNAL LEAF OF CAVITY WALL BELOW DPC, EXTERNAL LEAF OF CAVITY WALL ABOVE DPC TO RECEIVE RENDERED FINISH AND MASONRY INTERNAL PARTITIONS BELOW DPC

- Blocks: To BS EN 771-3.
 - Manufacturer: Forterra.
Product reference: Fenlite 1500 Aggregate Block.
 - Configuration: Group 1.
 - Compressive strength:
Mean value: 7.3 N/mm².
Characteristic value: Not applicable.
Category: -.
 - Freeze/ Thaw resistance: Not applicable.
 - Thermal properties: Thermal conductivity: 0.48 W/mK.
 - Recycled content: Not applicable
 - Work sizes (length x width x height): 440 x 140 x 215 mm.
Tolerance category: D1.
 - Special shapes: None.
 - Additional requirements: None.
- Mortar: As section Z21.
 - Standard: To BS EN 998-2.
 - Mix: 1:1:4-5 cement:lime:sand below dpc.
 - Additional requirements: Density: 1450 kg/m³.
- Bond: Half lap stretcher.

400 HARD LANDSCAPING MATERIALS SPECIFICATION

- Minimum BRE 'Green Guide to Specification' online rating: A.

WORKMANSHIP GENERALLY

430 CONDITIONING OF CLAY AND CALCIUM SILICATE BRICKS AND CLAY BLOCKS

- Bricks and blocks delivered warm from manufacturing process: Do not use until cold.
- Absorbent bricks in warm weather: Wet to reduce suction. Do not soak.

440 CONDITIONING OF CONCRETE BRICKS/ BLOCKS

- Autoclaved concrete bricks/ blocks delivered warm from manufacturing process: Do not use.
- Age of nonautoclaved concrete bricks/ blocks: Do not use until at least four weeks old.
- Avoidance of suction in concrete bricks/ blocks: Do not wet.
 - Use of water retaining mortar admixture: Submit details.

500 LAYING GENERALLY

- Mortar joints: Fill vertical joints. Lay bricks, solid and cellular blocks on a full bed.
- AAC block thin mortar adhesive and gypsum block adhesive joints: Fill vertical joints. Lay blocks on a full bed.
- Clay block joints:
 - Thin layer mortar: Lay blocks on a full bed.
 - Interlocking perpends: Butted.
- Bond where not specified: Half lap stretcher.
- Vertical joints in brick and concrete block facework: Even widths. Plumb at every fifth cross joint.

- 535 HEIGHT OF LIFTS IN WALLING USING CEMENT GAUGED OR HYDRAULIC LIME MORTAR
- Quoins and advance work: Rack back.
 - Lift height (maximum): 1.2 m above any other part of work at any time.
 - Daily lift height (maximum): 1.5 m for any one leaf.
- 545 LEVELLING OF SEPARATE LEAVES USING CEMENT GAUGED OR HYDRAULIC LIME MORTAR
- Locations for equal levelling of cavity wall leaves: As follows:
 - Every course containing vertical twist type ties or other rigid ties.
 - Every third tie course for double triangle/ butterfly ties.
 - Courses in which lintels are to be bedded.
- 560 COURSING BRICKWORK
- Gauge: Four brick courses including bed joints to 300 mm.
- 561 COURSING BRICKWORK WITH EXISTING
- Gauge: Line up with existing brick courses.
- 610 SUPPORT OF EXISTING WORK
- Joint above inserted lintel or masonry: Fully consolidated with semidry mortar to support existing structure.
- 620 BLOCK BONDING NEW WALLS TO EXISTING
- Pocket requirements: Formed as follows:
 - Width: Full thickness of new wall.
 - Depth (minimum): 100 mm.
 - Vertical spacing:
 - Brick to brick: 4 courses high at 8 course centres.
 - Block to block: Every other course.
 - Pocket joints: Fully filled with mortar.
- 635 JOINTING
- Profile: Consistent in appearance.
- 645 ACCESSIBLE JOINTS NOT EXPOSED TO VIEW
- Jointing: Struck flush as work proceeds.
- 671 FIRE STOPPING
- Avoidance of fire and smoke penetration: Fit tightly between cavity barriers and masonry. Leave no gaps.

690 ADVERSE WEATHER

- General: Do not use frozen materials or lay on frozen surfaces.
- Air temperature requirements: Do not lay bricks/ blocks:
 - In cement gauged mortars when at or below 3°C and falling or unless it is at least 1°C and rising.
 - In hydraulic lime:sand mortars when at or below 5°C and falling or below 3°C and rising.
 - In thin joint mortar glue when outside the limits set by the mortar manufacturer.
- Temperature of walling during curing: Above freezing until hardened.
- Newly erected walling: Protect at all times from:
 - Rain and snow.
 - Drying out too rapidly in hot conditions and in drying winds.

ADDITIONAL REQUIREMENTS FOR FACEWORK

710 THE TERM FACEWORK

- Definition: Applicable in this specification to all brick/ block walling finished fair.
 - Painted facework: The only requirement to be waived is that relating to colour.

740 FINISHED MASONRY WORK REFERENCE PANELS

- General: Before proceeding to construct the following walling types, construct panels as specified. Give notice when panels are dry.
- Selection masonry units: Reasonably representative of the average quality of the whole order to be delivered .
- Panel types:
 - Walling type: F10/110 .
 - Location: TBA .
 - Size: 1.5 x 1.5 m .
 - Other requirements: None .

750 COLOUR CONSISTENCY OF MASONRY UNITS

- Colour range: Submit proposals of methods taken to ensure that units are of consistent and even appearance within deliveries.
- Conformity: Check each delivery for consistency of appearance with previous deliveries and with approved reference panels; do not use if variation is excessive.
- Finished work: Free from patches, horizontal stripes and racking back marks.

760 APPEARANCE

- Brick/ block selection: Do not use units with damaged faces or arrises.
- Cut masonry units: Where cut faces or edges are exposed cut with table masonry saw.
- Quality control: Lay masonry units to match relevant reference panels.
 - Setting out: To produce satisfactory junctions and joints with built-in elements and components.
 - Coursing: Evenly spaced using gauge rods.
- Lifts: Complete in one operation.
- Methods of protecting facework: Submit proposals.

780 GROUND LEVEL

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

**CAINSCROSS FOOTBALL
PAVILLION**

F10

790 PUTLOG SCAFFOLDING

- Use: Not permitted in facework.

800 TOOTHED BOND

- New and existing facework in same plane: Bond together at every course to achieve continuity.

830 CLEANLINESS

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

F30 Accessories/ sundry items for brick/ block/ stone walling

To be read with Preliminaries/ General conditions

CAVITIES

- 110 CONCRETE FILL TO BASE OF CAVITY
- Concrete generally: To BS EN 206 and BS 8500-2.
 - Designated concrete: GEN 1.
 - Workability: High.
 - Extent: Maintain 75 mm between top of fill and external ground level and a minimum of 225 mm between top of fill and ground level dpc.
 - Placement: Compact to eliminate voids.
- 120 CLEANLINESS
- Cavity base and faces, ties, insulation and exposed dpcs: Free from mortar and debris.
- 130 PERPEND JOINT WEEP HOLES
- Form: Open perpend joint.
 - Locations: Through outer leaf immediately above base of cavity, at cavity trays, stepped dpcs and external openings. 75 mm above top of cavity fill at base of cavity.
 - Provision: At not greater than 1000 mm centres and not less than two over each opening.
- 132A CAVITY WEEP HOLE DUCT
- Manufacturer: Rytons Building Products Ltd.
 - Web: www.vents.co.uk.
 - Email: admin@rytons.com.
 - Product reference: RYTWEBS.
 - Accessories: None.
- 150A FULL FILL CAVITY WALL INSULATION BOARD
- Manufacturer: Celotex.
 - Web: www.celotex.co.uk.
 - Email: info@celotex.co.uk.
 - Product reference: CF5097.
- 180A CAVITY CLOSERS
- Manufacturer: Kingspan Insulation.
 - Web: www.kingspaninsulation.co.uk.
 - Email: info@kingspaninsulation.co.uk.
 - Product reference: Kingspan Kooltherm® Cavity Closer 100.
 - Accessories:
 - Jointing clip;
 - Jointing strip; and
 - Fixing tie.

REINFORCING/ FIXING ACCESSORIES

210A CAVITY WALL TIES

- Manufacturer: Ancon Building Products.
 - Web: www.ancon.co.uk.
 - Email: info@ancon.co.uk.
 - Product reference: ST1 Wall tie
- Length: 225 mm.
- Material: Stainless steel grade 1.4301 (304)

228 FIXING TIES IN MASONRY CAVITY WALLS WITH FULL FILL CAVITY INSULATION

- Embedment in mortar beds (minimum): 50 mm.
- Placement: Sloping slightly downwards towards outer leaf, without bending. Drip centred in the cavity and pointing downwards.
- Spacing: Staggered in alternate courses.
 - Horizontal centres: 600.
 - Vertical centres: 450.
- Provision of additional ties:
- One row to support lowest row of insulation batts.
- Within 225 mm of reveals of unbonded openings and at the vertical reveals of unsupported masonry.
- Spacing: 225mm.

241A WALL STARTERS/ CONNECTORS

- Manufacturer: Ancon Building Products.
 - Web: www.ancon.co.uk.
 - Email: info@ancon.co.uk.
 - Product reference: Staifix Universal Wall Starter System.
- Material:
 - Universal Wall Starter: Stainless steel grade 1.4401.

281A LATERAL RESTRAINT PROPRIETARY SLIP TIES FOR MOVEMENT JOINTS

- Manufacturer: Ancon Building Products.
 - Web: www.ancon.co.uk.
 - Email: info@ancon.co.uk.
 - Product reference: Ancon Movement/ Lateral Restraint Slip Ties
- Type: Ancon PPS wall tie.
- Length: 150 mm.
- Material: Stainless steel grade 1.4301 (304)

FLEXIBLE DAMP PROOF COURSES/ CAVITY TRAYS

310A DAMP PROOF COURSE

- Manufacturer: Visqueen Building Products.
 - Web: www.visqueenbuilding.co.uk.
 - Email: riba@visqueenbuilding.co.uk.
 - Product reference: Zedex Bitumen DPC
- Width: To suit width of walls.
- Accessories: DPC Jointing Tape.

370A PREFORMED CAVITY TRAYS

- Manufacturer: Cavity Trays Ltd.
 - Web: www.cavitytrays.com.
 - Email: enquiries@cavitytrays.co.uk.
 - Product reference: Type B Vertical DPC Cavitytray
- Location: As drawing 15.
- Type: B2.
- Attached insulation: Not required.

370B PREFORMED CAVITY TRAYS

- Manufacturer: Cavity Trays Ltd.
 - Web: www.cavitytrays.com.
 - Email: enquiries@cavitytrays.co.uk.
 - Product reference: Type Q Arresting Barrier
- Location: As drawings.
- Cavity width: 125 mm.
- Profile:
 - Masonry leaf base length: 100mm.
 - Cavity upstand: 225mm.
- Return angle trays:
 - Internal angle: Not required.
 - External angle: Not required.

385A PREFORMED DPC/ CAVITY TRAY JUNCTION CLOAKS/ STOP ENDS

- Manufacturer: Cavity Trays Ltd.
 - Web: www.cavitytrays.com.
 - Email: enquiries@cavitytrays.co.uk.
 - Product reference: Type C Cavitytray
- Location: As drawings.
- Lintel type/ profile: As drawings.
- Cavity width: 100 mm.
- Opening width: As drawings.
- Lintel length: As drawings.
- Dpc thickness: 1.5 mm.
- Inner skin return: Required.

INSTALLATION OF DPCS/ CAVITY TRAYS

415 HORIZONTAL DPCS

- Placement: In continuous lengths on full even bed of fresh mortar, with 100 mm laps at joints and full laps at angles.
- Width: At least full width of leaf unless otherwise specified. Edges of dpc not covered with mortar or projecting into cavity.
- Overlying construction: Immediately cover with full even bed of mortar to receive next masonry course.
- Overall finished joint thickness: As close to normal as practicable.

425 GROUND LEVEL DPCS

- Joint with damp proof membrane: Continuous and effectively sealed.

- 485 CAVITY TRAYS OVER OPENINGS AND OTHER CAVITY BRIDGINGS
- Length: To extend not less than 150 mm beyond ends of lintels/ bridgings.
- 515 DPC/ CAVITY TRAY LEADING EDGE IN FACEWORK - FLUSH
- Treatment at face of masonry: Finish flush and clear of mortar at the following locations: Generally.
- 560 VERTICAL DPCS GENERALLY
- Form: In one piece wherever possible.
 - Joints: Upper part overlapping lower not less than 100 mm.
- 570 JAMB DPCS AT OPENINGS
- Joint with cavity tray/ lintel at head: Full underlap.
 - Joint with sill/ horizontal dpc at base: Full overlap.
 - Projection into cavity: Not less than 25 mm.
 - Relationship with frame: In full contact.

JOINTS

- 610 MOVEMENT JOINTS WITH SEALANT TO EXTERNAL FACING BRICKWORK AND WALL STARTER LOCATIONS
- Joint preparation and sealant application: As section Z22.
 - Filler: Closed cell polyethylene foam.
 - Thickness: To match design width of joint.
 - Manufacturer: Fosroc.
Product reference: Hydrocell XL.
 - Placement: Build in as work proceeds with no projections into cavities and to correct depth to receive sealant system.
 - Sealant:
 - Designation: -.
 - Manufacturer: Fosroc.
Product reference: Nitoseal MS100.
 - Colour: Buff.
- 650 POINTING IN FLASHINGS
- Joint preparation: Free of debris and lightly wetted.
 - Pointing mortar: As for adjacent walling.
 - Placement: Fill joint and finish flush.
- 660 PINNING UP TO SOFFITS
- Top joint of loadbearing walls: Fill and consolidate with mortar.
- 670 TOPS OF NONLOADBEARING WALLS
- Restraints: Timber blocking fixed to underside of truss.
 - Fixing: Secure to soffit.
 - Joint filler: Closed cell polythene foam.
 - Placement: Full, no gaps.

PROPRIETARY SILLS/ LINTELS/ COPINGS/ DRESSINGS

735 PRECAST CONCRETE LINTELS

- Standard: To BS EN 845-2.
- Manufacturer: Naylor.
 - Product reference: Fair faced High Spec.
- Types: Single.
- Sizes: As schedule.
- Additional requirements: All Lintels to course through with fair faced blockwork to be 215mm high.
- Placement: Bed on mortar used for adjacent work.
 - Bearing length (minimum): 150 mm.

755 PREFABRICATED STEEL LINTELS

- Standard: To BS EN 845-2.
- Manufacturer: IG Lintels.
 - Product reference: L1/S 100 WIL.
- Types: Single.
- Material/ finish: -.
- Sizes: As Lintel Schedule.
- Additional requirements: As schedule.
- Placement: Bed on mortar used for adjacent work.
 - Bearing length (minimum): 150 mm.

MISCELLANEOUS ITEMS

840 OPENINGS FOR FRAMES

- Formation: Use accurate, rigid templates to required size.

850 WALL PLATES

- Placement: On full bed of mortar to correct horizontal level.

G12 Isolated structural metal members

To be read with Preliminaries/ General conditions.

PRODUCTS

320 STEEL

- Steel: Refer to engineers 1064 series drawings.
 - Grade: S35S.
 - Section properties and dimensions: As engineers drawings.
 - Surface condition: Free from heavy pitting and rust, burrs, sharp edges and flame cutting dross.

340 BOLT ASSEMBLIES

- Designation: Black bolts to BS 4190, grade 8.8.
- Size: M20 unless noted otherwise.
- Nuts and washers: Material grade and finish to suit bolts.
- Coating applied by manufacturer: Zinc plated.
- Other requirements: none.

FABRICATION

510 FABRICATION OF STEEL MEMBERS

- Cuts and holes: Accurate and neat.
- Welding: Metal arc method to BS EN 1011-2.
 - Welded joints: Fully fused, with mechanical properties not less than those of the parent metal.
 - Site welding: Obtain approval.
- Joints: Location and layout of fastenings as drawing -.

EXECUTION

610 INSTALLATION

- Accuracy: Members positioned true to line and level using, if necessary, steel packs of sufficient area to allow full transfer of loads to bearing surfaces.
- Fixing: Use washers under bolt heads and nuts.
 - Tapered washers: Provide under bolt heads and nuts bearing on sloping surfaces. Match taper to slope angle and align correctly.

**CAINSCROSS FOOTBALL
PAVILLION**

G12

650 SHOP PRIMING GENERALLY

- Preparation: To BS EN ISO 12944-4. Remove fins, burrs, sharp edges and weld spatter and clean out crevices.
 - Surface finish: Blast cleaned to BS EN ISO 8501-1, grade Sa 2½.
 - Prepared surfaces: Keep in a dry atmosphere and apply first coating without delay.
- Priming:
 - Primer: Zinc phosphate epoxy.
Number of coats: One.
Dry film thickness (minimum): 80 micrometres per coat.
 - Application: To BS EN ISO 12944-7.
- Other requirements: none.

G20 Carpentry/ timber framing/ first fixing

To be read with Preliminaries/ General conditions.

GENERAL

105 TIMBER PROCUREMENT

- Timber (including timber for wood based products): Obtained from well managed forests/ plantations in accordance with:
 - The laws governing forest management in the producer country or countries.
 - International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).
- Documentation: Provide either:
 - Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied, or
 - Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood based products.

120 STRUCTURAL DESIGN PROVIDED

- Description: Canopy Edge Beam.
- Requirements:
 - Generally: As section B50/B51.
 - Additional requirements: None.

150 STRENGTH GRADING OF TIMBER

- Grader: A company currently registered under a third party quality assurance scheme operated by a certification body approved by the UK Timber Grading Committee.

160 GRADING AND MARKING OF SOFTWOOD

- Timber of a target/ finished thickness less than 100 mm and not specified for wet exposure: Graded at an average moisture content not exceeding 20% with no reading being in excess of 24% and clearly marked as 'DRY' or 'KD' (kiln dried).
- Timber graded undried (green) and specified for installation at higher moisture contents: Clearly marked as 'WET' or 'GRN'.
- Structural timber members cut from large graded sections: Regraded to approval and marked accordingly.

PRODUCTS

210 STRUCTURAL SOFTWOOD (GRADED DIRECT TO STRENGTH CLASS) FOR STRUCTURAL USE GENERALLY

- Grading standard: To BS 4978, BS EN 14081-1, or other national equivalent and so marked.
- Strength class to BS EN 338: C24.
- Treatment:
 - Preservative treatment: Organic solvent impregnation to NBS section Z12 and Wood Protection Association Commodity Specification C8.
Design service life: 30 years.
 - Fire retardant treatment: None required.

- 270 **UNGRADED SOFTWOOD FOR INTERNAL NONSTRUCTURAL USE**
- Quality of timber: Free from decay, insect attack (except pinhole borers) and with no knots wider than half the width of the section.
 - Surface finish: Regularized.
 - Treatment:
 - Preservative treatment: None required.
 - Design service life: -.
 - Fire retardant treatment: -.
- 350 **TRUSSED RAFTERS**
- Design and fabrication standard: To BS EN 14250.
 - Manufacturer: A firm currently registered under a third party quality assurance scheme.
 - Truss system: Agrément certified .
 - Ancillary components to be supplied by the truss fabricator: Double trusses .
 - Treatment: Organic solvent type as section Z12 and BWPDA Commodity Specification C8
- Other requirements: Manufacturer to allow for mechanical and electrical plant and equipment loadings in centre of roof. Allow for 2 no. air handling units.
Truss Manufacturer to allow for the following in the design: Suspended ceilings, HD plasterboard ceilings, Light fittings .

WORKMANSHIP GENERALLY

- 401 **CROSS SECTION DIMENSIONS OF STRUCTURAL SOFTWOOD AND HARDWOOD**
- Dimensions: Dimensions in this specification and shown on drawings are target sizes as defined in BS EN 336.
 - Tolerances: The tolerance indicators (T1) and (T2) specify the maximum permitted deviations from target sizes as stated in BS EN 336, clause 4.3:
 - Tolerance class 1 (T1) for sawn surfaces.
 - Tolerance class 2 (T2) for further processed surfaces.
- 402 **CROSS SECTION DIMENSIONS OF NON-STRUCTURAL SOFTWOOD**
- Dimensions: Dimensions in this specification and shown on drawings are finished sizes.
 - Maximum permitted deviations from finished sizes: As stated in BS EN 1313-1:
 - Clause 6 for sawn sections.
- 420 **WARPING OF TIMBER**
- Bow, spring, twist and cup: Not greater than the limits set down in BS 4978, BS EN 14081-1 and BS EN 844-3.
- 430 **SELECTION AND USE OF TIMBER**
- Timber members damaged, crushed or split beyond the limits permitted by their grading: Do not use.

435 NOTCHES, HOLES AND JOINTS IN TIMBER

- Notches and holes:
 - General: Avoid if possible.
 - Sizes: Minimum needed to accommodate services.
 - Position: Do not locate near knots or other defects.
 - In same joist: Minimum 100 mm apart horizontally.
- Notches in joists:
 - Position: Locate at top. Form by sawing down to a drilled hole.
 - Depth (maximum): 0.15 x joist depth.
 - Distance from supports: Between 0.1 and 0.2 x span.
- Holes in joists:
 - Position: Locate on neutral axis.
 - Diameter (maximum): 0.25 x joist depth.
 - Centres (minimum): 3 x diameter of largest hole.
 - Distance from supports: Between 0.25 and 0.4 of span.
- Notches in roof rafters, struts and truss members: Not permitted.
- Holes in struts and columns: Locate on neutral axis.
 - Diameter (maximum): 0.25 x minimum width of member.
 - Centres (minimum): 3 x diameter of largest hole.
 - Distance from ends: Between 0.25 and 0.4 of span.
- Scarf joints, finger joints and splice plates: Do not use without approval.

440 PROCESSING TREATED TIMBER

- Cutting and machining: Carry out as much as possible before treatment.
- Extensively processed timber: Retreat timber sawn lengthways, thickness, planed, ploughed, etc.
- Surfaces exposed by minor cutting/ drilling: Treat with two flood coats of a solution recommended by main treatment solution manufacturer.

450 MOISTURE CONTENT

- Moisture content of wood and wood based products at time of installation: Not more than:
 - Covered in generally unheated spaces: 24%.
 - Covered in generally heated spaces: 20%.
 - Internal in continuously heated spaces: 20%.

510 PROTECTION

- Generally: Keep timber dry and do not overstress, distort or disfigure sections or components during transit, storage, lifting, erection or fixing.
- Timber and components: Store under cover, clear of the ground and with good ventilation. Support on regularly spaced, level bearers on a dry, firm base. Open pile to ensure free movement of air through the stack.
- Trussed rafters: Keep vertical during handling and storage.

520 EXPOSED END GRAIN PROTECTION

- Components: Seal exposed end grain of the following before delivery to site:
 - Rafters.
- Sealer: Clear end grain sealer.

550 EXPOSED TIMBER

- Planed structural timber exposed to view in completed work: Prevent damage to and marking of surfaces and arrises.

JOINTING TIMBER

570 JOINTING/ FIXING GENERALLY

- Generally: Where not specified precisely, select methods of jointing and fixing and types, sizes and spacings of fasteners in compliance with section Z20.

580 FRAMING ANCHORS

- Manufacturer: Expamet.
 - Product reference: Framing Anchors.
- Material/ finish: Galvanized low carbon steel.
- Fasteners: Galvanized or sherardized square twist nails.
 - Size: Not less than size recommended by anchor manufacturer.
- Fixing: Secure using not less than the number of nails recommended by anchor manufacturer.

630 BOLTED JOINTS

- Bolt spacings (minimum): To BS EN 1995-1-1, section 8.5.
- Holes for bolts: Located accurately and drilled to diameters as close as practical to the nominal bolt diameter and not more than 2 mm larger.
- Washers: Placed under bolt heads and nuts that would otherwise bear directly on timber. Use spring washers in locations which will be hidden or inaccessible in the completed building.
- Bolt tightening: So that washers just bite the surface of the timber. Ensure that at least one complete thread protrudes from the nut.
 - Checking: At agreed regular intervals up to Completion. Tighten as necessary.

670 ANTI-CORROSION FINISHES FOR FASTENERS

- Galvanizing: To BS 7371-6, with internal threads tapped and lightly oiled following treatment.
- Sherardizing: To BS 7371-8, Class 1.
- Zinc plating: To BS EN ISO 4042 and passivated.

ERECTION AND INSTALLATION

760 TEMPORARY BRACING

- Provision: As necessary to maintain structural timber components in position and to ensure complete stability during construction.

770 ADDITIONAL SUPPORTS

- Provision: Position and fix additional studs, noggings and/ or battens to support edges of sheet materials, and wall/ floor/ ceiling mounted appliances, fixtures, etc. shown on drawings.
- Material properties: Additional studs, noggings and battens to be of adequate size and have the same treatment, if any, as adjacent timber supports.

780 WALL PLATES

- Position and alignment: To give the correct span and level for trusses, joists, etc.
- Bedding: Fully in fresh mortar.
- Joints: At corners and elsewhere where joints are unavoidable use nailed half lap joints. Do not use short lengths of timber.

784 JOISTS GENERALLY

- Centres: Equal, and not exceeding designed spacing.
- Bowed joists: Installed with positive camber.
- End joists: Positioned approximately 50 mm from masonry walls.

786 JOISTS ON HANGERS

- Hangers: Bedded directly on and hard against supporting construction. Do not use packs or bed on mortar.
- Joists: Cut to leave not more than 6 mm gap between ends of joists and back of hanger. Rebated to lie flush with underside of hangers.
- Fixing to hangers: A nail in every hole.

795 TRIMMING OPENINGS

- Trimmers and trimming joists: When not specified otherwise, not less than 25 mm wider than general joists.

800 TRUSSED RAFTER INSTALLATION

- Erection: To Trussed Rafter Association (TRA) Technical handbook. Site installation guide and TRA Product data sheet PD3.
- Trusses generally: Do not modify without approval.
- Damaged trusses: Do not use.
- Fixing: With truss clips. Bottom chords of standard trusses and rafters of raised tie trusses bearing fully on wall plates.
 - Bottom chords of standard trusses: Do not fix to internal walls until roofing is complete and cisterns are installed and filled.
- Tolerances: To NA to BS EN 1995-1-1.

805 TRUSS CLIPS

- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Material/ finish: Galvanized steel.
- Fasteners: 32 x 3.5 mm galvanized or sherardized square twisted nails in every hole.

810 PERMANENT BRACING OF TRUSSED RAFTERS

- Bracing and binders:
 - Size: As truss manufacturers requirements.
 - Method of fixing: To every rafter, strut or tie with not less than two fasteners. Fasteners: As truss manufacturers recommendations.
- Lap joints: Extended over and nailed to at least two truss members.

820 VERTICAL RESTRAINT STRAPS

- Type: Bent.
- Manufacturer: Expamet.
 - Product reference: Restraint Strap.
- Material/ finish: Galvanized steel.
- Size:
 - Cross section: Not less than 30 x 3 mm.
 - Length: 1000mm.
- Centres: Not more than 1.2 m.
- Fixing:
 - To timber members with not less than 3 no. screws.
 - To masonry with not less than 3 no. screws evenly spaced, with at least one screw located within 150 mm of the bottom end of each strap.

830 LATERAL RESTRAINT STRAPS

- Manufacturer: Expamet.
 - Product reference: Restraint Strap.
- Material/ finish: Galvanized steel.
- Size: Not less than 30 x 5 mm x 1200 mm long.
- Fixing: To top of joists/ rafters/ ties at not more than 1.2 m centres and as shown on drawings.
 - Ensure that cranked end is in tight contact with cavity face of wall inner leaf and is not pointing upwards.
- Straps spanning joists/ rafters/ ties running parallel to wall: Fix noggings and packs tightly beneath straps.
 - Size of noggings and packs: Not less than three quarters of joist/ rafter/ tie depth and not less than 38 mm thick.
 - Notching: Notch joists so that straps fit flush with surface. Do not notch rafters/ ties.
- Fasteners: No. 6 screws.

950A FASCIA AND SOFFIT SYSTEM ALUMINIUM

- Manufacturer: Dales Fabrications Ltd - Aluminium Eaves Products.
 - Web: www.dales-eaves.co.uk.
 - Email: rp13sales@dales-eaves.co.uk.
 - Product reference: Panel Fascia and Soffit System.
 - Gauge: 2 mm.
 - Finish: Polyester powder coating.
 - Colour: TBC.
 - Nominal depth: Fascia - 300mm deep and soffit 250mm deep.
 - Edge profile: Standard.
 - Accessories:
 - Internal and external corners;
 - Gable boxes ends;
 - Apex pieces; and
 - Soffit end closures
- Fixing: Standard fixing straps and clips as manufacturers recommendations
Other Requirements: 18mm Plywood backing boards to support fascia and soffit boards.

J40 Flexible sheet waterproofing/ damp proofing

To be read with Preliminaries/ General conditions.

110 SOFT BLINDING TO HARDCORE BEDS

- Material: Soft sand.
 - Thickness (minimum): 25 mm.
- Finish on completion: Smooth, consolidated bed free of sharp projections.

TYPES OF TANKING/ DAMP PROOFING

120A LOOSE LAID POLYETHYLENE DAMP PROOFING

- Manufacturer: Visqueen Building Products.
 - Web: www.visqueenbuilding.co.uk.
 - Email: riba@visqueenbuilding.co.uk.
 - Product reference: Eco Membrane
- Membrane:
 - Thickness: 1200 gauge.
- Accessories: Double Sided Jointing Tape and Foil Backed Lap Tape.

WORKMANSHIP

310 WORKMANSHIP GENERALLY

- Condition of substrate:
 - Clean and even textured, free from voids and sharp protrusions.
 - Moisture content: Compatible with damp proofing/ tanking.
- Air and surface temperature: Do not apply sheets if below minimum recommended by membrane manufacturer.
- Condition of membrane at completion:
 - Neat, smooth and fully supported, dressed well into abutments and around intrusions.
 - Completely impervious and continuous.
 - Undamaged. Prevent puncturing during following work.
- Permanent overlying construction: Cover membrane as soon as possible.

345 COLD APPLIED BONDING COMPOUNDS

- Type and application: As recommended for the purpose by the membrane manufacturer.

350 ANGLES IN BONDED DAMP PROOFING/ TANKING

- Preformed rot proof fillet to internal angles:
 - Size (minimum): 50 x 50 mm, splay faced.
 - Bedding: Bitumen mastic or bonding compound.
- Reinforcing strip to all angles:
 - Material: As damp proofing/ tanking.
 - Width (minimum): 300 mm.
 - Timing: Apply before main sheeting.
- Dressing of main sheeting onto adjacent surfaces (minimum): 100 mm.

365 JUNCTIONS WITH FLUSH DPCS/ CAVITY TRAYS

- Adjoining surfaces: Clean and dry.
- Dpcs/ Cavity trays:
 - Expose edge where concealed.
 - Lap and fully bond/ seal sheeting to wall.
 - Dressing of sheeting beyond dpc/ cavity tray (minimum): 50 mm.
 - Bonding/ Sealing: Mastic tape.

370A PREFORMED COLLARS FOR PIPES, DUCTS, CABLES, ETC.

- Manufacturer: Visqueen Building Products.
 - Web: www.visqueenbuilding.co.uk.
 - Email: riba@visqueenbuilding.co.uk.
 - Product reference: Top Hat units
- Type: Rigid preformed pipe sleeve.
- Diameter: As required.

J42 Single layer polymeric sheet roof coverings

To be read with Preliminaries/ General conditions.

TYPES OF ROOF COVERING

- 101A WARM DECK ROOF
Refer to Appendix for roof specification

K10 Plasterboard dry linings/ partitions/ ceilings

To be read with Preliminaries/ General conditions.

TYPES OF DRY LINING

205 LINING ON TIMBER TO STUD PARTITIONS

- Background: 125 x 75 mm timber studs at 400mm centres.
- Metal resilient (acoustic) bars: At 450 mm centres.
- Linings: 1no. 15mm Duraline board both sides .
 - Fixing: Screws.
- Finishing: Seamless jointing.
 - Primer/ Sealer: As recommended by board manufacturer for vapour control.
 - Accessories: Metal beads/ stops recommended by board manufacturer .
- Other requirements: Provide 18mm plywood sheathing as K11/415A behind plasterboard to timber stud wall in Tea Point to enable fixing of kitchen units .

245 CEILING LINING ON TIMBER TRUSSES

- Background: Trusses at 600 mm centres.
- Metal resilient (acoustic) bars: Not required.
- Linings: 15 mm British Gypsum Duraline Board.
 - Fixings: Screws.
- Finishing: Seamless jointing.
 - Primer/ Sealer: As recommended by board manufacturer for vapour control.
 - Accessories: Metal beads/ stops recommended by board manufacturer .
- Other requirements: Fire stopping around service penetrations as section P12.

INSTALLATION

335 ADDITIONAL SUPPORTS

- Framing: Accurately position and securely fix to give full support to:
 - Partition heads running parallel with, but offset from main structural supports.
 - Fixtures, fittings and service outlets. Mark framing positions clearly and accurately on linings.
 - Board edges and lining perimeters, as recommended by board manufacturer to suit type and performance of lining.

375 NEW WET LAID BASES

- Dpcs: Install under full width of partitions/ freestanding wall linings.
 - Material: Bituminous sheet or plastics.

435 DRY LININGS GENERALLY

- General: Use fixing, jointing, sealing and finishing materials, components and installation methods recommended by board manufacturer.
- Cutting plasterboards: Neatly and accurately without damaging core or tearing paper facing.
 - Cut edges: Minimize and position at internal angles wherever possible. Mask with bound edges of adjacent boards at external corners.
- Fixings boards: Securely and firmly to suitably prepared and accurately levelled backgrounds.
- Finishing: Neatly to give flush, smooth, flat surfaces free from bowing and abrupt changes of level.

445 CEILINGS

- Sequence: Fix boards to ceilings before installing dry lined walls and partitions.
- Orientation of boards: Fix with bound edges at right angles to supports and with ends staggered in adjacent rows.
- Two layer boarding: Stagger joints between layers.

510 SEALING GAPS AND AIR PATHS

- Location of sealant: To perimeter abutments and around openings.
 - Pressurized shafts and ducts: At board-to-board and board-to-metal frame junctions.
- Application: To clean, dry and dust free surfaces as a continuous bead with no gaps.
 - Gaps greater than 6 mm between floor and underside of plasterboard: After sealing, fill with jointing compound.

555 FIRE STOPPING AT PERIMETERS OF DRY LINING SYSTEMS

- Material: Tightly packed mineral wool or intumescent mastic/ sealant.
- Application: To perimeter abutments to provide a complete barrier to smoke and flame.

560 JOINTS BETWEEN BOARDS

- Tapered edged plasterboards:
 - Bound edges: Lightly butted.
 - Cut/ unbound edges: 3 mm gap.
- Square edged plasterboards: 3 mm gap.
- Square edged fibre reinforced gypsum boards: 5 mm gap.

565 VERTICAL JOINTS

- Joints: Centre on studs.
 - Partitions: Stagger joints on opposite sides of studs.
 - Two layer boarding: Stagger joints between layers.

570 HORIZONTAL JOINTS

- Surfaces exposed to view: Horizontal joints not permitted. Seek instructions where height of partition/ lining exceeds maximum available length of board.
- Two layer boarding: Stagger joints between layers by at least 600 mm.
- Edges of boards: Support using additional framing.
 - Two layer boarding: Support edges of outer layer.

610 FIXING PLASTERBOARD TO TIMBER

- Fixing to timber: Securely at the following centres (maximum):
 - Nails: 150 mm.
 - Screws to partitions/ wall linings: 300 mm. Reduce to 200 mm at external angles.
 - Screws to ceilings: 230 mm.
- Position of nails/ screws from edges of boards (minimum):
 - Bound edges: 10 mm.
 - Cut/ unbound edges: 13 mm.
- Position of nails/ screws from edges of timber supports (minimum): 6 mm.

FINISHING

650 LEVEL OF DRY LINING ACROSS JOINTS

- Sudden irregularities: Not permitted.
- Joint deviations: Measure from faces of adjacent boards using methods and straightedges (450 mm long with feet/ pads) to BS 8212, clause 3.3.5.
 - Tapered edge joints:
Permissible deviation (maximum) across joints when measured with feet resting on boards: 3 mm.
 - External angles:
Permissible deviation (maximum) for both faces: 4 mm.
 - Internal angles:
Permissible deviation (maximum) for both faces: 5 mm.

670 SEAMLESS JOINTING TO PLASTERBOARDS

- Cut edges of boards: Lightly sand to remove paper burrs.
- Filling and taping: Fill joints, gaps and internal angles with jointing compound and cover with continuous lengths of paper tape, fully bedded.
- Protection of edges/ corners: Reinforce external angles, stop ends, etc. with specified edge/ angle bead.
- Finishing: Apply jointing compound. Feather out each application beyond previous application to give a flush, smooth, seamless surface.
- Nail/ screw depressions: Fill with jointing compound to give a flush surface.
- Minor imperfections: Remove by light sanding.

695 INSTALLING BEADS/ STOPS

- Cutting: Neatly using mitres at return angles.
- Fixing: Securely using longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with substrate.
- Finishing: After joint compounds/ plasters have been applied, remove surplus material while still wet from surfaces of beads exposed to view.

K11 Rigid sheet flooring/ sheathing/ decking/ sarking/ linings/ casings

To be read with Preliminaries/ General conditions.

TYPES OF FLOORING/ SHEATHING/ DECKING /SARKING/ LININGS/ CASINGS

110 WOOD-BASED SHEETS GENERALLY

- Standard: To BS EN 13986.
 - Evidence of compliance: All sheets to be CE marked. Submit Declaration of Performance (DoP).

315 PLYWOOD FLOORING FOR ROOF CRAWLWAYS

- Substrate: Roof Trusses as Section G20 at nominal 60mm ccs..
 - Additional supports: As Clause 930.
- Flooring: Plywood manufactured to the relevant standards and quality control procedures specified in BS EN 636, and so marked.
 - Type: Finnish birch plywood.
 - Grade: B.
 - Nominal thickness/ number of plies: 21mm.
 - Edges: Tongued and grooved all edges.
 - Other requirements: Support long edges with panel clips fitted in accordance with panel manufacturers recommendations.
- Setting out: Long edges running across joists. End joints central over joists and staggered.
- Fixing to joists:
 - Fasteners: 50 mm x 8 gauge wood screws into pilot holes.
 - Fixing centres (maximum):
 - Around floor perimeter and along short edges of each board: 150 mm.
 - Along intermediate supports: 300 mm.
 - Fixing distance from edges: 25 mm from long edges and minimum 10 mm from short edges.
- Joint treatment: Bonded with PVA adhesive to BS EN 204, class D3..
- Expansion provision:
 - Clear expansion gap around perimeter of floor area and upstands: 1 mm per metre run of floor, with a minimum gap of 10 mm.
 - Intermediate expansion/ movement joints: As recommended by flooring manufacturer.

415A PLYWOOD WALL SHEATHING IN TIMBER STUD PARTITIONS TO TEA POINT

- Manufacturer: Hanson Plywood Ltd.
 - Web: www.hanson-plywood.co.uk.
 - Email: panels@hanson-plywood.co.uk.
 - Product reference: Hanson Performance Plywood
- Thickness: 18 mm.

615A PLYWOOD SARKING TO ROOF

- Substrate: Trussed rafters as Section G20 at 600mm ccs..
 - Additional supports: As clause 930.
- Sarking: Plywood manufactured to the relevant standards and quality control procedures specified in BS EN 636, and so marked.
 - Type: Finnish birch plywood.
 - Grade: BB.
 - Nominal thickness/ number of plies: 18mm.
 - Edges: Square.
 - Other requirements: Support long edges with panel clips fitted in accordance with panel manufacturers recommendations.
- Setting out: Long edges running across rafters. End joints central over rafters and staggered.
- Fixing to each rafter:
 - Fasteners: 50 mm x 8 gauge wood screws into pilot holes.
 - Fixing centres (maximum):
 - Around roof perimeter and along short edges of each board: 150 mm.
 - Along intermediate supports: 300 mm.
 - Fixing distance from edges: 25 mm from long edges and minimum 10 mm from short edges.

845A CEMENT BONDED PARTICLEBOARD TO PORCH SOFFIT

- Manufacturer: Euroform Products.
 - Web: www.euroform.co.uk.
 - Email: sales@euroform.co.uk.
 - Product reference: Versapanel Cement Board
- Grade: Calibrated.
- Thickness: 16 mm.
- Edge profile: Tongued and grooved.

WORKMANSHIP

910 INSTALLATION GENERALLY

- Timing: Building to be weathertight before fixing boards internally.
- Moisture content of timber supports (maximum): 18%.
- Joints between boards: Accurately aligned, of constant width and parallel to perimeter edges.
- Methods of fixing, and fasteners: As section Z20 where not specified otherwise.

930 ADDITIONAL SUPPORTS

- Additional studs, noggings/ dwangs (Scot) and battens:
 - Provision: In accordance with board manufacturer's recommendations and as follows:
 - Tongue and groove jointed rigid board areas: To all unsupported perimeter edges.
 - Butt jointed rigid board areas: To all unsupported edges.
 - Size: Not less than 50 mm wide and of adequate thickness.
 - Quality of timber: As for adjacent timber supports.
 - Treatment (where required): As for adjacent timber supports.

940 BOARD MOISTURE CONTENT AND CONDITIONING

- Moisture content of boards at time of fixing: Appropriate to end use.
- Conditioning regime: Submit proposals.

**CAINSCROSS FOOTBALL
PAVILLION**

K11

960 **FIXING GENERALLY**

- Boards/ sheets: Fixed securely to each support without distortion and true to line and level.
- Fasteners: Evenly spaced in straight lines and, unless otherwise recommended by board manufacturer, in pairs across joints.
 - Distance from edge of board/ sheet: Sufficient to prevent damage.
- Surplus adhesive: Removed as the work proceeds.

980 **OPEN JOINTS**

- Perimeter joints, expansion joints and joints between boards: Free from plaster, mortar droppings and other debris.
- Temporary wedges and packings: Removed on completion of board fixing.

990 **ACCESS PANELS**

- Size and position: Agree before boards are fixed.
- Additional noggings/ dwangs (Scot), battens, etc: Provide and fix as necessary.

K32 Panel cubicles/ duct and wall linings/ screens

To be read with Preliminaries/General conditions.

112A FULLY FRAMED PANEL CUBICLES

- Manufacturer: Bushboard Washroom Systems Ltd.
 - Web: www.bushboard-washrooms.co.uk.
 - Email: washrooms@bushboard-washrooms.co.uk.
 - Product reference: Tough Stuff MFC Panel Cubicles
- Colour:
 - Doors, Partitions & Pilasters: TBC from standard colour range.
 - Headrail: Silver.
 - Faceplate & Pilaster Foot: Silver.
 - Hinges & Channels: Silver.
- Pilaster Shape: Crescent.
- Floor Clearance: Low.
- Accessories: None.
- Other requirements: None.

150A MELAMINE FACED CHIPBOARD WASHROOM PANEL SYSTEM

- Manufacturer: Bushboard Washroom Systems Ltd.
 - Web: www.bushboard-washrooms.co.uk.
 - Email: washrooms@bushboard-washrooms.co.uk.
 - Product reference: Ezeeduct MFC
- Panels:
 - Size: To suit WC dims.
 - Colour: TBC from standard colour range.
 - Fixing: Lift off.
- Skirting: Silver.
- Accessories: Duct locks.

250 INSTALLATION

- Programming: Do not install cubicles or duct/ wall panels before building is weathertight, wet trades have finished their work, wall and floor finishes are complete, and the building is well dried out.
- Accuracy: Set out to ensure frames and/ or panels and doors are plumb, level and accurately aligned.
- Modifications: Do not cut, plane or sand prefinished components except where shown on drawings.
- Fixing: Secure components using methods and fasteners recommended by the cubicle manufacturer. Prevent pulling away, bowing or other distortions to frames, panels and doors.
- Moisture and thermal movement: Make adequate allowance for future movement.

K40 Demountable suspended ceilings

To be read with Preliminaries/General conditions.

TYPES OF CEILING SYSTEM

115A CEILING SYSTEM

- Manufacturer: Saint-Gobain Ecophon.
 - Web: www.ecophon.com/uk.
 - Email: info@ecophon.co.uk.
 - Product reference: Focus A
- Tile:
 - Colour: White Frost.
- Size: 600 x 600 mm.
- Grid:
 - Type: Interlocking Connect T24 with adjustable hangers/ wire.
 - Colour: White 010.
 - Accessories: -.
 - Trim: Connect Shadowline.
- Lighting: See Electrical Specification.
- Accessories: None.

COMPONENTS

245 STANDARDS

- Steel panels: To BS EN 10346.
- Aluminium sheet, strip and plate: To BS EN 485-1 and -2.
- Aluminium bars, tubes and sections: To relevant parts of BS EN 515, BS EN 573, BS EN 755 and BS EN 12020.

EXECUTION

305 SETTING OUT

- General: Completed ceiling should present, over the whole of its surface exposed to the room below, a continuous and even surface, jointed (where applicable) at regular intervals.
- Infill and access units, integrated services: Fitted correctly and aligned.
- Edge/ perimeter infill units size (minimum): Half standard width or length.
- Corner infill units size (minimum): Half standard width and length.
- Grid: Position to suit infill unit sizes. Allow for permitted deviations from nominal sizes of infill units.
- Infill joints and exposed suspension members: Straight, aligned and parallel to walls, unless specified otherwise.
- Suitability of construction: Give notice where building elements and features to which the ceiling systems relate are not square, straight or level.

315 PROTECTION

- Loading: Do not apply loads for which the suspension system is not designed.
- Ceiling materials: When necessary, remove and replace correctly using special tools and clean gloves, etc. as appropriate.

325 INSTALLING HANGERS

- Wire hangers: Straighten and tension before use.
- Installation: Install vertical or near vertical without bends or kinks. Do not allow hangers to press against fittings, services, or insulation covering ducts/ pipes.
- Obstructions: Where obstructions prevent vertical installation, either brace diagonal hangers against lateral movement, or hang ceiling system on an appropriate rigid sub-grid bridging across obstructions and supported to prevent lateral movement.
- Extra hangers: Provide as necessary to carry additional loads.
- Fixing:
 - Wire hangers: Tie securely at top with tight bends to loops to prevent vertical movement.
 - Angle/ Strap hangers: Do not use rivets for top fixing.
- Spacings: As manufacturers recommendations.

335 INSTALLING PERIMETER TRIMS

- Jointing: Neat and accurate, without lipping or twisting.
- External and internal corners: Mitre joints generally. Overlap joints at internal corners are not acceptable.
 - Intermediate butt joints: Minimize. Use longest available lengths of trim. Align adjacent lengths.
- Fixing: Fix firmly to perimeter wall, edge battens or other building structure.
 - Fasteners: As manufacturers recommendations.
 - Fixing centres: 450 mm.

390 OPENINGS IN CEILING MATERIALS

- General: Neat and accurate. To suit sizes and edge details of fittings. Do not distort ceiling system.

395 INTEGRATED SERVICES

- General: Position services accurately, support adequately. Align and level in relation to the ceiling and suspension system. Do not diminish performance of ceiling system.
- Small fittings: Support with rigid backing boards or other suitable means. Do not damage or distort the ceiling.
 - Surface spread of flame rating of additional supporting material: Not less than ceiling material.
- Services outlets:
 - Supported by ceiling system: Provide additional hangers.
 - Independently supported: Provide flanges to support ceiling system.

401 CEILING-MOUNTED LUMINAIRES

- Support: By ceiling system.
 - Independently supported luminaires: Suspension adjusted to line and level of ceiling.
 - Ceiling supported luminaires: Modifications and/ or extra support required: To each luminaire
- Surface mounted luminaires: Units installed so that in event of a fire the designed grid expansion provision is not affected.
- Modular fluorescent recessed luminaires: Compatible with ceiling module. Extension boxes must not foul ceiling system.
- Recessed rows of luminaires: Provide flanges for support of grid and infill units, unless mounted above grid flanges. Retain in position with lateral restraint.
- Fire protecting/ resisting ceiling systems: Luminaires must not diminish protection integrity of ceiling system.
- Access: Provide access for maintenance of luminaires.

411 MECHANICAL SERVICES

- Fan coil units:
 - Inlet and outlet grilles: Trim ceiling grid and infill units to suit.
 - Space beneath: Sufficient for ceiling system components.
 - Suspension and connections: Permit accurate setting out and levelling of fan coil units.
- Air grilles and diffusers:
 - Setting out: Accurate and level.
 - Linear air diffusers: Retain in place with lateral restraint. Provide flanges for support of grid and infill units.
 - Grille/ diffuser ceiling joints: Provide smudge rings and edge seals.
- Smoke detectors and PA speakers:
 - Ceiling infill units: Scribe and trim to suit.
 - Independent suspension: Required.
 - Flexible connections: Required.
- Sprinkler heads: Carefully set out and level.

COMPLETION

505 TOOLS

- Access tools: At Completion supply one set of the following: Suction pad lifters for ceiling K40/115A.

530 SPARES

- General: At Practical Completion supply the following: 1 box spare tiles for system type K40/115A.

L10 Windows/ Rooflights/ Screens/ Louvres

To be read with Preliminaries/ General conditions.

GENERAL

110 EVIDENCE OF PERFORMANCE

- Certification: Provide independently certified evidence that all incorporated components comply with specified performance requirements.

120 SITE DIMENSIONS

- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
- Designated items: All .

PRODUCTS

205 WINDOW MATERIALS SPECIFICATION

- Minimum BRE 'Green Guide to Specification Online' rating: A.

330A ALUMINIUM WINDOWS

- Manufacturer: Sapa Building Systems Ltd.
 - Web: www.sapabuildingsystems.co.uk.
 - Email: info@sapabuildingsystems.co.uk.
 - Product reference: Dualframe 75 mm Standard Casement Windows, Side & Top Hung.
- Profile: Chamfered.
- Size: As window Schedule.
- Finish: Powder coated satin, colour.
- Glazing: 28 mm.
- Handles colour: White.
- Hinges: Austenitic stainless steel restrictor friction casement stays and Butt hinges.
- Accessories: Opening restrictor and Trickle ventilator.

495A DAYLIGHT PIPE

- Manufacturer: VELUX Company Ltd.
 - Web: www.velux.co.uk.
 - Email: sales@velux.co.uk.
 - Product reference: Rigid sun tunnels for roof pitch 15° - 60°
- Roof pitch: 17.5 degrees.
- Rooflight: TLR 014 2010.
- Accessories: ZTR 014 0124.

EXECUTION

710 PROTECTION OF COMPONENTS

- General: Do not deliver to site components that cannot be installed immediately or placed in clean, dry floored and covered storage.
- Stored components: Stack vertical or near vertical on level bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.

- 730 PRIMING/ SEALING
- Wood surfaces inaccessible after installation: Prime or seal as specified before fixing components.
- 740 CORROSION PROTECTION
- Surfaces to be protected: -.
 - Protective coating: Two coats of bitumen solution to BS 6949 or an approved mastic impregnated tape.
 - Timing of application: Before fixing components.
- 750 BUILDING IN
- General: Not permitted unless indicated on drawings.
 - Brace and protect components to prevent distortion and damage during construction of adjacent structure.
- 760 REPLACEMENT WINDOW INSTALLATION
- Standard: To BS 8213-4.
- 765 WINDOW INSTALLATION GENERALLY
- Installation: Into prepared openings.
 - Gap between frame edge and surrounding construction:
 - Minimum: 3mm.
 - Maximum: 8mm.
 - Distortion: Install windows without twist or diagonal racking.
- 766 LOCATION OF OPENABLE WINDOWS IN NATURALLY VENTILATED BUILDINGS
- Location: Over 10 m from sources of external pollution.
- 782 FIXING OF ALUMINIUM FRAMES
- Standard: As section Z20.
 - Fasteners: As manufacturers recommendations.
 - Spacing: When not predrilled or specified otherwise, position fasteners not more than 250 mm from ends of each jamb, adjacent to each hanging point of opening lights, and at maximum 600 mm centres.
- 810A SILICONE SEALANT
- Manufacturer: Dow Corning.
 - Web: www.dowcorning.com/construction.
 - Email: bruce.nicol@dowcorning.com.
 - Product reference: 791 Weatherproofing Silicone Sealant
 - Colour: Buff.
- 820 IRONMONGERY
- Fixing: In accordance with any third party certification conditions applicable. Assemble and fix carefully and accurately using fasteners with matching finish supplied by ironmongery manufacturer. Do not damage ironmongery and adjacent surfaces.
 - Checking/ Adjusting/ Lubricating: Carry out at completion and ensure correct functioning.

L20 Doors/ shutters/ hatches

To be read with Preliminaries/ General conditions.

GENERAL

110 EVIDENCE OF PERFORMANCE

- Certification: Provide independently certified evidence that all incorporated components comply with specified performance requirements.

115 FIRE RESISTING DOORS/ DOOR ASSEMBLIES/ DOORSETS

- Door products: As defined in BS EN 12519.
- Evidence of fire performance: Provide certified evidence, in the form of a product conformity certificate, directly relevant fire test report or engineering assessment, that each door/ door assembly/ doorset supplied will comply with the specified requirements for fire or smoke resistance if tested to BS 476-22, BS EN 1634-1 or BS EN 1634-3. Such certification must cover door and frame materials, glass and glazing materials and their installation, essential and ancillary ironmongery, hinges and seals.
- Components and assemblies will be marked to the relevant product standard and/ or third party certification rating.

120 NON FIRE RESISTING DOORS/ DOOR ASSEMBLIES/ DOORSETS

- Provide certified evidence, in the form of a product conformity certificate or engineering assessment, that each door/ doorset/ assembly supplied will comply with the specified requirements to BS EN 14351-1. Such certification must cover door and frame materials, glass and glazing materials and their installation, essential and ancillary ironmongery, hinges and seals.
- Components and assemblies will be marked to the relevant product standard and/ or third party certification rating.

150 SITE DIMENSIONS

- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
- Designated items: All.

PRODUCTS

280A ALUMINIUM DOORS (EXTERNAL)

- Manufacturer: Sapa Building Systems Ltd.
 - Web: www.sapabuildingsystems.co.uk.
 - Email: info@sapabuildingsystems.co.uk.
 - Product reference: Stormframe 202
- Screen height: As Door and Window Schedule.
- Materials:
 - Frame: Extruded aluminium
- Finish:
 - Type: Powder coated matt, colour - to match windows.
 - Panels: Refer to Door and Window Schedule.
- Glazing: 28mm double glazed units comprising of 6mm laminated inner pane and 6mm toughened outer pane.
- Hardware: Anti finger-trap pivot hinge stiles, DDA compliant closer with adjustable opening and closing forces, Internal thumbturn cylinder, shoot bolt locking .
- Accessories/ Other requirements: None.

485 WOOD DOORSETS INTERNAL FIRE & NON-FIRE RATED

Manufacturer: Integrated Doorsets (Formerly Leaderflush) or equal.

- Product reference: Integrated.
 - Door leaf:
 - Facings: Interior grade plywood.
 - Lippings: 8mm hardwood lipping all round.
 - Finish as delivered: Full factory finish - Refer to M60/112.
 - Frame and architraves:
 - Wood species:
 - Hardwood
 - Profile: Cubith.
 - Finish as delivered: Prepared and primed, as section M60.
 - Preservative treatment: Not required.
 - Glazing/ Infill details: Vision Panel Type TN3 and glazed in 6mm Pyrostop clear glass fixed in intumescent tape .
- Manifestation: Not required.
- Beading: Hardwood beading.
 - Ironmongery:
 - Supplier: Westland Architectural Ironmongery - See separate schedule
 - Finish: Satin stainless steel
 - Perimeter seals: Fire and smoke seals to provide 30 mins FR.
 - Thermal performance (U-value maximum): Manufacturer's standard.
 - Other requirements: None.
 - Fixing: Plugged and screwed as manufacturers recommendations.

- 610A SECURITY ROLLER SHUTTERS TO EXTERNAL WINDOWS AND DOORS WITH INTERGRATED LINTELS
- Manufacturer: Charter Specialist Security, Innovation House, Arkwright Road, Reading, RG2 0LU.
Tel: 0845 050 8705.
Website: www.chartergroupuk.c.
 - Product reference: Charter-Integr8 180LS Security Shutter System.
 - Performance: -.
 - Arrangement: Horizontal shutters, with roller shutter boxes concealed behind external blockwork leaf..
 - Shutter/ Curtain material: Compact high security Grade 5053 T6 as standard.
 - Finish as delivered: Polyester powder coated to 25 microns in Standard RAL/BS code.
 - Frame/ Guides: Recessed into cavity of external wall complete with fully insulated closer in frame former design.
 - Finish as delivered: Polyester powder coated to 25 microns in Standard RAL/BS code.
 - Operation: Motorised to allow controlled ascent and descent.
 - Ironmongery: As manufacturers standard.
 - Other requirements: Emergency hand chain.
- 610B ROLLER SHUTTERS/ CURTAINS TO TEA POINT AND OFFICE
- Manufacturer: Hörmann (UK) Ltd.
 - Web: www.hormann.co.uk.
 - Email: info@hormann.co.uk.
 - Product reference: HR120 Manual Rolling Shutter.
 - Size: Refer to Drawings.
 - Shutter curtain:
 - Type: Single skinned 0.7 mm galvanized sheet steel.
 - Finish: Self-coloured galvanized steel.
 - Frame/ guides: 2 mm thick galvanized steel side guides, complete with articulated windlock and integral brush seal.
 - Operation: Manual.
- 610C SECURITY ROLLER SHUTTERS TO EXISTING EXTERNAL WINDOWS AND DOORS
- Manufacturer: Charter Specialist Security, Innovation House, Arkwright Road, Reading, RG2 0LU.
Tel: 0845 050 8705.
Website: www.chartergroupuk.c.
 - Product reference: Charter-Integr8 180C Security Shutter System.
 - Performance: Security.
 - Arrangement: Horizontal shutters, with roller shutter boxes mounted at high level.
 - Shutter/ Curtain material: Compact high security Grade 5053 T6 as standard.
 - Finish as delivered: Polyester powder coated to 25 microns in Standard RAL/BS code.
 - Frame/ Guides: Slimline guide profiles fixed direct to structure.
 - Finish as delivered: Polyester powder coated to 25 microns in Standard RAL/BS code.
 - Operation: Motorised to allow controlled ascent and descent.
 - Ironmongery: As manufacturers standard.
 - Other requirements: Emergency hand chain.

630A HATCHES

- Manufacturer: Cavity Trays Ltd.
 - Web: www.cavitytrays.com.
 - Email: enquiries@cavitytrays.co.uk.
 - Product reference: Type LAD Loft Access Door
- Size: 559 x 750 mm.
- Optional accessories: Integral locking latch mechanism.

EXECUTION

710 PROTECTION OF COMPONENTS

- General: Do not deliver to site components that cannot be installed immediately or placed in clean, dry, floored and covered storage.
- Stored components: Stacked on level bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.

740 CORROSION PROTECTION

- Surfaces to be protected: - .
- Protective coating: Two coats of bitumen solution to BS 6949 or an approved mastic impregnated tape.
 - Timing of application: Before fixing components.

760 BUILDING IN

- General: Not permitted unless indicated on drawings.

809 FIRE RESISTING/ SMOKE CONTROL DOORS/ DOORSETS/ ROLLER SHUTTERS/ CURTAINS

- Installation: By a firm currently registered under a third party accredited fire door installer scheme in accordance with instructions supplied with the product conformity certificate, test report or engineering assessment.

810 FIRE RESISTING/ SMOKE CONTROL DOORS/ DOORSETS/ ROLLER SHUTTERS/ CURTAINS

- Gaps between frames and supporting construction: Filled as necessary in accordance with requirements for certification and/ or door/ doorset manufacturer's instructions.

820A SILICONE SEALANT

- Manufacturer: Dow Corning.
 - Web: www.dowcorning.com/construction.
 - Email: bruce.nicol@dowcorning.com.
 - Product reference: 791 Weatherproofing Silicone Sealant
- Colour: Buff.

830 FIXING IRONMONGERY GENERALLY

- Fasteners: Supplied by ironmongery manufacturer.
 - Finish/ Corrosion resistance: To match ironmongery.
- Holes for components: No larger than required for satisfactory fit/ operation.
- Adjacent surfaces: Undamaged.
- Moving parts: Adjusted, lubricated and functioning correctly at completion.

840 FIXING IRONMONGERY TO FIRE RESISTING DOOR ASSEMBLIES

- General: All items fixed in accordance with door leaf manufacturer's recommendations ensuring that integrity of the assembly, as established by testing, is not compromised.
- Holes for through fixings and components: Accurately cut.
 - Clearances: Not more than 8 mm unless protected by intumescent paste or similar.
 - Lock/ Latch cases for fire 60 doors requiring $\geq$ 60 minutes integrity performance: Coated with intumescent paint or paste before installation.

850 LOCATION OF HINGES

- Primary hinges: Where not specified otherwise, positioned with centre lines 250 mm from top and bottom of door leaf.
- Third hinge: Where specified, positioned with centre line 250 mm below centre line of top hinge.
- Hinges for fire resisting doors: Positioned in accordance with door leaf manufacturer's recommendations.

L30 Stairs/ ladders/ walkways/ handrails/ balustrades

To be read with Preliminaries/ General conditions.

PRELIMINARY INFORMATION/ REQUIREMENTS

130 SITE DIMENSIONS

- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
 - Designated items: L30/421A.

COMPONENTS

421A LOFT LADDERS

- Manufacturer: Surespan Ltd.
 - Web: www.surespancovers.com.
 - Email: sales@surespancovers.com.
 - Product reference: ZIP7 - 3091 x 3390 mm. 11 treads, minimum aperture 600 x 850 mm..
- Accessories: Additional grab rail and Telescopic handrail.

INSTALLATION

610 MOISTURE CONTENT

- Temperature and humidity: Monitor and control internal conditions to achieve specified moisture content in wood components at time of installation.

620 PRIMING/SEALING/PAINTING

- Surfaces inaccessible after assembly/installation: Before fixing components, apply full protective/decorative treatment/coating system.

630 CORROSION PROTECTION OF DISSIMILAR MATERIALS

- Components/ substrates/ fasteners of dissimilar materials: Isolate using washers/ sleeves or other suitable means to separate materials to avoid corrosion and/ or staining.

640 INSTALLATION GENERALLY

- Fasteners and methods of fixing: To section Z20.
- Structural members: Do not modify, cut, notch or make holes in structural members, except as indicated on drawings.
- Temporary support: Do not use stairs, walkways or balustrades as temporary support or strutting for other work.
- Applied features (finishes, inserts, nosings and the like): Substrates to be even, dry, sound and free from contaminants. Make good substrate surfaces and prepare/ prime as applied feature manufacturer's recommendations before application.

COMPLETION

910 INSPECTION

- Timing: Two weeks after request by Contract Administrator.
- Period of notice (minimum): 5 working days.

M10 Cement based levelling/ wearing screeds

To be read with Preliminaries/General conditions.

TYPES OF SCREED

115A CEMENT:SAND LEVELLING SCREEDS

- Manufacturer: CEMEX UK.
 - Web: www.cemex.co.uk.
 - Email: gb-enquiries@cemex.com.
 - Product reference: Readyscreed Original
- Mix: 1:3
Thickness: Nominal 70mm
Finish: Trowelled as clause 540 .

GENERALLY/ PREPARATION

210 SUITABILITY OF SUBSTRATES

- General:
 - Suitable for specified levels and flatness/ regularity of finished surfaces. Consider permissible minimum and maximum thicknesses of screeds.
 - Sound and free from significant cracks and gaps.
- Concrete strength: In accordance with BS 8204-1, Table 2.
- Cleanliness: Remove plaster, debris and dirt.
- Moisture content: To suit screed type. New concrete slabs to receive fully or partially bonded construction must be dried out by exposure to the air for minimum six weeks.

215 SURFACE HARDNESS OF SUBSTRATES TO RECEIVE POLYMER MODIFIED WEARING SCREEDS

- General: Substrates must restrain stresses that occur during setting and hardening of wearing screeds.
- Test for surface hardness: To BS EN 12504-2 using a rebound hammer with compliance values as follows:
 - Rebound hammer value (minimum):
Screed thickness 15 mm or less: 25.
Screed thickness greater than 15 mm: 30.
- Report: Submit details of areas where substrate surface hardness does not comply with these values.

220 PROPRIETARY LEVELLING/ WEARING SCREEDS

- General: Materials, mix proportions, mixing methods, minimum/ maximum thicknesses and workmanship must be in accordance with recommendations of screed manufacturer.
- Standard: In accordance with BS 8204-3.

290 FLOATING CONSTRUCTION

- Insulation:
 - Type: Celotex FI5000 150mm thick.
 - Installation: Lay with tight butt joints. Continue up at perimeter abutments for full depth of screed.
- Separating layer:
 - Type: Polyethylene sheet, minimum 125 micrometres thick (500 gauge)..
 - Installation: Lay over insulation and turn up at perimeter abutments. Lap 100 mm at joints.

BATCHING/MIXING

302 CEMENTS

- Cement types: In accordance with BS 8204-1, clause 5.1.3.

305 AGGREGATES

- Sand: To BS EN 13139.
 - Grading limits: In accordance with BS 8204-1, Table B1.
- Coarse aggregates for fine concrete levelling screeds:
 - Standard: BS EN 12620.
 - Designation 4/10.
- Lightweight aggregates: In accordance with BS 8204-1, Annex A.

307 ADMIXTURES

- Standard: In accordance with BS 8204-1, Table 1.
- Calcium chloride: Do not use in admixtures.

310 BATCHING WITH DENSE AGGREGATES

- Mix proportions: Specified by weight.
- Batching: Select from:
 - Batch by weight.
 - Batch by volume: Permitted on the basis of previously established weight:volume relationships of the particular materials. Use accurate gauge boxes. Allow for bulking of damp sand.

330 MIXING

- Water content: Minimum necessary to achieve full compaction, low enough to prevent excessive water being brought to surface during compaction.
- Mixing: Mix materials thoroughly to uniform consistence. Mixes other than no-fines must be mixed in a suitable forced action mechanical mixer. Do not use a free fall drum type mixer.
- Consistency: Use while sufficiently plastic for full compaction.
- Ready-mixed retarded screed mortar: Use within working time and site temperatures recommended by manufacturer. Do not retemper.

335 IN SITU CRUSHING RESISTANCE (ISCR)

- Standards and category: In accordance with BS 8204-1, table 4.
 - Testing of bonded and unbonded screeds: To Annex D.
 - Testing of floating levelling screeds: To Annex E.

340 ADVERSE WEATHER

- Screeds surface temperature: Maintain above 5°C for a minimum of four days after laying.
- Hot weather: Prevent premature setting or drying out.

LAYING

345 LEVEL OF SCREED SURFACES

- Permissible deviation: (allowing for thickness of coverings): ± 5 mm from datum..

350 SCREEDING TO FALLS

- Minimum screed cover: Maintain at the lowest point.
- Falls: Gradual and consistent.
 - Gradient (minimum): 1:60 to gully positions .

355 FLATNESS/ SURFACE REGULARITY OF FLOOR SCREEDS

- Standard: In accordance with BS 8204-1, Table 5.
- Test: In accordance with BS 8204-1, Annex C.
- Sudden irregularities: Not permitted.

375 COMPACTION OF SCREEDS

- General: Compact thoroughly over entire area.
- Screeds over 50 mm thick: Lay in two layers of approximately equal thickness. Roughen surface of compacted lower layer then immediately lay upper layer.

405 JOINTS IN LEVELLING SCREEDS GENERALLY

- Laying screeds: Lay continuously using 'wet screeds' between strips or bays. Minimize defined joints.
- Daywork joints: Form with vertical edge.

FINISHING/CURING

510 FINISHING GENERALLY

- Timing: Carry out all finishing operations at optimum times in relation to setting and hardening of screed material.
- Prohibited treatments to screed surfaces:
 - Wetting to assist surface working.
 - Sprinkling cement.

540 TROWELLED FINISH TO LEVELLING SCREEDS

- Floating: To an even texture with no ridges or steps.
- Trowelling: To a uniform, smooth but not polished surface, free from trowel marks and other blemishes, and suitable to receive specified flooring material.

650 CURING

- General: Prevent premature drying. Immediately after laying, protect surface from wind, draughts and strong sunlight. As soon as screed has set sufficiently, closely cover with polyethylene sheeting.
- Curing period (minimum): Keep polyethylene sheeting in position for period recommended by screed manufacturer.
- Drying after curing: Allow screeds to dry gradually. Do not subject screeds to artificial drying conditions that will cause cracking or other shrinkage related problems.

M20 Plastered/ Rendered/ Roughcast coatings

To be read with Preliminaries/ General conditions.

TYPES OF COATING

160A PROPRIETARY CEMENT GAUGED RENDER

- Manufacturer: K Rend (Kilwaughter Chemical Company Ltd).
 - Web: www.k-rend.co.uk.
 - Email: sales@k-rend.co.uk.
 - Product reference: K Rend Silicone WP
- Primer: K Rend R7 Acrylic Primer.
- Basecoat: K Rend Standard UF Base.
 - Thickness: 6 mm.
- Final coat: K Rend Silicone WP
 - Thickness: 10-12 mm.
 - Colour: TBC.
 - Finish: Textured
- Total thickness (finished): 16 mm.

210 LIGHTWEIGHT GYPSUM PLASTER INTERNALLY

- Substrate: Concrete blockwork as section F10.
 - Preparation: Bonding agent recommended by plaster manufacturer.
- Manufacturer: British Gypsum.
 - Web: www.british-gypsum.com.
 - Email: bgtechnical.enquiries@bpb.com.
- Undercoats: To BS EN 13279-1.
 - Product reference: Thistle Hardwall.
 - Thickness (excluding dubbing out and keys): Two coat 13 mm overall.
- Final coat: Finish plaster to BS EN 13279-1, class B.
 - Product reference: Thistle Multi Finish.
 - Thickness: 2-3 mm.
 - Finish: Smooth.
- Accessories: Beads and stops .

280 GYPSUM PLASTER SKIM COAT ON PLASTERBOARD

- Plasterboard: 12.5 mm.
 - Preparation: Bonding agent recommended by plaster manufacturer.
- Plaster: Board finish/ finish plaster to BS EN 13279-1, class B.
 - Manufacturer: British Gypsum.
 - Web: www.british-gypsum.com.
 - Email: bgtechnical.enquiries@bpb.com .
 - Product reference: Thistle Multifinish.
 - Thickness: 2-3mm.
 - Finish: Smooth.
- Accessories: Beads and stops .

MATERIALS AND MAKING OF MORTAR

- 430 READY-TO-USE CEMENT GAUGED MORTARS
- Time and temperature limitations: Use within limits prescribed by mortar manufacturer.
 - Retempering: Restore workability with water only within prescribed time limits.
- 438 CEMENTS FOR MORTARS
- Cement: To BS EN 197-1.
 - Types: Portland cement, CEM I.
Portland slag cement, CEM II.
Portland fly ash cement, CEM II.
 - Strength class: 32.5, 42.5 or 52.5.
 - White cement: To BS EN 197-1.
 - Type: Portland cement, CEM 1.
 - Strength class: 52.5.
 - Sulfate resisting Portland cement: To BS EN 197-1.
 - Strength class: 42.5.
 - Masonry cement: To BS EN 998-1 and Kitemarked.
- 440 SAND FOR CEMENT GAUGED MORTARS
- Standard: To BS EN 13139.
 - Grading: 0/2 or 0/4 (CP or MP); category 2 fines.
 - Colour and texture: Consistent. Obtain from one source.
- 443 LIME FOR CEMENT GAUGED MORTARS
- Standard: To BS EN 459-1.
 - Type: CL 90S.
- 445 PIGMENT FOR COLOURED MORTARS
- Standard: To BS EN 12878.
- 449 ADMIXTURES FOR CEMENT GAUGED MORTARS
- Suitable admixtures: Select from:
 - Air entraining (plasticizing) admixtures: To BS EN 934-2 and compatible with other mortar constituents.
 - Other admixtures: Submit proposals.
 - Prohibited admixtures: Calcium chloride and any admixture containing calcium chloride.
- 478 HYDRAULIC LIME
- Standard: To BS EN 459-1.
 - Type: Natural hydraulic lime (NHL).
- 495 MIXING
- Render mortars (site-made):
 - Batching: By volume. Use clean and accurate gauge boxes or buckets.
 - Mix proportions: Based on damp sand. Adjust for dry sand.
 - Lime:sand: Mix thoroughly. Allow to stand, without drying out, for at least 16 hours before using.
 - Mixes: Of uniform consistence and free from lumps. Do not retemper or reconstitute mixes.
 - Contamination: Prevent intermixing with other materials.

497 COLD WEATHER

- General: Do not use frozen materials or apply coatings on frozen or frost bound substrates.
- External work: Avoid when air temperature is at or below 5°C and falling or below 3°C and rising. Maintain temperature of work above freezing until coatings have fully hardened.
- Internal work: Take precautions to enable internal coating work to proceed without damage when air temperature is below 3°C.

PREPARING SUBSTRATES

510 SUITABILITY OF SUBSTRATES

- Soundness: Free from loose areas and significant cracks and gaps.
- Cutting, chasing, making good, fixing of conduits and services outlets and the like: Completed.
- Tolerances: Permitting specified flatness/ regularity of finished coatings.
- Cleanliness: Free from dirt, dust, efflorescence and mould, and other contaminants incompatible with coatings.

541 BONDING AGENT APPLICATION

- General: Apply evenly to substrate to achieve effective bond of plaster/ render coat. Protect adjacent surfaces.

556 REMOVING DEFECTIVE EXISTING RENDER

- Render for removal: Detached, hollow, soft, friable, badly cracked, affected by efflorescence or otherwise damaged.
- Removing defective render: Cut out to regular rectangular areas with straight edges.
 - Horizontal and vertical edges: Square cut or slightly undercut.
 - Bottom edges to external render: Do not undercut.
 - Render with imitation joints: Cut back to joint lines.
- Cracks:
 - Fine hairline cracking/ crazing: Leave.
 - Other cracks: Obtain instructions.
- Dust and loose material: Remove from exposed substrates and edges.

566 REMOVING DEFECTIVE EXISTING PLASTER

- Plaster for removal: Detached, soft, friable, badly cracked, affected by efflorescence or otherwise damaged.
 - Hollow, detached areas: Remove where area of detachment is more than 300 m².
- Stained plaster: Remove.
- Removing defective plaster. Cut back to a square, sound edge.
- Faults in background (structural deficiencies, damp, etc.): Submit proposals.
- Cracks:
 - Fine hairline cracking/ crazing: Leave.
 - Other cracks; Obtain instructions.
- Dust and loose material: Remove from exposed substrates and edges.

568 EXISTING DAMP AFFECTED PLASTER/ RENDER

- Plaster affected by rising damp: Remove to a height of 300 mm above highest point reached by damp or 1 m above dpc, whichever is higher.
- Perished and salt contaminated masonry:
 - Mortar joints: Rake out.
 - Masonry units: Submit proposals.
- Faults in substrate (structural deficiencies, additional sources of damp, etc.): Submit proposals.
- Drying out substrate: Established drying conditions. Leave walls to dry for as long as possible before plastering.
- Dust and loose material: Remove from exposed substrate and edges.

BACKINGS/ BEADS/ JOINTS

607 PROPRIETARY GYPSUM PLASTERBOARD BACKINGS

- Manufacturer: British Gypsum.
 - Product reference: Submit proposals.
- Exposed surface and edge profiles: Suitable to receive specified plaster finish.

610 FIXING PLASTERBOARD BACKINGS TO TIMBER BACKGROUNDS

- Fixings, accessories and installation methods: As recommended by board manufacturer.
- Fixing: At the following centres (maximum):
 - Nails: 150 mm.
 - Screws to partitions/ walls: 300 mm. Reduce to 200 mm at external angles.
 - Screws to ceilings: 230 mm.
- Position of nails/ screws from edges of boards (minimum):
 - Bound edges: 10 mm.
 - Cut/ unbound edges: 13 mm.
- Position of nails/ screws from edges of supports (minimum): 6 mm.
- Nail/ screw heads: Set below surface. Do not break paper or gypsum core.

612 JOINTS IN PLASTERBOARD BACKINGS

- Ceilings:
 - Bound edges: At right angles to supports and with ends staggered in adjacent rows.
 - Two layer boarding: Stagger joints between layers.
- Partitions/ walls:
 - Vertical joints: Centre on studs. Stagger joints on opposite sides of studs.
Two layer boarding: Stagger joints between layers.
 - Horizontal joints:
Two layer boarding: Stagger joints between layers by at least 600 mm. Support edges of outer layer.
- Joint widths (maximum): 3 mm.

630 BEADS/ STOPS FOR INTERNAL USE

- Material: Galvanized steel to BS 13658-1.

636 BEADS/ STOPS FOR EXTERNAL USE

- Material: Stainless steel to BS EN 10088-1, grade 1.4301.

640 BEADS/ STOPS GENERALLY

- Location: External angles and stop ends, except where specified otherwise.
- Corners: Neat mitres at return angles.
- Fixing: Secure, using longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with substrate.
 - Beads/ stops for external render: Fix mechanically.
- Finishing: After coatings have been applied remove surplus material, while still wet, from surfaces of beads/ stops exposed to view.

646 CRACK CONTROL AT JUNCTIONS BETWEEN DISSIMILAR SOLID SUBSTRATES

- Locations: Where defined movement joints are not required. Where dissimilar solid substrates materials are in same plane and rigidly bonded or tied together.
- Crack control materials:
 - Isolating layer: Building paper to BS 1521.
 - Metal lathing: Stainless steel ribbed expanded metal.
- Installation: Fix metal lathing over isolating layer. Stagger fixings along both edges of lathing.
- Width of installation over single junctions:
 - Isolating layer: 150 mm.
 - Lathing: 300 mm.
- Width of installation across face of dissimilar substrates material (column, beam, etc. with face width not greater than 450 mm):
 - Isolating layer: 25 mm (minimum) beyond junctions with adjacent substrates.
 - Lathing: 100 mm (minimum) beyond edges of isolating layer.

659 PLASTERBOARD JOINTS

- Joints and angles (except where coincident with metal beads): Reinforce with continuous lengths of jointing tape.

INTERNAL PLASTERING

710 APPLICATION GENERALLY

- Application of coatings: Firmly and in one continuous operation between angles and joints. Achieve good adhesion.
- Appearance of finished surfaces: Even and consistent. Free from rippling, hollows, ridges, cracks and crazing.
 - Accuracy: Finish to a true plane, to correct line and level, with angles and corners to a right angle unless specified otherwise, and with walls and reveals plumb and square.
- Drying out: Prevent excessively rapid or localised drying out.

715 FLATNESS/ SURFACE REGULARITY

- Sudden irregularities: Not permitted.
- Deviation of plaster surface: Measure from underside of a straight edge placed anywhere on surface.
 - Permissible deviation (maximum) for plaster not less than 13 mm thick: 3 mm in any consecutive length of 1800 mm.

720 DUBBING OUT

- General: Correct substrate inaccuracies.
- New smooth, dense concrete and similar surfaces: Dubbing out prohibited unless total plaster thickness is within range recommended by plaster manufacturer.
- Thickness of any one coat (maximum): 10 mm.
- Mix: As undercoat.
- Application: Achieve firm bond. Allow each coat to set sufficiently before the next is applied. Cross scratch surface of each coat.

725 UNDERCOATS GENERALLY

- General: Rule to an even surface. Cross scratch to provide a key for the next coat.
- Undercoats on metal lathing: Work well into interstices to obtain maximum key.
- Undercoats gauged with Portland cement: Do not apply next coat until drying shrinkage is substantially complete.

777 SMOOTH FINISH

- Appearance: A tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks. Avoid water brush, excessive trowelling and over polishing.

EXTERNAL RENDERING

810 APPLICATION GENERALLY

- Application of coatings: Firmly and in one continuous operation between angles and joints. Achieve good adhesion.
- Appearance of finished surfaces: Even and consistent. Free from rippling, hollows, ridges, cracks and crazing.
 - Accuracy: Finish to a true plane, to correct line and level, with angles and corners to a right angle unless specified otherwise, and with walls and reveals plumb and square.
- Drying: Prevent excessively rapid or localized drying out.

815 FLATNESS/ SURFACE REGULARITY OF RENDERING TO RECEIVE CERAMIC TILES

- Sudden irregularities: Not permitted.
- Deviation of render surface: Measure from underside of a 2 m straight edge placed anywhere on surface.
 - Permissible deviation (maximum): 3 mm.

820 DUBBING OUT FOR RENDERING

- General: Correct substrate inaccuracies.
- Thickness of any one coat (maximum): 16 mm.
 - Total thickness (maximum): 20 mm, otherwise obtain instructions.
- Mix: As undercoat.
- Application: Achieve firm bond. Allow each coat to set sufficiently before the next is applied. Comb surface of each coat.

840 UNDERCOATS GENERALLY

- General: Rule to an even surface. Comb to provide a key for the next coat. Do not penetrate the coat.
- Undercoats on metal lathing: Work well into interstices to obtain maximum key.

861 FINAL COAT - SCRAPED FINISH

- Finish: Scraped to expose aggregate and achieve an even texture.

880 CURING AND DRYING

- General: Prevent premature setting and uneven drying of each coat.
- Curing coatings: Keep each coat damp by covering with polyethylene sheet and/ or spraying with water.
 - Curing period (minimum): As render manufacturer's recommendations.
 - Final coat: Hang sheeting clear of the final coat.
- Drying: Allow each coat to dry thoroughly, with drying shrinkage substantially complete before applying next coat.
- Protection: Protect from frost and rain.

M50 Rubber/ plastics/ cork/ lino/ carpet tiling/ sheeting

To be read with Preliminaries/ General conditions.

TYPES OF COVERING

130A CARPET TILING

- Location: As Finishes Schedule.
- Base: Existing and New screed.
 - Preparation: As carpet manufacturers recommendations.
- Fabricated underlay: None.
- Carpet tiles:
 - Manufacturer: kircman & Dolman Limited.
 - Product reference: As Finishes Schedule.
 - BS EN 1307 classification:
 - Size: 500 x 500 mm.
 - Method of laying: Fully adhere all tiles with release adhesive recommended by tile manufacturer..
- Accessories: Edging strip at thresholds.
- Other requirements: None.

150A SHEET FLOORING

- Manufacturer: Altro.
 - Web: www.altro.co.uk.
 - Email: enquiries@altro.com.
 - Product reference: Altro Classic 25
- Colour: TBC.
- Accessories: Coved Skirtings.

150B PVC-U SHEET CLADDING TO SHOWER AREAS (MAX. 3M HEIGHT) & SPLASH BACKS

- Manufacturer: Altro.
 - Web: www.altro.co.uk.
 - Email: enquiries@altro.com.
 - Product reference: Altro Whiterock White
- Size: 3000 x 1220 mm.

155A SHEET FLOORING TO SHOWER AREAS

- Manufacturer: Altro.
 - Web: www.altro.co.uk.
 - Email: enquiries@altro.com.
 - Product reference: Altro Marine 20
- Colour: TBC.
- Accessories: Skirtings.

GENERAL REQUIREMENTS

210 WORKMANSHIP GENERALLY

- Base condition after preparation: Rigid, dry, sound, smooth and free from grease, dirt and other contaminants.
- Finished coverings: Accurately fitted, tightly jointed, securely bonded, smooth and free from air bubbles, rippling, adhesive marks and stains.

250 LAYOUT - ROLL MATERIALS

- Setting out of seams: Agree setting out for sheeting types M50/ All .

330 COMMENCEMENT

- Required condition of works prior to laying materials:
 - Building is weathertight and well dried out.
 - Wet trades have finished work.
 - Paintwork is finished and dry.
 - Conflicting overhead work is complete.
 - Floor service outlets, duct covers and other fixtures around which materials are to be cut are fixed.
- Notification: Submit not less than 48 hours before commencing laying.

340 CONDITIONING

- Prior to laying: Condition materials by unpacking and separating in spaces where they are to be laid. Maintain resilient flooring rolls in an upright position. Unroll carpet and keep flat on a supporting surface.
- Conditioning time and temperature (minimum): As recommended by manufacturer with time extended by a factor of two for materials stored or transported at a temperature of less than 10°C immediately prior to laying.

350 ENVIRONMENT

- Temperature and humidity: Before, during and after laying, maintain approximately at levels which will prevail after building is occupied.
- Ventilation: Before during and after laying, maintain adequate provision.

PREPARING BASES

410 NEW BASES

- Suitability of bases and conditions within any area: Commencement of laying of coverings will be taken as acceptance of suitability.

420 EXISTING BASES

- Notification: Before commencing work, confirm that existing bases will, after preparation, be suitable to receive coverings.
- Suitability of bases and conditions within any area: Commencement of laying of coverings will be taken as acceptance of suitability.

430 NEW WET LAID BASES

- Base drying aids: Not used for at least four days prior to moisture content testing.
- Base moisture content test: Carry out in accordance with BS 5325, Annex A or BS 8203, Annex A.
 - Locations for readings: In all corners, along edges, and at various points over area being tested.
- Commencement of laying coverings: Not until all readings show 75% relative humidity or less.

440 SUBSTRATES TO RECEIVE THIN COVERINGS

- Trowelled finishes: Uniform, smooth surface free from trowel marks and other blemishes. Abrade suitably to receive specified floor covering material.

460A SMOOTHING UNDERLAYMENT

- Manufacturer: Fosroc Ltd.
 - Web: www.fosroc.com.
 - Email: enquiryuk@fosroc.com.
 - Product reference: Cemtop UL
- Primer: Nitoprime 33, two coats
- Screed thickness: 75mm.

470 BASES FROM WHICH EXISTING FLOOR COVERINGS HAVE BEEN REMOVED

- Substrate: Clear of covering and as much adhesive as possible. Skim with smoothing underlayment compound to give smooth, even surface.

LAYING COVERINGS

610 SETTING OUT TILES

- Method: Set out from centre of area/ room, so that wherever possible:
 - Tiles along opposite edges are of equal size.
 - Edge tiles are more than 50% of full tile width.

640 ADHESIVE FIXING GENERALLY

- Adhesive type: As specified, as recommended by covering/ underlay manufacturer or as approved.
- Primer: Type and usage as recommended by adhesive manufacturer.
- Application: As necessary to achieve good bond.
- Finished surface: Free from trowel ridges, high spots caused by particles on the substrate, and other irregularities.

720 DOORWAYS

- Joint location: On centre line of door leaf.

740A FLOOR TRIM

- Manufacturer: Gradus.
 - Web: www.gradusworld.com.
 - Email: imail@gradusworld.com.
 - Product reference: Joint Trim
- Type: JT365EBF4.
- Finish: Silver anodized.

740B THRESHOLD TRIM

- Manufacturer: Gradus.
 - Web: www.gradusworld.com.
 - Email: imail@gradusworld.com.
 - Product reference: Threshold Trim
- Profile: TH495.
- Colour/ Finish: Platinum.

770A SKIRTINGS

- Manufacturer: Altro.
 - Web: www.altro.co.uk.
 - Email: enquiries@altro.com.
 - Product reference: Self-Coved Skirting
- Cove former: CF20R.
- Capping seal: C7WHT.

780 TRAFFICKING AFTER LAYING

- Covering types: All.
- Traffic free period: Until adhesive is set.

COMPLETION

820 FINISHING GENERALLY

- Cleaning operations:
 - Wash floor with water containing neutral (pH 6-9) detergent. If necessary, lightly scrub heavily soiled areas.
 - Rinse with clean water, removing surplus to prevent damage to adhesive. Allow to dry.
- Emulsion polish: Two coats of a type recommended by covering manufacturer.

880 WASTE

- Spare covering material: Retain suitable material for patching. On completion submit pieces for selection. Hand over selected pieces to Employer.

M60 Painting/ clear finishing

To be read with Preliminaries/ General conditions.

COATING SYSTEMS

150A EGGSHELL/ SATIN PAINT TO INTERNAL PLASTER, WOOD & METAL SURFACES

- Manufacturer: Dulux Trade, brand of AkzoNobel.
 - Web: www.duluxtrade.co.uk.
 - Email: john.ashford@akzonobel.com.
 - Product reference: Diamond Quick Drying Eggshell
- System code: As recommended by paint manufacturer.
- Colour: As Finishes Schedule.

180A FLOOR COATING

- Manufacturer: Dulux Trade, brand of AkzoNobel.
 - Web: www.duluxtrade.co.uk.
 - Email: john.ashford@akzonobel.com.
 - Product reference: Floorshield
- System code: As recommended by paint manufacturer.
- Colour: As Finishes Schedule.

GENERAL

210 COATING MATERIALS

- Manufacturer: Obtain materials from any of the following:
Dulux.
- Selected manufacturers: Submit names before commencement of any coating work.

215 HANDLING AND STORAGE

- Coating materials: Deliver in sealed containers, labelled clearly with brand name, type of material and manufacturer's batch number.
- Materials from more than one batch: Store separately.

240 SURFACES NOT TO BE COATED

Radiator valves and stop valves .

250 SURFACES TO BE CLEANED BUT NOT COATED

Existing building .

280 PROTECTION

- 'Wet paint' signs and barriers: Provide where necessary to protect other operatives and general public, and to prevent damage to freshly applied coatings.

PREPARATION

400 PREPARATION GENERALLY

- Standard: In accordance with BS 6150.
- Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
- Preparation materials: Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
- Substrates: Sufficiently dry in depth to suit coating.
- Efflorescence salts: Remove.
- Dirt, grease and oil: Remove. Give notice if contamination of surfaces/ substrates has occurred.
- Surface irregularities: Remove.
- Joints, cracks, holes and other depressions: Fill flush with surface, provide smooth finish.
- Dust, particles and residues from preparation: Remove and dispose of safely.
- Water based stoppers and fillers:
 - Apply before priming unless recommended otherwise by manufacturer.
 - If applied after priming: Patch prime.
- Oil based stoppers and fillers: Apply after priming.
- Doors, opening windows and other moving parts:
 - Ease, if necessary, before coating.
 - Prime resulting bare areas.

420 FIXTURES AND FITTINGS

- Removal: Before commencing work remove: Coverplates, grilles, wall clocks, and other surface mounted fixtures .
- Replacement: Refurbishment as necessary, refit when coating is dry.

425 IRONMONGERY

- Removal: Before commencing work remove ironmongery from surfaces to be coated.
- Hinges: Remove.
- Replacement: Refurbish as necessary; refit when coating is dry.

430 EXISTING IRONMONGERY

- Refurbishment: Remove old coating marks. Clean and polish.

- 440 PREVIOUSLY COATED SURFACES GENERALLY
- Preparation: In accordance with BS 6150, clause 11.5.
 - Contaminated or hazardous surfaces: Give notice of:
 - Coatings suspected of containing lead.
 - Substrates suspected of containing asbestos or other hazardous materials.
 - Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
 - Significant rot, corrosion or other degradation of substrates.
 - Removing coatings: Do not damage substrate and adjacent surfaces or adversely affect subsequent coatings.
 - Loose, flaking or otherwise defective areas: Carefully remove to a firm edge.
 - Alkali affected coatings: Completely remove.
 - Retained coatings:
 - Thoroughly clean to remove dirt, grease and contaminants.
 - Gloss coated surfaces: Provide key.
 - Partly removed coatings:
 - Additional preparatory coats: Apply to restore original coating thicknesses.
 - Junctions: Provide flush surface.
 - Completely stripped surfaces: Prepare as for uncoated surfaces.
- 461 PREVIOUSLY COATED WOOD
- Degraded or weathered surface wood: Take back to provide suitable substrate.
 - Degraded substrate wood: Repair with sound material of same species.
 - Exposed resinous areas and knots: Apply two coats of knotting.
- 471 PREPRIMED WOOD
- Areas of defective primer: Take back to bare timber.
- 481 UNCOATED WOOD
- General: Provide smooth, even finish with arrises and moulding edges lightly rounded or eased.
 - Heads of fasteners: Countersink sufficient to hold stoppers/fillers.
 - Resinous areas and knots: Apply two coats of knotting.
- 490 PREVIOUSLY COATED STEEL
- Defective paintwork: Remove to leave a firm edge and clean bright metal.
 - Sound paintwork: Provide key for subsequent coats.
 - Corrosion and loose scale: Take back to bare metal.
 - Residual rust: Treat with a proprietary removal solution.
 - Bare metal: Apply primer as soon as possible.
 - Remaining areas: Degrease.
- 500 PREPRIMED STEEL
- Areas of defective primer, corrosion and loose scale: Take back to bare metal. Reprime as soon as possible.

521 UNCOATED STEEL - MANUAL CLEANING

- Oil and grease: Remove.
- Corrosion, loose scale, welding slag and spatter: Remove.
- Residual rust: Treat with a proprietary removal solution.
- Primer: Apply as soon as possible.

580 UNCOATED PLASTER

- Nibs, trowel marks and plaster splashes: Scrape off.
- Overtrowelled 'polished' areas: Key lightly.

590 UNCOATED PLASTERBOARD

- Depressions around fixings: Fill with stoppers/ fillers.

622 ORGANIC GROWTHS

- Dead and loose growths and infected coatings: Scrape off and remove from site
- Treatment biocide: Apply appropriate solution to growth areas and surrounding surfaces.
- Residual effect biocide: Apply appropriate solution to inhibit re-establishment of growths.

651 EXISTING GUTTERS

- Dirt and debris: Remove from inside of gutters.
- Defective joints: Clean and seal with suitable jointing material.

APPLICATION

711 COATING GENERALLY

- Application standard: In accordance with BS 6150, clause 9.
- Conditions: Maintain suitable temperature, humidity and air quality during application and drying.
- Surfaces: Clean and dry at time of application.
- Thinning and intermixing of coatings: Not permitted unless recommended by manufacturer.
- Overpainting: Do not paint over intumescent strips or silicone mastics.
- Priming coats:
 - Thickness: To suit surface porosity.
 - Application: As soon as possible on same day as preparation is completed.
- Finish:
 - Even, smooth and of uniform colour.
 - Free from brush marks, sags, runs and other defects.
 - Cut in neatly.
- Doors, opening windows and other moving parts: Ease before coating and between coats.

740 CONCEALED METAL SURFACES

- General: Apply additional coatings to surfaces that will be concealed when component is fixed in place.
 - Components: -.
 - Additional coatings: -.

N10 General fixtures/ furnishings/ equipment

To be read with Preliminaries/General conditions.

PRODUCTS

145A VANITY AND WASHROOM FURNITURE TO ALL TOILETS

- Manufacturer: Bushboard Washroom Systems Ltd.
 - Web: www.bushboard-washrooms.co.uk.
 - Email: washrooms@bushboard-washrooms.co.uk.
 - Product reference: Semi Recessed Vanity Unit HPL
- Colour:
 - Under-panels:
Material: 18 mm nominal overall thickness moisture resistant 680 kg/m³ grade chipboard faced with high pressure laminate.
Edge treatment: Post formed horizontal edges and 1 mm PVC lipping to vertical edges
Colour: TBC.
 - Worktop:
Material: 18 mm nominal overall thickness moisture resistant 730 kg/m³ grade chipboard faced with high pressure laminate.
Edge treatment: 1 mm matching PVC lipping.
Colour: TBC.
- Bed height: Adult.
- Accessories: None.
- Other requirements: None.

160A SHELVING SYSTEM

- Manufacturer: Boyco (UK) Ltd.
 - Web: www.boycouk.com.
 - Email: sales@boycouk.com.
 - Product reference: Shelving - Fixed Heavy Duty
- Type: E4(L).
- Unit height: 1800 mm.
- Shelf depth: 500 mm.
- Colour:
 - Frame: Grey, RAL 7035.
 - Shelves: Grey laminate.

170A CLOAKROOM UNITS

- Manufacturer: Boyco (UK) Ltd.
 - Web: www.boycouk.com.
 - Email: sales@boycouk.com.
 - Product reference: Changing and Cloakroom Benches and fittings
- Type: WS (400).
- Height: Senior.
- Length: As drawings.
- Colour:
 - Frame: Grey, RAL 7035.
 - Seats/ Backrests: Silver grey speckled.
- Other requirements: None.

200A WORKBENCHES TO OFFICES

- Manufacturer: Boyco (UK) Ltd.
 - Web: www.boycouk.com.
 - Email: sales@boycouk.com.
 - Product reference: Workbenches
- Type: L-Technotop Cantilever, wall fixed workbench..
- Height: 750mm.
- Depth: 700mm.
- Colour:
 - Frame: Grey, RAL 7035.
 - Surface: Trespa
 - Colour: TBC.

242 BLINDS TO OFFICE AND CLUB ROOM

- Standard: To BS EN 13120.
- Type: Vertical roller.
- Material: Fabric.
 - Finish/ Colour: TBC.
- Operation: Manual, stainless steel ball chain.
- Operating effort: Class 1.
- Testing: Appearance and tolerance.
- Mechanism endurance: Class 2.
- Accessories/ Other requirements: None.

300 ENTRANCE MATTING TO FRONT ENTRANCE.

- Manufacturer: Kircman & Dolman Limited.
 - Product reference: As Schedule.
- Arrangement: -.
- Material: -.
- Pattern: -.
- Colour: TBC.
- Size: As Drawings.
- Integral accessories: -.

460A SEALANT

- Manufacturer: Adshead Ratcliffe & Co Ltd.
 - Web: www.arbo.co.uk.
 - Email: arbo@arbo.co.uk.
 - Product reference: Arbosil 1081
- Code: SL8130CWH.
- Accessories: Primer as recommended by manufacturer.

EXECUTION

710 MOISTURE CONTENT OF WOOD AND WOOD-BASED BOARDS

- Standard To BS EN 942
- Moisture content on delivery: 9-13%
- Temperature and humidity: During delivery, storage, fixing and to handover maintain conditions to suit specified moisture contents of timber components.

720 INSTALLATION GENERALLY

- General: As Prelims.
- Fixing and fasteners: As section Z20.
- Services: As Engineering Services specification.

760 SEALANT BEDDING AND POINTING

- Application: As section Z22
- Bedding: Sinks to top of worktop.
- Pointing: Joints between worktop and splash backs.

770 TRIMS

- Lengths: Wherever possible, unjointed between angles or ends of runs.
- Running joints: Where unavoidable, obtain approval of location and method of jointing.
- Angle joints: Mitred.

COMPLETION

910 GENERAL

- Doors and drawers: Accurately aligned, not binding. Adjusted to ensure smooth operation.
- Ironmongery: Checked, adjusted and lubricated to ensure correct functioning.

920 APPLIANCES

- Test: Run for a full cycle, ensure that all functions and features work correctly.
- Documentation: Submit guarantees, instruction manuals, etc.

N11 Domestic kitchen fittings, furnishings and equipment

To be read with Preliminaries/ General conditions.

PRODUCTS

- 310A FITTED BASE UNITS TO TEA POINT
 - Standard: To BS 6222-2 and -3, and BS EN 14749.
- 320A FITTED WALL UNITS TO TEA POINT
 - Standard: To BS 6222-2 and -3, and BS EN 14749.
- 340A WORKTOPS TO TEA POINT
 - Standard: To BS 6222-3.
- 350A SINKS, TAPS, TRAPS AND WASTES TO TEA PONT
 - Sinks:
 - Standard: To BS EN 13310.
 - Wastes: Standard: To BS EN 274-1, -2 and -3.
 - Traps: Standard: To BS EN 274-1, -2 and -3.
- 360 APPLIANCES
 - Item: Hydroboil.
 - Manufacturer: Zip.
 - Product reference: Hydroboil plus HP003 - 3 Litre capacity.
 - Colour and finish: White.
 - Service connections: Cold water.
- 390A KITCHEN AND BATHROOM SEALANT
 - Manufacturer: Adshead Ratcliffe & Co Ltd.
 - Web: www.arbo.co.uk.
 - Email: arbo@arbo.co.uk.
 - Product reference: Arbosil Kitchen and Bathroom Sealant

EXECUTION

- 610 MOISTURE CONTENT OF WOOD AND WOOD BASED BOARDS
 - Control and monitoring:
 - Method statement: Submit.
- 620 INSTALLATION GENERALLY
 - Fixings and adhesives: As section Z20.
 - Services: As Engineering Services specification.
- 630 INSTALLING UNITS AND WORKTOPS
 - General: Well fitting, stable and secure.

640 INSTALLING APPLIANCES

- Connections: Provide to electric, gas, and hot and cold water services.

650 INSTALLING SINKS, TAPS AND WASTES

- Water supply: To BS EN 806-2 and -4.
- Taps:
 - Fixing: Secure, watertight seal with the appliance.
 - Positioning: Hot tap to left of cold tap as viewed by the user of the appliance.
- Wastes:
 - Bedding: Waterproof jointing compound.
 - Fixing: With resilient washer between appliance and backnut.

660 SEALANT BEDDING AND POINTING

- Application: As section Z22.
- Bedding: Sink to top of worktop.
- Pointing: Between units and splash backs.

670 INSTALLING TRIMS AND MOULDINGS

- Lengths: Un-jointed between angles or ends of runs.
- Angle joints: Mitred.

COMPLETION

910 GENERAL

- Doors and drawers: Accurately aligned, not binding. Adjusted to ensure smooth operation.
- Ironmongery: Checked, adjusted and lubricated to ensure correct functioning.

920 APPLIANCE COMMISSIONING

- Appliance operation, functions and controls: Verify.
- Documentation: Submit guarantees, instruction manuals, etc

N13 Sanitary appliances and fittings

To be read with Preliminaries/ General conditions.

PRODUCTS

- 100 SANITARYWARE
Refer to Sanitary Schedule in Appendix
- 438A MIRRORS ABOVE ALL BASINS
- Manufacturer: Bobrick Washroom Equipment Ltd.
 - Web: www.bobrick.co.uk.
 - Email: info@bobrick.co.uk.
 - Product reference: B-1556 2436 Frameless mirror - 610mm wide x 910mm high.
- 472A HAND DRYER
- Manufacturer: Dyson.
 - Web: www.dyson.co.uk/forbusiness.
 - Email: Specification@dyson.com.
 - Product reference: AB08 - Polycarbonate ABS
 - Colour/ Finish: Sprayed nickel.
- 580A SEALANT
- Manufacturer: Dow Corning.
 - Web: www.dowcorning.com/construction.
 - Email: bruce.nicol@dowcorning.com.
 - Product reference: 786 Mildew Resistant Silicone Sealant
 - Colour: White.

EXECUTION

- 610 INSTALLATION GENERALLY
- Assembly and fixing: Surfaces designed to falls to drain as intended.
 - Fasteners: Nonferrous or stainless steel.
 - Supply and discharge pipework: Fix before appliances.
 - Fixing: Fix appliances securely to structure. Do not support on pipework.
 - Jointing and bedding compounds: Recommended by manufacturers of appliances, accessories and pipes being jointed or bedded.
 - Appliances: Do not use. Do not stand on appliances.
 - On completion: Components and accessories working correctly with no leaks.
 - Labels and stickers: Remove.
- 620 NOGGINGS AND BEARERS
- Noggings, bearers, etc. to support sanitary appliances and fittings: Position accurately. Fix securely.

- 630 TILED BACKGROUNDS OTHER THAN SPLASHBACKS
- Timing: Complete before fixing appliances.
 - Fixing appliances: Do not overstress tiles.
- 670 INSTALLING CISTERNS
- Cistern operating components: Obtain from cistern manufacturer.
 - Inlet and flushing valves: Match to pressure of water supply.
 - Internal overflows: Into pan, to give visible warning of discharge.
 - External overflows: Fix pipes to falls and locate to give visible warning of discharge. Agree location where not shown on drawings.
- 710 INSTALLING TAPS
- Fixing: Secure against twisting.
 - Seal with appliance: Watertight.
 - Positioning: Hot tap to left of cold tap as viewed by user of appliance.
- 720 INSTALLING WASTES AND OVERFLOWS
- Bedding: Waterproof jointing compound.
 - Fixing: With resilient washer between appliance and backnut.
- 725 INSTALLING HAND DRIERS
- Fused connection units:
 - Type: Unswitched.
 - Engraving: With 'HAND DRIER'.
 - Location: Immediately below ceiling.
 - Final connection: Concealed.
 - Containment: As Electrical Engineers specification.
- 755 SEALANT BEDDING AND POINTING
- Bedding: Bed and point basins to underside of vanity units and bed sinks to worktops.
 - Pointing: Joints between appliances and splashbacks..

N17 Portable fire fighting systems

To be read with Preliminaries/ General Conditions.

GENERAL

SYSTEM PERFORMANCE

- 210 DESIGN
- Design: Complete the design of the portable fire fighting system.
 - Basis: In accordance with BS 5306-0.
 - Proposals: Submit drawings, technical information, calculations and manufacturers' literature.
- 220 COLOUR CODING
- Portable fire extinguishers: Colour code in accordance with BS 7863.

PRODUCTS

- 320 DRY POWDER EXTINGUISHERS
- Standard: To BS EN 3-7.
 - Manufacturer: Chubb.
 - Product reference: 2Kg.
- 340 WATER EXTINGUISHERS
- Standard: To BS EN 3-10.
 - Manufacturer: Chubb.
 - Product reference: 9L.
- 410 FIRE BLANKETS - LIGHT DUTY
- Standard: To BS EN 1869.
 - Manufacturer: Chubb.
 - Product reference: Fire Blanket.

EXECUTION

- 610 INSTALLING PORTABLE FIRE EXTINGUISHERS
- Mounting height above finished floor level: Bracket fixed at 1 m.
- 650 INSTALLING FIRE BLANKETS
- Mounting height above finished floor level: 1200mm.

COMPLETION

- 910 CLEANING
- Protective wrappings: Remove.
 - Cleaning: Clean off and wipe down container finishes.

**CAINSCROSS FOOTBALL
PAVILLION**

N17

920 TESTING

- Test standard: To BS 5603-0.
- Test times: At completion.
- Notice for testing (minimum): 5 days.

930 TRAINING

- Training: Submit instruction manuals or supply other appropriate resources to train the users of the building in the safe and appropriate use of the fire extinguishers and fire blankets.
- Fire brigade: Submit contact details.

940 MAINTENANCE

- Servicing: Arrange the first annual service of the portable fire fighting systems.
- Maintenance standard: To BS 5603-0.

P10 Sundry insulation/ proofing work

SUNDRY INSULATION/ PROOFING WORK

To be read with Preliminaries/ General conditions

TYPES OF INSULATION

125A INSULATION LAID BETWEEN CEILING TIES/ JOISTS

- Manufacturer: ROCKWOOL Ltd.
 - Web: www.rockwool.co.uk.
 - Email: info@rockwool.com.
 - Product reference: Rockwool rolls
- Thickness: 150 mm.

135A INSULATION LAID ACROSS CEILING TIES/ JOISTS

- Manufacturer: ROCKWOOL Ltd.
 - Web: www.rockwool.co.uk.
 - Email: info@rockwool.com.
 - Product reference: Rockwool rolls
- Thickness: 170 mm.

190A INSULATION TO INTERNAL FACE OF EXISTING BUILDING

- Manufacturer: Kingspan Insulation.
 - Web: www.kingspaninsulation.co.uk.
 - Email: info@kingspaninsulation.co.uk.
 - Product reference: Kooltherm® K12 Framing Board & Kooltherm K18 insulated Plasterboard
- Insulation thickness: 50 mm K12 + 37.5mm K18.

220A INSULATION ACOUSTIC IN TIMBER STUD WALLS

- Manufacturer: Knauf Insulation Ltd.
 - Web: www.knaufinsulation.co.uk.
 - Email: info@knaufinsulation.com.
 - Product reference: Earthwool® Flexible Slab
- Thickness: 100 mm
- .

P12 Fire stopping systems

To be read with Preliminaries/ General conditions.

GENERAL

160A FIRESTOP STRIP

- Manufacturer: Mayplas.
 - Web: www.mayplas.co.uk.
 - Email: sales@mayplas.co.uk.
 - Product reference: 553 Firestop Strip
- Width: 100 mm.

PRODUCTS

305 PRODUCT CERTIFICATION

- Certification: For products specified generically, submit evidence of compliance with the specification.
- Acceptable evidence: Agrément certificate.

335A INTUMESCENT FOAM

- Manufacturer: Dow Corning.
 - Web: www.dowcorning.com/construction.
 - Email: bruce.nicol@dowcorning.com.
 - Product reference: Firestop 3-6548 silicone RTV foam

338A SEALANT INTUMESCENT

- Manufacturer: PFC Corofil Fire Stop Products.
 - Web: www.pfc-corofil.com.
 - Email: sales@pfc-corofil.co.uk.
 - Product reference: High Expansion Sealant

340A INTUMESCENT MORTAR

- Manufacturer: ROCKWOOL Ltd.
 - Web: www.rockwool.co.uk.
 - Email: info@rockwool.com.
 - Product reference: Rockwool Firepro Firestop Compound

375A PIPE WRAPS

- Manufacturer: ROCKWOOL Ltd.
 - Web: www.rockwool.co.uk.
 - Email: info@rockwool.com.
 - Product reference: Rockwool Firepro Intumescent Pipe Wraps

390A SEALANT

- Manufacturer: Dow Corning.
 - Web: www.dowcorning.com/construction.
 - Email: bruce.nicol@dowcorning.com.
 - Product reference: Firestop 700 Silicone Sealant

EXECUTION

620 WORKMANSHIP GENERALLY

- Gaps: Seal gaps between building elements and services, to provide fire resistance and resist the passage of smoke.
- Adjacent surfaces: Prevent overrun of sealant or mortar on to finished surfaces.

650 INSTALLING FIRE STOP LAMINATE

- Fitting of strips: Compress strips and fit into gap, so that, as they decompress, the strips wedge themselves in the void.
- Shrink wrapping: Not applicable.
- Joints:
 - Ends of strips: Fit intumescent 'end piece' at both ends of run of stop laminate.
 - Joints between strips: Fit two intumescent 'end pieces' at each butt joint.

660 APPLYING INTUMESCENT FOAM

- New joints: Remove builder's debris, mortar droppings, grease, and other contaminants.
- Old joints: Clean and remove existing sealant from each joint.
- Priming: Lightly moisten substrate with water.
- Application: Fill joint to approximately half its depth, and allow foam to expand to face of joint.
- Trimming: Trim excess foam to give a neat, flush appearance.

670 APPLYING INTUMESCENT MORTAR

- Sequence: Install mortar after services are permanently installed.
- Loose dust and combustible materials: Remove from the opening.
- Shuttering: Install suitable shuttering panels to the faces of the opening.
- Temperature: Do not apply mortar when it could be damaged by frost.
- Powder:water ratio: As manufacturers recommendations.
- Mortar cure: Do not disturb mortar before final set has taken place.
- Shuttering: Remove after mortar has cured.

745 APPLYING SEALANTS GENERALLY

- Application: As section Z22.

COMPLETION

910 CLEANING

- Masking tapes: Remove.
- Cleaning: Clean off splashes and droppings. Wipe down finishes.

920 INSPECTION

- Notice for inspection (minimum): 5 working days .

P20 Unframed isolated trims/ skirtings/ sundry items

To be read with Preliminaries/General conditions

200 MEDIUM DENSITY FIBREBOARD SKIRTINGS, ARCHITRAVES & WINDOW BOARDS

- Manufacturer: Submit proposals.
 - Product reference: Contractor's choice.
- Standard: To BS EN 622-5.
 - Type: MDF.H.
 - Formaldehyde class: To BS EN 622-1, Class E1.
- Fire rating: Class 0 as defined in Building Regulations.
- Thickness: 19mm.
- Edges: 6mm pencil rounded arrises.
- Finish: Prepared and primed as section M60.
- Recycled content: Contractor's choice.
- Support/ Fixing: -.

410 LEG SUPPORTS FOR WORKTOP IN OFFICE

- Material: Stainless steel .
 - Finish: Brushed .
 - Colour: N/a .
- Dimensions:
 - Profile: 50 mm diameter .
 - Height: 700 mm .
- Fixing: Plugged and screwed into floor tiles .

510 INSTALLATION GENERALLY

- Joinery workmanship: As section Z10.
- Metal workmanship: As section Z11.
- Methods of fixing and fasteners: As section Z20 where not specified.
- Straight runs: To be in one piece, or in long lengths with as few joints as possible.
- Running joints: Location and method of forming to be agreed where not detailed.
- Joints at angles: Mitre, unless shown otherwise.
- Position and level: To be agreed where not detailed.

P30 Trenches, pipeways and pits for buried engineering services

To be read with Preliminaries/ General conditions.

GENERAL

PRODUCTS

320 PIPEDUCTS FOR NEW SERVICES

- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Type: Full duct.
- Material: PVC-U to BS EN 1401-1, class SN4, Kitemark certified.
- Colours: To suit service.
- Sizes: 100mm diameter.
- Jointing: Submit proposals.

411 SELECTED AS-DUG MATERIAL

- Material: Selected, free from vegetable matter, rubbish, frozen soil and excluding lumps and stones retained on a 40 mm sieve.

412 GRANULAR MATERIAL

- Material: Granular: To Department for Transport (DfT) 'Specification for the reinstatement of openings in highways: code of practice' 3rd Edition.

440 MORTAR BEDDING

- Mix: 1:3 cement:sand.

475 DRAWLINES

- Number of drawlines: One per duct.
Material: Heavy gauge natural polypropylene.
 - Diameter: 10 mm.

480 WARNING MARKER TAPES

- Standard: To BS EN 12613.
- Type: Continuous colour coded, heavy gauge polyethylene identification tapes.
- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Width: 100 mm.
- Colour: Red with white lettering.
- Message: Required.
- Wire detection aid: Not required.

EXECUTION

610 ROUTES OF SERVICES BELOW GROUND

- Locations of existing service runs and pipeducts: Generally as drawings?.
- Site survey: To verify location of existing services.
 - Submit: Copy of survey, highlighting discrepancies.
- Locations of new service runs and pipeducts: As drawings.
 - Temporary marking: Indicate new service runs and pipeducts with 75 x 75 mm softwood posts painted white and projecting not less than 600 mm above ground level, or with clearly visible waterproof markings on hard surfaces.

620 EXISTING ROADS AND PAVINGS

- Excavation and backfilling: To Department for Transport (DfT) 'Specification for the reinstatement of openings in highways: code of practice' 3rd Edition.

625 TRENCHES

- Trench width: As small as practicable.
- Trench bottoms: Remove mud, rock projections, boulders and hard spots. Trim level.
- Give notice: To inspect trench for each section of the work.

630 CUTTING TREE ROOTS IN SERVICE TRENCHES

- Protected area: The larger of the branch spread of the tree or an area with a radius of half the tree's height, measured from the trunk.
- Roots in protected area: Do not cut.
- Roots exceeding 25 mm diameter: Give notice and do not cut without permission.
- Cutting:
 - Use a hand saw to make clean smooth cuts.
 - Minimize wound area and ragged edges.
 - Pare cut surfaces smooth with a sharp knife.
- Unintentionally severed roots: Give notice and form a new clean cut slightly nearer the trunk.
- Backfilling: Retained topsoil .

640 LAYING PIPEDUCTS

- General: Lay straight to line, true to gradient or level on an even continuous bed.
- Clearance between pipeducts where they cross (minimum): 50 mm.
- Drawlines: During laying, thread through pipeducts. Leave in place for future pulling through of services.
 - Length: Length of pipeduct plus 5 m.
- Seal: Ends of pipeducts terminating inside buildings.
 - Material: Vermin/ insect proof expanding foam.
- Protection: Protect from ingress of debris. During construction, temporarily seal all exposed ends.

650 PIPEDUCT BEDDING AND SURROUND – GRANULAR MATERIAL

- Bedding: Granular material thoroughly compacted by hand in 150 mm maximum layers.
 - Thickness (minimum): 150 mm.
- Surround: Granular material. Lay and compact to 150 mm (minimum) above pipeduct crown.

- 655 CONCRETE SURROUND FOR PIPEDUCTS
- Concrete blinding: 25 mm thick over full width of trench. Allow to set.
 - Pipeducts:
 - Temporary support: Folding wedges of compressible board. Prevent flotation.
 - Height above blinding (minimum): 100 mm.
 - Surround, to full width of trench:
 - Depth: To 150 mm above crown of pipeduct or as shown on drawings.
 - Vertical construction joints: At face of flexible pipeduct joints using 18 mm thick compressible board pre-cut to pipeduct profile.
 - Socketed pipeducts: Fill gaps between spigots and sockets with resilient material to prevent entry of concrete.
- 660 CONCRETE SURROUND FOR SHALLOW PIPEDUCTS UNDER BUILDINGS
- Locations: Where pipeduct crowns are less than 300 mm below underside of slab.
 - Timing: Excavate trench after hardcore has been laid and compacted.
 - Concrete blinding: 25 mm thick over full width of trench. Allow to set.
 - Pipeducts:
 - Temporary support: Folding wedges of compressible board. Prevent flotation.
 - Height above blinding (minimum): 100 mm.
 - Surround: Cast integral with slab. Extend surround to within 150 mm of nearest flexible joint.
- 665 PIPEDUCT RUNS NEAR FOUNDATIONS
- Concrete surround: Provide in locations where bottom of trench is lower than bottom of foundation. Measurements are horizontal clear distances between nearest edges of foundations and pipe trenches.
 - Trenches less than one metre from foundations: Top of concrete surround not lower than bottom of foundation.
 - Trenches more than one metre from foundations: Top of concrete surround not lower than D mm below bottom of foundation, where D mm is horizontal distance of trench from foundation, less 150 mm.
- 675 BACKFILLING GENERALLY
- Backfill from top of pipeduct surround: Material excavated from the trench.
 - Backfilling: Lay and compact in 300 mm maximum layers. Do not use heavy compactors before backfill is 600 mm deep.
- 680 BACKFILLING UNDER ROADS AND PAVINGS
- Backfill from top of pipeduct surround: Granular sub-base material to Highways Agency 'Specification for highway works', clause 803 (Type 1)..
 - Backfilling: Lay and compact in 150 mm maximum layers.
- 710 TEMPORARY BRIDGES
- Construction traffic: After backfilling, provide temporary bridges over trenches to prevent damage to pipeducts or services.
- 720 WARNING MARKER BOARDS, TAPES AND TILES
- Installation: During backfilling.
 - Depth: Continuously, 200–300 mm above service pipe or cable or to requirements of service undertaker if different.
 - Pipelines deeper than 2 m lay additional marker 600 mm above the top of the pipeline or to requirements of service undertaker if different.

- 750 ADDITIONAL REQUIREMENTS FOR WATER AND GAS MAINS
- Anchor blocks: Provide at all bends, tapers, cap ends and junctions.
 - Material: Ready mix concrete.
 - Size: -.

COMPLETION

- 910 INSPECTION
- Inspection of pipeducts: Before backfilling.
 - Inspection by: CA.
- 920 TESTING
- Timing: Where services require testing as set out in the respective work section; undertake tests before backfilling the service.
 - Notice for inspection (minimum): Five days.
 - Defects: Report immediately.
- 930 DOCUMENTATION
- Record drawings: Submit.

P31 Holes, chases, covers and supports for services

To be read with Preliminaries/General conditions.

PRODUCTS

EXECUTION

- 620 HOLES, RECESSES AND CHASES IN IN SITU CONCRETE
- Cast in: Holes larger than 10 mm diameter, recesses and chases.
 - Cutting and drilling:
 - Permitted for holes not larger than 10 mm diameter.
 - Not permitted for holes larger than 10 mm diameter except as indicated on drawings.
- 650 HOLES, RECESSES AND CHASES IN MASONRY
- Locations: To maintain integrity of strength, stability and sound resistance of construction.
 - Sizes: Minimum needed to accommodate services.
 - Holes (maximum): 300 mm².
 - Walls of hollow or cellular blocks: Do not chase.
 - Walls of other materials:
 - Vertical chases: No deeper than one third of single leaf thickness, excluding finishes.
 - Horizontal or raking chases: No longer than 1 m. No deeper than one sixth of the single leaf thickness, excluding finishes.
 - Chases and recesses: Do not set back to back. Offset by a clear distance at least equal to the wall thickness.
 - Cutting: Do not cut until mortar is fully set. Cut carefully and neatly. Avoid spalling, cracking and other damage to surrounding structure.
- 670 NOTCHES AND HOLES IN STRUCTURAL TIMBER
- General: Avoid if possible.
 - Sizes: Minimum needed to accommodate services.
 - Position: Do not locate near knots or other defects.
 - Notches and holes in the same joist: Minimum 100 mm apart horizontally.
 - Notches in joists:
 - Position: Locate at top. Form by sawing down to a drilled hole.
 - Depth (maximum): 0.15 x joist depth.
 - Distance from supports: Between 0.1 and 0.2 x span.
 - Holes in joists:
 - Position: Locate on neutral axis.
 - Diameter (maximum): 0.25 x joist depth.
 - Centres (minimum): 3 x diameter of largest hole.
 - Distance from supports: Between 0.25 and 0.4 of span.
 - Notches in roof rafters, struts and truss members: Not permitted.
 - Holes in struts and columns: Locate on neutral axis.
 - Diameter (maximum): 0.25 x minimum width of member.
 - Centres (minimum): 3 x diameter of largest hole.
 - Distance from ends: Between 0.25 and 0.4 of span.

690 INSTALLING PIPE SLEEVES

- Sleeves: Fit to pipes passing through building fabric.
- Material: Match pipeline.
- Size: One or two sizes larger than pipe to allow clearance.
- Finish: Install sleeves flush with building finish. In areas where floors are washed down, install protruding 100 mm above floor finish.
- Masking plates: Fit at visible penetrations, including through false ceilings of occupied rooms.

710A SEALANT

- Manufacturer: Dow Corning.
 - Web: www.dowcorning.com/construction.
 - Email: bruce.nicol@dowcorning.com.
 - Product reference: 756 SMS Building Sealant
- Colour: TBA.

Q10 Kerbs/ edgings/ channels/ paving accessories

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

TYPES OF KERBS/ EDGINGS/ CHANNELS

110A PROPRIETARY PRECAST CONCRETE TO NEW PATHS

- Manufacturer: Marshalls plc.
 - Web: www.marshalls.co.uk.
 - Email: info@marshalls.co.uk.
 - Product reference: EF Flat Top Edgings.
- Size: 50 x 250 mm.

LAYING

510 LAYING KERBS, EDGINGS AND CHANNELS

- Cutting: Neat, accurate and without spalling. Form neat junctions.
 - Long units (450 mm and over) minimum length after cutting: 300 mm.
 - Short units minimum length after cutting: The lower of one third of their original length or 50 mm.
- Bedding of units: Positioned true to line and levelled along top and front faces, in a mortar bed on accurately cast foundations or on a race of fresh concrete.
- Securing of units: After bedding has set, secured with a continuous haunching of concrete or on a race of fresh concrete with backing concrete cast monolithically.

530 CONCRETE FOR FOUNDATIONS, RACES AND HAUNCHING

- Standard: To BS 8500-2.
- Designated mix: Not less than GEN0 or Standard mix ST1.
- Workability: Very low.

540 CEMENT MORTAR BEDDING

- General: To section Z21.
- Mix: (Portland cement:sand): 1:3.
 - Portland cement: Class CEM I 42.5 to BS EN 197-1.
 - Sand: to BS EN 12620, grade 0/4 or 0/2 (MP).
- Bed thickness: 12-40 mm.

547 BEDDING/ BACKING OF UNITS ON FRESH CONCRETE RACES

- Standard: To BS 7533-6.

560 HAUNCHING DOWELS

- Dowels: Steel bar to BS 4482.
 - Size: 12 mm diameter, 150 mm long.
- Installation of dowels: Vertically into foundation while concrete is plastic.
 - Centres: 450 mm.
 - Distance from back face of kerb: 50 mm.
 - Projection: 75 mm.
- Haunching: Rectangular cross section, cast against formwork, fully enclosing and protecting dowels.

620 ACCURACY

- Deviations (maximum):
 - Level: ± 6 mm.
 - Horizontal and vertical alignment: 3 mm in 3 m.

630 NARROW MORTAR JOINTS

- Jointing: Ends of units buttered with bedding mortar as laying proceeds. Joints completely filled, tightly butted and surplus mortar removed immediately.
 - Joint width: 3 mm.

Q20 Granular sub-bases to roads/ pavings

To be read with Preliminaries/ General conditions.

110 THICKNESSES OF SUB-BASE/ SUBGRADE IMPROVEMENT LAYERS

- Thicknesses: See sections:
 - Q22 Coated macadam/ asphalt roads/ pavings.

130 HERBICIDES

- Type: Contractor's choice.
- Application: To subgrade of footpath.

140 EXCAVATION OF SUBGRADES

- Final excavation to formation/ subformation level: Carry out immediately before compaction of subgrade.
- Soft spots and voids: Give notice.
- Old drainage and service trenches: Excavate to remove soft or degraded material, then backfill with specified granular sub-base material and compact..
- Wet conditions: Do not excavate or compact when the subgrade may be damaged or destabilized.

145 PREPARATION AND COMPACTION OF SUBGRADES

- Timing: Immediately before placing sub-base.
- Soft or damaged areas: Excavate and replace with sub-base material, compacted in layers 300 mm (maximum) thick.
- Compaction: Thoroughly, by roller or other suitable means, adequate to resist subsidence or deformation of the subgrade during construction and of the completed roads/ pavings when in use. Take particular care to compact fully at intrusions, perimeters and where local excavation and backfilling has taken place.

180 NOTICE

- Give notice: After preparation and compaction of subgrades and On completion of compaction .
 - Period of notice: 2 working days.

210 HIGHWAYS AGENCY TYPE 1 UNBOUND MIXTURE FOR SUB-BASE

- Material: Type 1 unbound mixture to Highways Agency 'Specification for highway works', clauses 801 and 803.
 - Recycled aggregate: Not permitted.

211 GRANULAR MATERIAL

- Quality: Of a known suitability for use in sub-base, free from excessive dust, well graded, all pieces less than 75 mm in any direction, minimum 10% fines value of 50 kN when tested in a soaked condition to BS 812-111 or a resistance to fragmentation of LA50 for the Los Angeles test to BS EN 1097-2, and in any one layer only one of the following:
 - Crushed rock (other than argillaceous rock) or quarry waste with not more binding material than is required to help hold the stone together.
 - Crushed concrete, crushed brick or tile, free from plaster, timber and metal.
 - Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay.
 - Natural gravel.
 - Natural sand.
- Filling: Spread and levelled in 150 mm maximum layers, each layer thoroughly compacted.

230 PLACING GRANULAR MATERIAL GENERALLY

- Preparation: Loose soil, rubbish and standing water removed.
- Structures, membranes and buried services: Ensure stability and avoid damage.

250 LAYING GRANULAR SUB-BASES FOR PEDESTRIAN AREAS

- General: Spread and levelled.
- Compaction:
 - Timing: As soon as possible after laying.
 - Method: By roller or other suitable means, adequate to resist subsidence or deformation of the sub-base during construction and of the completed paving when in use. Take particular care to compact fully at intrusions, perimeters and where local excavation and backfilling has taken place.

310 ACCURACY

- Permissible deviation from required levels, falls and cambers (maximum):
 - Subgrades:
 - Roads and parking areas: +20 -30 mm.
 - Footways and recreation areas: ± 20 mm.
 - Sub-bases:
 - Roads and parking areas: n/a.
 - Footways and recreation areas: ± 12 mm .

330 COLD WEATHER WORKING

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

340 PROTECTION

- Sub-bases: As soon as practicable, cover with subsequent layers, specified elsewhere.
- Subgrades and sub-bases: Prevent degradation by construction traffic, construction operations and inclement weather.

Q22 Asphalt roads/ pavings

To be read with Preliminaries/ General conditions.

TYPES OF PAVING

115A ASPHALT BASE AND BINDER COURSES

- Manufacturer: Aggregate Industries - Asphalt.
 - Web: www.aggregate.com/asphalt.
 - Email: asphalt@aggregate.com.
 - Product reference: Superflex 100 14 mm.

115B ASPHALT FINISHING COURSE

- Manufacturer: Aggregate Industries - Asphalt.
 - Web: www.aggregate.com/asphalt.
 - Email: asphalt@aggregate.com.
 - Product reference: Superlasting

PREPARATORY WORK/ REQUIREMENTS

LAYING

310 LAYING GENERALLY

- Preparation: Remove all loose material, rubbish and standing water.
- Adjacent work: Form neat junctions. Do not damage.
- Channels, kerbs, inspection covers etc: Keep clean.
- New paving:
 - Keep traffic free until it has cooled to prevailing atmospheric temperature.
 - Do not allow rollers to stand at any time.
 - Prevent damage.
 - Lines and levels: With regular falls to prevent ponding.
 - Overall texture: Smooth, even and free from dragging, tearing or segregation.
 - State on completion: Clean.

330 LEVELS

- Permissible deviation from the required levels, falls and cambers (maximum): In accordance with BS 594987, clause 5.2.

351 CONTRACTOR'S USE OF PAVEMENTS

- Preparation for final surfacing:
 - Timing: Defer laying until as late as practicable.
 - Immediately before laying final surfacing: Clean and make good the base/ binder course. Allow to dry.
 - Adhesion: Bond coat.
Application rate: As manufacturer's recommendation.
Accuracy: Uniform, without puddles.
 - Finishing: Allow emulsion to break completely before applying surface.

Q30 Seeding/ turfing

To be read with Preliminaries/General conditions.

GENERAL INFORMATION/REQUIREMENTS

115 SEEDED AND TURFED AREAS

- Growth and development: Healthy, vigorous grass sward, free from the visible effects of pests, weeds and disease.
- Appearance: A closely knit, continuous ground cover of even density, height and colour.

120 CLIMATIC CONDITIONS

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

145 WATERING

- Quantity: Wet full depth of topsoil.
- Application: Even and without displacing seed, seedlings or soil.
- Frequency: As necessary to ensure the establishment and continued thriving of all seeding/turfing.

150 WATER RESTRICTIONS

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

160 NOTICE

- Give notice before:
 - Setting out.
 - Applying herbicide.
 - Applying fertilizer.
 - Preparing seed bed.
 - Seeding or turfing.
 - Visiting site during maintenance period.
- Period of notice: 2 working days.

PREPARATION

212 SEED BED CLEANING BEFORE SOWING ALL GRASSED AREAS

- Operations: As seed supplier's recommendations

250 SOIL REQUIREMENTS

- Type:
 - Seeded areas: Existing topsoil.
 - Turfed areas: n/a.
 - Reinforced grass areas: n/a.

SEEDING

- 310 GRASS SEED FOR PLAYING FIELD AND DAMAGED AREAS
- Mixture: 35% Chewings fescue, 35% Slender red fescue, 20% Smooth stalked meadow grass, 10% Brown top bent.
 - Application rate: 20-35 g/m².
- 319 QUALITY OF SEED FOR SPORTS FIELDS
- Freshness: Produced for the current growing season.
 - Certification: Blue label certified varieties.
 - Standard: EC purity and germination regulations.
 - Official Seed Testing Station certificate of germination, purity and composition: Submit when requested.
 - Samples of mixtures: Submit when requested.
- 330 SOWING
- General: Establish good seed contact with the root zone.
 - Method: To suit soil type, proposed usage, location and weather conditions during and after sowing.
 - Distribution: 2 equal sowings at right angles to each other.
- 335 GRASS SOWING SEASON
- Grass seed generally: April to June or August to October.
- 340 PRE-EMERGENT HERBICIDE FOR SPORTS FIELDS
- Standard: Pesticide Safety Directorate approved.
 - Application rate: In accordance with manufacturer's written recommendation.
 - Timing: Immediately after sowing.

CUTTING MAINTENANCE

- 530 FIRST CUT OF GRASSED AREAS
- Timing: When grass is reasonably dry.
 - Height of initial growth: 40-75 mm.
 - Preparation:
 - Debris and litter: Remove.
 - Stones and earth clods larger than 25 mm in any dimension: Remove
 - Height of first cut: 40 mm.
 - Mower type: Contractor's choice.
 - Arisings: Spread evenly over cut areas.
- 610 FAILURES OF SEEDING/TURFING
- Duration: Carry out the following operations from completion of seeding/ turfing until the end of the rectification period.
 - Defective materials or workmanship: Areas that have failed to thrive.
 - Exclusions: Theft or malicious damage.
 - Method of making good: Recultivation and reseeded/ returfing.
 - Timing of making good: The next suitable planting season.

620 MAINTAINING SPORTS FIELDS

- Duration: Carry out the following operations from completion of seeding/ turfing until the end of the rectification period.
- Maximum height of growth at any time: 75 mm.
- Preparation: Before each cut remove all litter and debris.
- Cutting: As and when necessary to a height of 50 mm.
 - Arisings: Spread evenly over cut areas.
- Bulb planting areas: Do not cut until bulb foliage has died down.
- Trimming: All edges.
 - Arisings: Remove.
- Weed control: Substantially free of broad leaved weeds.
 - Method: Application of a suitable selective herbicide.
- Stones brought to the surface: Remove regularly.
 - Size: Exceeding 25 mm in any dimension.
- Areas of settlement: Make good.
- Watering: Contractor's choice.

Q40 Fencing

To be read with Preliminaries/ General conditions.

FENCING SYSTEMS

125A SECURITY GATES TO LOCKABLE STORAGE AREA

- Manufacturer: Jacksons Fencing.
 - Web: www.jacksons-security.co.uk.
 - Email: sales@jacksons-fencing.co.uk.
 - Product reference: EuroGuard Extra
- Height: 3000mm x 5000mm wide - Site Dimensions to be taken prior to manufacture.
- Gates:
 - Type: Swing.
 - Operation: Manual.
 - Control: Not applicable.
- Finish/ Colour:
 - Posts: Manufacturer's standard 80x60mm RHSbolted down to concrete base.
 - Panels: Manufacturer's standard.
 - Gates: Not applicable
- Other requirements: Refer to drawing for configuration..

440 BOUNDARY PROTECTION MATERIALS SPECIFICATION

- Minimum BRE 'Green Guide to Specification Online' rating: Manufacturers standard.

ACCESSORIES

EXECUTION

710 INSTALLATION GENERALLY

- Set out and erect:
 - Alignment: Straight lines or smoothly flowing curves.
 - Tops of posts: Following profile of the ground.
 - Setting posts: Rigid, plumb and to specified depth, or greater where necessary to ensure adequate support.
 - Fixings: All components securely fixed.

715 COMPETENCE

- Operatives: Contractors must employ competent operatives.
- Qualifications: Submit certification of training.
 - NHSS Sector Scheme 2A sub categories: Not required.
 - NHSS Sector Scheme 2C sub categories: Not required.

780 MAKING GOOD GALVANIZED SURFACES

- Treatment of minor damage (including on fasteners and fittings): Low melting point zinc alloy repair rods or powders made for this purpose, or at least two coats of zinc-rich paint to BS 4652.
- Thickness: Apply sufficient material to provide a zinc coating at least equal in thickness to the original layer.

COMPLETION

910 CLEANING

- General: Leave the works in a clean, tidy condition.
- Surfaces: Clean immediately before handover.

920 FIXINGS

- All components: Tighten.
 - Timing: Before handover.

930 GATES

- Hinges, latches and closers: Adjust to provide smooth operation. Lubricate where necessary.
 - Timing: Before handover.

R10 Rainwater drainage systems

To be read with Preliminaries/ General conditions.

GENERAL

110 GRAVITY RAINWATER DRAINAGE SYSTEM

- Rainwater outlets: Proprietary.
- Gutters: Formed in single ply membrane layer.
- Pipework: Aluminium.
- Below ground drainage: As section R12.
- Disposal: To surface water drainage.
- Controls: Not applicable.
- Accessories: Anticlimb rainwater pipe covers.

SYSTEM PERFORMANCE

210 DESIGN

- Design: Complete the design of the rainwater drainage system.
- Standard:
 - To BS EN 12056-3, clauses 3–7, Annex A and National Annexes.
 - To BS EN 12056-5, clauses 3, 4, 6 and 11.
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

221 COLLECTION AND DISTRIBUTION OF RAINWATER

- General: Complete, and without leakage or noise nuisance.

PRODUCTS

365A RAINWATER OUTLETS

- Manufacturer: Alumasc Exterior Building Products Ltd.
 - Web: www.alumasc-exteriors.co.uk.
 - Email: info@alumasc-exteriors.co.uk.
 - Product reference: Harmer AV Vertical Spigot roof outlet
- Type: AV300/F, aluminium body, flat grating, 75 mm pipe.
- Accessories:
 - Grate extension piece: Not required.
 - Terrace grate: Not required.
 - Metal deck support plate: SP1, 50/75 mm pipe diameter.

370A ALUMINIUM PIPEWORK

- Manufacturer: Alumasc Exterior Building Products Ltd.
 - Web: www.alumasc-exteriors.co.uk.
 - Email: info@alumasc-exteriors.co.uk.
 - Product reference: CP30 Flushjoint 75 mm round pipework
- System colour/ finish: Mill finish.
- Pipes: CP30/3MA, length 3000 mm .
- Fittings:
 - Bends: As required to complete system.
 - Branches: As required to complete system.
 - Access pipe: Not required.
 - Offset (two part): As required to complete system.
 - Shoe: Not required.
 - Pipe clips: RW2/237 standard pipe clip and RW2/365 extension base pipe clip.

EXECUTION

600 PREPARATION

- Work to be completed before commencing work specified in this section:
 - Below ground drainage. Alternatively, make temporary arrangements for dispersal of rainwater without damage or disfigurement of the building fabric and surroundings.
 - Painting of surfaces which will be concealed or inaccessible.

605 INSTALLATION GENERALLY

- Electrolytic corrosion: Avoid contact between dissimilar metals where corrosion may occur.
- Plastics and galvanized steel pipes: Do not bend.
- Allowance for thermal and building movement: Provide and maintain clearance as fixing and jointing proceeds.
- Protection:
 - Fit purpose made temporary caps to prevent ingress of debris.
 - Fit access covers, cleaning eyes and blanking plates as the work proceeds.

630 INSTALLING RAINWATER OUTLETS

- Fixing: Secure. Fix before connecting pipework.
 - Method: Support plate and clamp.
- Junctions between outlets and pipework: Accommodate movement in structure and pipework.

635 FIXING PIPEWORK

- Pipework: Fix securely, plumb and/ or true to line.
- Branches and low gradient sections: Fix with uniform and adequate falls to drain efficiently.
- Externally socketed pipes and fittings: Fix with sockets facing upstream.
- Additional supports: Provide as necessary to support junctions and changes in direction.
- Vertical pipes:
 - Provide a loadbearing support at least at every storey level.
 - Tighten fixings as work proceeds so that every storey is self supporting.
 - Wedge joints in unsealed metal pipes to prevent rattling.
- Wall and floor penetrations: Isolate pipework from structure.
 - Pipe sleeves: As section P31.
 - Masking plates: Fix at penetrations if visible in the finished work.
- Expansion joint pipe sockets: Fix rigidly to buildings. Elsewhere, provide brackets and fixings that allow pipes to slide.

640 FIXING VERTICAL PIPEWORK

- Bracket fixings: Plugged and screwed into masonry.
- Distance between bracket fixing centres (maximum): 900 mm.

650 JOINTING PIPEWORK AND GUTTERS

- General: Joint with materials and fittings that will make effective and durable connections.
- Jointing differing pipework and gutter systems: Use adaptors intended for the purpose.
- Cut ends of pipes and gutters: Clean and square. Remove burrs and swarf. Chamfer pipe ends before inserting into ring seal sockets.
- Jointing or mating surfaces: Clean and, where necessary, lubricate immediately before assembly.
- Junctions: Form with fittings intended for the purpose.
- Jointing material: Strike off flush. Do not allow it to project into bore of pipes and fittings.
- Surplus flux, solvent jointing materials and cement: Remove.

675 CUTTING COATED PIPEWORK AND GUTTERS

- Cutting: Recoat bare metal.

690 ELECTRICAL CONTINUITY - PIPEWORK

- Joints in metal pipes with flexible couplings: Clips (or suitable standard pipe couplings) supplied for earth bonding by pipework manufacturer to ensure electrical continuity.

COMPLETION

905 INTERNAL PIPEWORK TEST - ENGLAND, WALES, IRELAND AND NORTHERN IRELAND

- Preparation: Temporarily seal open ends of pipework with plugs.
- Test apparatus: Connect a 'U' tube water gauge and air pump to pipework via a plug.
- Testing: Pump air into pipework until gauge registers 38 mm.
- Required performance:
 - Allow a period for temperature stabilization, after which the pressure of 38 mm is to be maintained without loss for at least 3 minutes.

910 GUTTER TEST

- Preparation: Temporarily block all outlets.
- Testing: Fill gutters to overflow level and after 5 minutes closely inspect for leakage.

R11 Above ground foul drainage systems

To be read with Preliminaries/ General conditions.

GENERAL

- 115 ABOVE GROUND FOUL DRAINAGE SYSTEM
- Sanitary and floor drainage outlets: Floor drains.
 - Waste pipework: ABS.
 - Discharge stack and branch pipework: Plastics.
 - Separate ventilating pipework: None required.
 - Accessories: Air admittance valves.
 - Disposal: To below ground drainage as section R12.

SYSTEM PERFORMANCE

- 210 DESIGN
- Design: Complete the design of the above ground foul drainage system.
 - Standards: To BS EN 12056-1 and BS EN 12056-2, and in accordance with BS EN 12056-2 National Annexes NA-NG.
 - System type to BS EN 12056-2: System III.
 - Proposals: Submit drawings, technical information, calculations and manufacturers' literature.
- 220 COLLECTION AND DISTRIBUTION OF FOUL WATER
- General: Quick, quiet and complete, self-cleansing in normal use, without blockage, crossflow, backfall, leakage, odours, noise nuisance or risk to health.
 - Pressure fluctuations in pipework (maximum): ± 38 mm water gauge.
 - Water seal retained in traps (minimum): 25 mm.

PRODUCTS

- 315A FLOOR DRAINS TO SHOWERS
- Manufacturer: Alumasc Exterior Building Products Ltd.
 - Web: www.alumasc-exteriors.co.uk.
 - Email: info@alumasc-exteriors.co.uk.
 - Product reference: Harmer Shower Drain
 - Drain body: DVS38.
 - Clamp and bell:
 - Type: CB38.
 - Colour: TBC.
 - Grate: Not required.
 - Pipe connector: Not required.

315B FLOOR DRAINS TP PLANT ROOM

- Manufacturer: Alumasc Exterior Building Products Ltd.
 - Web: www.alumasc-exterior.co.uk.
 - Email: info@alumasc-exterior.co.uk.
 - Product reference: Harmer Floor Drain Trapped
- Drain body: BVS100.
- Grates and bezels: BS150MN/T.
- Pipe adaptors: ADP100/UPVC.

375A AIR ADMITTANCE VALVES

- Manufacturer: OSMA.
 - Web: www.wavin.co.uk.
 - Email: info@wavin.co.uk.
 - Product reference: 4S304 OsmaVent 110 air admittance valve.

EXECUTION

601 INSTALLATION GENERALLY

- Standard: To BS EN 12056-5.
- Components: From the same manufacturer for each type of pipework.
- Electrolytic corrosion: Avoid contact between dissimilar metals where corrosion may occur.
- Plastics and galvanized steel pipes: Do not bend.
- Allowance for thermal and building movement: Provide and maintain clearance as fixing and jointing proceeds.
- Concealed or inaccessible surfaces: Decorate before starting work specified in this section.
- Protection:
 - Purpose made temporary caps: Fit to prevent ingress of debris.
 - Access covers, cleaning eyes and blanking plates: Fit as the work proceeds.

603 INSTALLATION

Refer to Mechanical Engineering Specification

R12 Below ground drainage systems

To be read with Preliminaries/ General conditions.

GENERAL

SYSTEM PERFORMANCE

PRODUCTS

315A ONE PIECE GULLIES (BACK INLET GULLIES)

- Manufacturer: Hep2O.
 - Web: www.wavin.co.uk.
 - Email: underfloor@hep2o.co.uk.
 - Product reference: SDG3/2 SuperSleeve Inlet gully with horizontal back inlet with hinged captive grid and vertical back inlet.
- Raising pieces: As required to complete drainage system.
- Additional covers: Not required.
- Accessories and spares: Not required.

315B ONE PIECE GULLIES (ACCESS GULLIES)

- Manufacturer: Hep2O.
 - Web: www.wavin.co.uk.
 - Email: underfloor@hep2o.co.uk.
 - Product reference: SG3/1 SuperSleeve Access gully complete with rodding eye, stopper and plastics grid.
- Raising pieces: As required to complete drainage system.
- Additional covers: IG1 alloy square grid.
- Accessories and spares: Not required.

329 PIPES, BENDS AND JUNCTIONS - SUPPLY

- Pipes and fittings: From same manufacturer for each pipeline.

346A PIPES, BENDS AND JUNCTIONS - PVC-U - SOLID WALL

- Manufacturer: OSMA.
 - Web: www.wavin.co.uk.
 - Email: info@wavin.co.uk.
 - Product reference: Drain pipe 110 mm 4D076.
- Accessories: As necessary to complete drainage system.

359A FLEXIBLE COUPLINGS

- Manufacturer: FloPlast Ltd.
 - Web: www.floplast.co.uk.
 - Email: sales@floplast.co.uk.
 - Product reference: Flexi-Coupling.

371A RODDING POINTS

- Manufacturer: Hep2O.
 - Web: www.wavin.co.uk.
 - Email: underfloor@hep2o.co.uk.
 - Product reference: SRP1/1 100 mm oblique oval rodding point.

379 WARNING MARKER TAPES GENERALLY

- Type: Heavy gauge polyethylene.
- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Colour: White with black lettering.
- Widths: 100 mm.
- Message: FOUL WATER DRAIN BELOW / SURFACE WATER DRAIN BELOW.
- Wire detection aid: Required.

401A INSPECTION CHAMBER PLASTIC FOR FOUL & SURFACE WATER

- Manufacturer: OSMA.
 - Web: www.wavin.co.uk.
 - Email: info@wavin.co.uk.
 - Product reference: Osma Universal Inspection Chamber
- Chamber bases: 4D922 110 mm OsmaDrain equal chamber base.
- Raising pieces: 4D975 raising piece.
- Covers and frames: 4D942 ductile iron cover and frame.
- Accessories: As required to complete drainage system.

483 CONCRETE GENERALLY

- Standard: To BS 8500-2.
- Concrete: Designated, GEN1, as section E10.

496 GRANULAR MATERIAL– NATURAL FOR PIPE SURROUNDS AND BEDDING

- Standards: To Water Industry Specification WIS 4-08-02 (as amended by WIS 4-08-02A, 2008).
- Supplier: Contractor's choice
- Recycled content: None permitted.
 - Size: Dependent on location - see Execution clauses in this section, and in sections R16, R17 and R18, if used.

FABRICATION

EXECUTION

611 EXISTING DRAINS

- Setting out: Before starting work, check invert levels and positions of existing drains, sewers, inspection chambers and manholes against drawings. Report discrepancies.
- Protection: Protect existing drains to be retained and maintain normal operation if in use.

613 EXCAVATED MATERIAL

- Turf, topsoil, hardcore, etc: Set aside for use in reinstatement.

- 616 **SELECTED FILL FOR BACKFILLING**
- Selected fill: As-dug material, free from vegetable matter, rubbish, frozen soil and material retained on a 40 mm sieve.
 - Compaction: By hand in 100 mm layers.
- 623 **LOWER PART OF TRENCH - GENERAL**
- Trench up to 300 mm above crown of pipe: Vertical sides, width as small as practicable.
 - Width (minimum): External diameter of pipe plus 300 mm.
- 631 **TYPE OF SUBSOIL**
- General: Where type of subsoil at level of crown of pipe differs from that stated for the type of bedding, surround or support, give notice.
- 635 **FORMATION FOR BEDDINGS**
- Timing: Excavate to formation immediately before laying beddings or pipes.
 - Mud, rock projections, boulders and hard spots: Remove. Replace with consolidated bedding material.
 - Local soft spots: Harden by tamping in bedding material.
 - Inspection of excavated formations: Give notice.
- 661 **CLASS O SUPPORT GENERALLY**
- Type of subsoil: Clay, sandy clay - firm .
 - Granular material: Natural.
 - Sizes: To Water Industry Specification WIS 4-08-02 (as amended by WIS 4-08-02A, 2008).
 - Bedding:
 - Material: Granular, compacted over full width of trench.
 - Thickness (minimum): 100 mm.
 - Pipes: Dig slightly into bedding, rest uniformly on barrels and adjust to line and gradient.
 - Initial testing before placing support: Not required.
 - Support:
 - Material: Granular.
 - Depth: To slightly above crown of pipe.
 - Compaction: By hand.
 - Backfilling:
 - Material and depth: Protective cushion of selected fill to 300 mm above crown of pipe; or
 - Additional granular material, to 100 mm above crown of pipe.
 - Compaction: By hand in 100 mm layers.

- 673 CLASS W SURROUND FOR DRAINAGE RUNS FOR PIPELINES UNDER SOLID GROUND FLOORS WHERE THE COVER FROM U/S OF SLAB IS MORE THAN 300MM
- Type of subsoil: Clay, sandy clay - firm .
 - Timing: Excavate trench after hardcore has been laid and compacted.
 - Granular material: Natural.
 - Sizes: To Water Industry Specification WIS 4-08-02 (as amended by WIS 4-08-02A, 2008).
 - Bedding:
 - Material: Granular, compacted over full width of trench.
 - Thickness (minimum): 100 mm.
 - Pipes: Dig slightly into bedding, rest uniformly on barrels and adjust to line and gradient.
 - Initial testing before placing surround: Not required.
 - Surround:
 - Material: Granular.
 - Depth: To 100 mm above crown of pipe.
 - Compaction: By hand.
 - Backfilling:
 - Material: Hardcore as section D20, or granular.
 - Depth: Up to slab formation.
 - Compaction: In 300 mm (maximum) thick layers.
- 676 CLASS Y SURROUND FOR DRAINAGE RUNS FOR PIPELINES UNDER SOLID GROUND FLOORS WHERE THE COVER FROM U/S OF SLAB IS LESS THAN 300MM
- Type of subsoil: Clay, sandy clay - firm .
 - Timing: Excavate trench after hardcore has been laid and compacted.
 - Blinding:
 - Material: Concrete.
 - Thickness (minimum): 25 mm.
 - Width: Full width of trench.
 - Allow to set before proceeding.
 - Pipes:
 - Temporary support: Folding wedges of compressible board. Prevent flotation.
 - Clearance under pipes (minimum): 100 mm.
 - Adjust pipes to line and gradient.
 - Initial testing before placing surround: Not required.
 - Surround, cast integrally with slab:
 - Material: Concrete of same mix as slab.
 - Width (minimum): External diameter of pipe plus 200 mm.
 - Extent of surround: To within 150 mm of nearest flexible joint.
- 680 CONCRETE SURROUND FOR PIPE RUNS NEAR FOUNDATIONS
- Class Z surround: Provide in locations where bottom of trench is lower than bottom of foundation and as follows (horizontal clear distance between nearest edges of foundations and pipe trenches):
 - Trenches less than 1 m from foundations: Top of concrete surround not lower than bottom of foundation.
 - Trenches more than 1 m from foundations: Top of concrete surround not lower than D mm below bottom of foundation, where D mm is horizontal distance of trench from foundation, less 150 mm.

683 LAYING PIPELINES

- Laying pipes: To true line and regular gradient on even bed for full length of barrel with sockets (if any) facing up the gradient.
- Ingress of debris: Seal exposed ends during construction.
- Timing: Minimize time between laying and testing.

685 JOINTING PIPELINES

- Connections: Durable, effective and free from leakage.
- Junctions, including to differing pipework systems: With adaptors intended for the purpose.
- Cut ends of pipes: Clean and square. Remove burrs and swarf. Chamfer pipe ends before inserting into ring seal sockets.
- Jointing or mating surfaces: Clean and, where necessary, lubricate immediately before assembly.
- Allowance for movement: Provide and maintain appropriate clearance at ends of spigots as fixing and jointing proceeds.
- Jointing material: Do not allow to project into bore of pipes and fittings.

689 PIPELINES PASSING THROUGH STRUCTURES

- Pipelines that must be cast in or fixed to structures (including manholes, catchpits and inspection chambers): Provide 600 mm long rocker pipes adjacent to the external face of the structure (or both faces where appropriate, e.g. walls to footings), with flexible joints at both ends.
 - Distance to rocker pipe from structure (maximum): 150 mm.
- Provision for movement for pipelines that need not be cast in or fixed to structures (e.g. walls to footings):
 - Rocker pipes as specified above; or
 - Openings in the structures to give 50 mm minimum clearance around the pipeline. Closely fit a rigid sheet to each side of opening to prevent ingress of fill or vermin.

691 BENDS AT BASE OF SOIL STACKS

- Type: Nominal 90° rest bends.
 - Radius to centreline of pipe (minimum): 200 mm.
- Height of invert of horizontal drain at base of stack below centreline of lowest branch pipe (minimum): 450 mm.
- Bedding: Do not impair flexibility of pipe couplings.
 - Material: Concrete.

697 INSTALLING FLEXIBLE COUPLINGS

- Ends of pipes to be joined: Cut cleanly and square.
- Outer surfaces of pipes to be joined: Clean and smooth. Where necessary, e.g. on concrete or iron pipes, smooth out mould lines and/ or apply a cement grout over the sealing area.
- Clamping bands: Tighten carefully to make gastight and watertight seals.

705 INITIAL TESTING OF PIPELINES

- Before testing:
 - Cement mortar jointing: Leave 24 h.
 - Solvent welded pipelines: Leave 1 h.
- Method: Block open ends of pipelines to be tested and pressurise. Air test short lengths to BS EN 1610.

715 BACKFILLING TO PIPELINES

- Backfilling above top of surround or protective cushion: Material excavated from trench, compacted in layers 300 mm (maximum) thick.
- Heavy compactors: Do not use before there is 600 mm (total) of material over pipes.

720 BACKFILLING UNDER ROADS AND PAVINGS

- Backfilling from top of surround or protective cushion up to formation level: Granular sub-base material, laid and compacted in 150 mm layers.

728 LAYING WARNING MARKER TAPES

- Installation: During backfilling, lay continuously over pipelines.
- Depth: 300-400 mm.
 - Pipelines deeper than 2 m: Lay an additional tape 600 mm above the top of the pipeline.

734 INSTALLING ACCESS POINTS AND GULLIES

- Bedding:
 - Material: Concrete.
 - Thickness (minimum): 100 mm.
- Surround:
 - Material: Concrete.
 - Thickness (minimum): 100 mm.
 - Height: Full height.
- Backfilling:
 - Material: Granular - natural, size 4/10 to BS EN 13242, to 100 mm above crown of pipes, then selected fill.
 - Compaction: By hand in 100 mm layers.
- Setting out relative to adjacent construction features: Square and tightly jointed.
- Permissible deviation in level of external covers and gratings: +0 to -6 mm.
- Raising pieces (clay and concrete units): Joint with 1:3 cement:sand mortar.
- Exposed openings: Fit purpose made temporary caps. Protect from site traffic.

736 INSTALLING RODDING POINTS

- Bedding and surround:
 - Material: Concrete.
 - Thickness (minimum): 150 mm
- Permissible deviation in level of external covers and gratings: +0 to -6 mm.

741 INSTALLING INSPECTION CHAMBERS - PLASTICS

- Bedding:
 - Material: Concrete.
 - Thickness (minimum): 150 mm.
- Surround:
 - Material: Concrete.
 - Thickness (minimum): 100 mm.
- Backfilling: Granular material - manufactured, size 4/10 to BS EN 13242, to 100 mm above crown of pipes, then selected fill.
 - Compaction: By hand in 100 mm layers.
- Concrete collar:
 - Material: Concrete.
 - Thickness (minimum): 200 mm.
 - Width (minimum): 200 mm.
- Seating: Not required.

757 LAYING CONVENTIONAL CHANNELS, BRANCHES AND BENCHING

- Main channel: Bed solid in 1:3 cement:sand mortar.
 - Branches: Connect to main channel at or slightly above invert level, but not higher than half channel level, so that discharge flows smoothly in direction of main flow.
 - Branches greater than nominal size 150 mm: Connect the branch soffit level with the main drain soffit.
 - Connecting angles more than 45° to direction of flow: Use three-quarter section channel bends.
- Benching:
 - Material: Concrete.
 - Profile: Rise vertically from top of main channel to a level not lower than soffit of outlet pipe, then slope upwards at 10% to walls.
 - Topping:
 - Material: Concrete.
 - Application: Before benching concrete has set, and with dense smooth uniform finish.

776 EXPOSED OPENINGS IN INSPECTION CHAMBERS, ACCESS POINTS, FITTINGS AND EQUIPMENT

- General: Fit purpose made temporary caps. Protect from site traffic.

COMPLETION

901 REMOVAL OF DEBRIS AND CLEANING

- Preparation: Lift covers to manholes, inspection chambers and access points. Remove mortar droppings, debris and loose wrappings.
 - Timing: Before cleaning, final testing, CCTV inspection if specified, and immediately before handover.
- Cleaning: Thoroughly flush pipelines with water to remove silt and check for blockages. Rod pipelines between access points if there is any indication that they may be obstructed.
- Washings and detritus: Do not discharge into sewers or watercourses.
- Covers: Securely replace after cleaning and testing.

903 TEMPORARY MEASURES

- Water used to stabilize tanks and the like during installation: Drain.

- 911 TESTING AND INSPECTION
- Dates for testing and inspection: Give notice.
 - Period of notice: 2 weeks.
- 921 FINAL TESTING OF PRIVATE GRAVITY DRAINS AND SEWERS UP TO DN 300
- Before testing:
 - Cement mortar jointing: Leave 24 h.
 - Solvent welded pipelines: Leave 1 h.
 - Standard: To Building Regulations.
 - Method: Water.
- 941 WATER TESTING OF MANHOLES AND INSPECTION CHAMBERS
- Timing: Before backfilling.
 - Standard:
 - Exfiltration: To BS EN 1610.
 - Method: Testing with water (method W).
 - Infiltration: No identifiable flow of water penetrating the chamber.

Z10 Purpose made joinery

To be read with Preliminaries/ General conditions.

110 FABRICATION

- Standard: To BS 1186-2.
- Sections: Accurate in profile and length, and free from twist and bowing. Formed out of solid unless shown otherwise.
 - Machined surfaces: Smooth and free from tearing, wooliness, chip bruising and other machining defects.
- Joints: Tight and close fitting.
- Assembled components: Rigid. Free from distortion.
- Screws: Provide pilot holes.
 - Screws of 8 gauge (4 mm diameter) or more and screws into hardwood: Provide clearance holes.
 - Countersink screws: Heads sunk at least 2 mm below surfaces visible in completed work.
 - Adhesives: Compatible with wood preservatives applied and end uses of timber.

120 CROSS SECTION DIMENSIONS OF TIMBER

- General: Dimensions on drawings are finished sizes.
- Maximum permitted deviations from finished sizes:
 - Softwood sections: To BS EN 1313-1:-
Clause 6 for sawn sections.
 - Hardwood sections: To BS EN 1313-2:-
Clause 6 for sawn sections.
Clause NA.3 for further processed sections.

130 PRESERVATIVE TREATED WOOD

- Cutting and machining: Completed as far as possible before treatment.
- Extensively processed timber: Retreat timber sawn lengthways, thickened, planed, ploughed, etc.
- Surfaces exposed by minor cutting and/ or drilling: Treat as recommended by main treatment solution manufacturer.

140 MOISTURE CONTENT

- Wood and wood based products: Maintained within range specified for the component during manufacture and storage.

250 FINISHING

- Surfaces: Smooth, even and suitable to receive finishes.
 - Arrises: Eased unless shown otherwise on drawings.
- End grain in external components: Sealed with primer or sealer as section M60 and allowed to dry before assembly.

Z11 Purpose made metalwork

To be read with Preliminaries/ General conditions.

PRODUCTS

310 MATERIALS GENERALLY

- Grades of metals, section dimensions and properties: To appropriate British Standards. When not specified, select grades and sections appropriate for the purpose.
- Prefinished metal: May be used if methods of fabrication do not damage or alter appearance of finish, and finish is adequately protected.
- Fasteners: To appropriate British Standards and, unless specified otherwise, of same metal as component being fastened, with matching coating or finish.

FABRICATION

515 FABRICATION GENERALLY

- Contact between dissimilar metals in components: Avoid.
- Finished components: Rigid and free from distortion, cracks, burrs and sharp arrises.
 - Moving parts: Free moving without binding.
- Corner junctions of identical sections: Mitre.

520 COLD FORMED WORK

- Profiles: Accurate, with straight arrises.

FINISHING

710 FINISHING WELDED AND BRAZED JOINTS VISIBLE IN COMPLETE WORK

- Standard: To BS EN ISO 8501-3.
 - Preparation grade: P2.
- Butt joints: Smooth, and flush with adjacent surfaces.
- Fillet joints: Neat.
- Grinding: Grind smooth where indicated on drawings.

745 PREPARATION FOR APPLICATION OF COATINGS

- General: Complete fabrication, and drill fixing holes before applying coatings.
- Paint, grease, flux, rust, burrs and sharp arrises: Remove.

780 GALVANIZING

- Standard: To BS EN ISO 1461.
- Preparation:
 - Vent and drain holes: Provide in accordance with BS EN 14713-1 and -2. Seal after sections have been drained and cooled.
 - Components subjected to cold working stresses: Heat treat to relieve stresses before galvanizing.
 - Welding slag: Remove.
 - Component cleaning: To BS EN ISO 8501-3.
 - Grade: St 2.

Z12 Preservative/ fire retardant treatment

To be read with Preliminaries/ General conditions.

- 110 TREATMENT APPLICATION
- Timing: After cutting and machining timber, and before assembling components.
 - Processor: Licensed by manufacturer of specified treatment solution.
 - Operatives: WPA certified.
 - Certification: For each batch of timber provide a certificate of assurance that treatment has been carried out as specified.
- 120 COMMODITY SPECIFICATIONS
- Standard: Current edition of the Wood Protection Association (WPA) publication 'Industrial wood preservation specification and practice'.
- 130 PRESERVATIVE TREATMENT SOLUTION STRENGTHS/ TREATMENT CYCLES
- General: Select to achieve specified service life and to suit treatability of specified wood species.
- 160 ORGANIC SOLVENT PRESERVATIVE TREATMENT
- Solution:
 - Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
 - Application: Double vacuum + low pressure impregnation, or immersion.
 - Moisture content of wood:
 - At time of treatment: As specified for the timber/ component at time of fixing.
 - After treatment: Timber to be surface dry before use.
- 180 RECYCLED TIMBER CONTAINING CREOSOTE OR CHROMIUM/ ARSENIC BASED PRESERVATIVE
- Usage: Not to be Used.
- 210A FIRE RETARDANT TREATMENT TO ENDS OF TIMBER TRUSSED RAFTERS AT SOFFITS
- Solution type: Dry interior.
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - Application: Vacuum + pressure impregnation.
 - Moisture content of wood:
 - At time of treatment: As specified for the timber/ component at time of fixing.
 - After treatment: Timber to be redried slowly at temperatures not exceeding 65°C to minimize distortion and degradation.
- 610 MAKING GOOD TO PRESERVATIVE TREATMENT ON-SITE
- Preservative solution: Compatible with off-site treatment.
 - Application: In accordance with preservative manufacturer's recommendations.

**CAINSCROSS FOOTBALL
PAVILLION**

Z12

620 MAKING GOOD TO FIRE RETARDANT TREATMENT ON-SITE

- Fire retardant: Compatible with off-site treatment.
- Application: In accordance with fire retardant manufacturer's recommendations.

Z20 Fixings and adhesives

To be read with Preliminaries/ General conditions.

PRODUCTS

310 FASTENERS GENERALLY

- Materials: To have:
 - Bimetallic corrosion resistance appropriate to items being fixed.
 - Atmospheric corrosion resistance appropriate to fixing location.
- Appearance: Submit samples on request.

320 PACKINGS

- Materials: Noncompressible, corrosion proof.
- Area of packings: Sufficient to transfer loads.

340 MASONRY FIXINGS

- Light duty: Plugs and screws.
- Heavy duty: Expansion anchors or chemical anchors.

350 PLUGS

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

390 ADHESIVES GENERALLY

- Standards:
 - Hot-setting phenolic and aminoplastic: To BS 1203.
 - Thermosetting wood adhesives: To BS EN 12765.
 - Thermoplastic adhesives: To BS EN 204.

410 POWDER ACTUATED FIXING SYSTEMS

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

EXECUTION

610 FIXING GENERALLY

- Integrity of supported components: Select types, sizes, quantities and spacings of fixings, fasteners and packings to retain supported components without distortion or loss of support.
- Components, substrates, fixings and fasteners of dissimilar metals: Isolate with washers/ sleeves to avoid bimetallic corrosion.
- Appearance: Fixings to be in straight lines at regular centres.

620 FIXING THROUGH FINISHES

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

630 FIXING PACKINGS

- Function: To take up tolerances and prevent distortion of materials and components.
- Limits: Do not use packings beyond thicknesses recommended by fixings and fasteners manufacturer.
- Locations: Not within zones to be filled with sealant.

640 FIXING CRAMPS

- Cramp positions: Maximum 150 mm from each end of frame sections and at 600 mm maximum centres.
- Fasteners: Fix cramps to frames with screws of same material as cramps.
- Fixings in masonry work: Fully bed in mortar.

670 PELLETED COUNTERSUNK SCREW FIXING

- Finished level of countersunk screw heads: Minimum 6 mm below timber surface.
- Pellets: Cut from matching timber, match grain and glue in to full depth of hole.
- Finished level of pellets: Flush with surface.

680 PLUGGED COUNTERSUNK SCREW FIXING

- Finished level of countersunk screw heads: Minimum 6 mm below timber surface.
- Plugs: Glue in to full depth of hole.
- Finished level of plugs: Projecting above surface.

690 USING POWDER ACTUATED FIXING SYSTEMS

- Powder actuated fixing tools: To BS 4078-2 and Kitemark certified.
- Operatives: Trained and certified as competent by tool manufacturer.

700 APPLYING ADHESIVES

- Surfaces: Clean. Adjust regularity and texture to suit bonding and gap filling characteristics of adhesive.
- Support and clamping during setting: Provide as necessary. Do not mark surfaces of or distort components being fixed.
- Finished adhesive joints: Fully bonded. Free of surplus adhesive.

Z21 Mortars

To be read with Preliminaries/ General conditions.

CEMENT GAUGED MORTARS

- 110 CEMENT GAUGED MORTAR MIXES
 - Specification: Proportions and additional requirements for mortar materials are specified elsewhere.
- 120 SAND FOR SITE MADE CEMENT GAUGED MASONRY MORTARS
 - Standard: To BS EN 13139.
 - Grading: 0/2 (FP or MP).
 - Fines content where the proportion of sand in a mortar mix is specified as a range (e.g. 1:1:5-6):
 - Lower proportion of sand: Use category 3 fines.
 - Higher proportion of sand: Use category 2 fines.
 - Sand for facework mortar: Maintain consistent colour and texture. Obtain from one source.
- 131 READY-MIXED LIME:SAND FOR CEMENT GAUGED MASONRY MORTARS
 - Standard: To BS EN 998-2.
 - Lime: Nonhydraulic to BS EN 459-1.
 - Type: CL 90S.
 - Pigments for coloured mortars: To BS EN 12878.
- 135 SITE MADE LIME:SAND FOR CEMENT GAUGED MASONRY MORTARS
 - Permitted use: Where a special colour is not required and in lieu of factory made ready-mixed material.
 - Lime: Nonhydraulic to BS EN 459-1.
 - Type: CL 90S.
 - Mixing: Thoroughly mix lime with sand, in the dry state. Add water and mix again. Allow to stand, without drying out, for at least 16 hours before using.
- 160 CEMENTS FOR MORTARS
 - Cement: To BS EN 197-1 and CE marked.
 - Types: Portland cement, CEM I.
 - Portland limestone cement, CEM II/A-L or CEM II/A-LL.
 - Portland slag cement, CEM II/B-S.
 - Portland fly ash cement, CEM II/B-V.
 - Strength class: 32.5, 42.5 or 52.5.
 - White cement: To BS EN 197-1 and CE marked.
 - Type: Portland cement, CEM I.
 - Strength class: 52.5.
 - Sulfate resisting Portland cement:
 - Types: To BS EN 197-1 Sulfate resisting Portland cement, CEM I/SR and CE marked.
 - To BS EN 197-1 fly ash cement, CEM II/B-V and CE marked.
 - Strength class: 32.5, 42.5 or 52.5.
 - Masonry cement: To BS EN 413-1 and CE marked.
 - Class: MC 12.5.

180 ADMIXTURES FOR SITE MADE CEMENT GAUGED MORTARS

- Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.
- Other admixtures: Submit proposals.
- Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.

190 RETARDED READY TO USE CEMENT GAUGED MASONRY MORTARS

- Standard: BS EN 998-2.
- Lime for cement:lime:sand mortars: Nonhydraulic to BS EN 459-1.
 - Type: CL 90S.
- Pigments for coloured mortars: To BS EN 12878.
- Time and temperature limitations: Use within limits prescribed by mortar manufacturer.
 - Retempering: Restore workability with water only within prescribed time limits.

210 MAKING CEMENT GAUGED MORTARS

- Batching: By volume. Use clean and accurate gauge boxes or buckets.
 - Mix proportions: Based on dry sand. Allow for bulking of damp sand.
- Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
 - Mortars containing air entraining admixtures: Mix mechanically. Do not overmix.
- Working time (maximum): Two hours at normal temperatures.
- Contamination: Prevent intermixing with other materials.

Z22 Sealants

To be read with Preliminaries/General conditions.

PRODUCTS

310 JOINTS GENERALLY

- Primer, backing strip, bond breaker: Types recommended by sealant manufacturer.

EXECUTION

610 SUITABILITY OF JOINTS

- Presealing checks:
 - Joint dimensions: Within limits specified for the sealant.
 - Substrate quality: Surfaces regular, undamaged and stable.
- Joints not fit to receive sealant: Submit proposals for rectification.

620 PREPARING JOINTS

- Surfaces to which sealant must adhere:
 - Remove temporary coatings, tapes, loosely adhering material, dust, oil, grease, surface water and contaminants that may affect bond.
 - Clean using materials and methods recommended by sealant manufacturer.
- Vulnerable surfaces adjacent to joints: Mask to prevent staining or smearing with primer or sealant.
- Backing strip and/ or bond breaker installation: Insert into joint to correct depth, without stretching or twisting, leaving no gaps.
- Protection: Keep joints clean and protect from damage until sealant is applied.

630 APPLYING SEALANTS

- Substrate: Dry (unless recommended otherwise) and unaffected by frost, ice or snow.
- Environmental conditions: Do not dry or raise temperature of joints by heating.
- Sealant application: Fill joints completely and neatly, ensuring firm adhesion to substrates.
- Sealant profiles:
 - Butt and lap joints: Slightly concave.
 - Fillet joints: Flat or slightly convex.
- Protection: Protect finished joints from contamination or damage until sealant has cured.

Z31 Powder coatings

To be read with Preliminaries/ General conditions.

120 POWDER COATING MATERIALS

- Manufacturer: Obtain from one only of the following: -
- Selected manufacturer: Submit details before commencement of powder coating including:
 - Name and contact details.
 - Details of accreditation schemes.
 - Technical data of product including current Agrément certificates.

210 WORKING PROCEDURES

- Comply with the follow following standards.
 - Aluminium components: To BS 6496 or BS EN 12206-1.
 - Steel components: To BS EN 13438.
 - Safety standards: To British Coatings Federation 'Code of safe practice - Application of thermosetting powder coatings by electrostatic spraying'.

220 POWDER COATING APPLICATORS

- Applicator requirements:
 - Approved by powder coating manufacturer.
 - Currently certified to BS EN ISO 9001.
 - Comply with quality procedures, guarantee conditions, standards and tests required by powder coating manufacturer.
 - Applicator to use only one plant.
 - Selected applicator: Submit details before commencement of powder coating including:
 - Name and contact details.
 - Details of accreditation schemes.

225 GUARANTEES

- Powder coating manufacturer and applicator guarantees:
 - Submit sample copies before commencement of powder coating.
 - Submit signed project specific copies on completion of work.

310 PRETREATMENT OF ALUMINIUM COMPONENTS

- Condition of components to be pretreated:
 - Free from corrosion and damage.
 - All welding and jointing completed and finish off as specified.
 - Free from impurities including soil, grease, oil.
 - Suitable for and compatible with the pretreatment process.
- Conversion coating requirements:
 - Chromate system: To BS 6496 or BS EN 12206-1.
 - Chromate-free system: To BS EN 12206-1. Submit details before using.
- Rinsing requirements: Use demineralized water. Drain and dry.

320 PRETREATMENT OF STEEL COMPONENTS

- Condition of components to be pretreated:
 - Free from corrosion and damage.
 - All welding and jointing completed and finish off as specified.
 - Free from impurities including soil, grease, oil.
 - Suitable for and compatible with the pretreatment process.
- Conversion coating requirements: To BS EN 13438.
- Rinsing requirements: Use demineralized water. Drain and dry.

430 EXTENT OF POWDER COATINGS

- Application: To visible component surfaces, and concealed surfaces requiring protection. Coated surfaces will be deemed 'significant surfaces' for relevant BS 6496/ BS EN 13438 performance requirements.

435 APPLICATION OF POWDER COATINGS

- Surfaces to receive powder coatings: Free from dust or powder deposits.
- Powder colours: Obtain from one batch of one manufacturer.
- Commencement of powder coatings: To be continuous from pretreatment.
- Jig points: Not visible on coated components.
- Curing: Controlled to attain metal temperatures and hold periods recommended by powder coating manufacturer.
- Stripping and recoating of components: Only acceptable by prior agreement of powder coating manufacturer. Stripping, pretreatment and powder coating are to be in accordance with manufacturer's requirements.
- Overcoating of components: Not acceptable.

440 PERFORMANCE AND APPEARANCE OF POWDER COATINGS

- For aluminium components:
 - Standard: To BS 6496 or BS EN 12206-1.
- For steel components:
 - Standard: To BS EN 13438.
- Visual inspection after powder coating: Significant surface viewing distances to be as specified in the relevant Standard, unless specified otherwise.
- Colour and gloss levels: To conform with approved samples.

450 ALUMINIUM ALLOY FABRICATIONS

- Units may be assembled:
 - Before powder coating.
 - From components powder coated after cutting to size.
 - Where approved, from components powder coated before cutting to size.
- Exposure of uncoated background metal: Not acceptable.
- Assembly sealants: Compatible with powder coatings. Obtain approval of colour if sealants are visible after fabrication.

460 STEEL FABRICATIONS

- Unit assembly: Wherever practical, before powder coating.
- Exposure of uncoated background metal: Not acceptable.
- Assembly sealants: Compatible with powder coatings. Obtain approval of colour if sealants are visible after fabrication.

470 FIXINGS

- Exposed metal fixings: Powder coat together with components, or coat with matching repair paint system applied in accordance with the powder coating manufacturer's recommendations.

480 DAMAGED COMPONENTS - REPAIR/ REPLACEMENT

- Before delivery to site: Check all components for damage to powder coatings. Replace damaged components.
- Site damage: Submit proposals for repair or replacement.

510 PROTECTION

- Powder coated surfaces of components: Protect from damage during handling and installation, or by subsequent site operations.
- Protective coverings: Must be:
 - Resistant to weather conditions.
 - Partially removable to suit building in and access to fixing points.
- Protective tapes in contact with powder coatings: Must be:
 - Low tack, self adhesive and light in colour.
 - Applied and removed in accordance with tape and powder coating manufacturers' recommendations. Do not use solvents to remove residues as these are detrimental to the coating.
- Inspection of protection: Carry out monthly. Promptly repair any deterioration or deficiency.

535 DOCUMENTATION

- Submit the following information for each batch of powder coated components:
 - Supplier.
 - Trade name.
 - Colour.
 - Type of powder.
 - Method of application.
 - Batch and reference number.
 - Statutory requirements.
 - Test certificates.
 - Maintenance instructions.

540 COMPLETION

- Protection: Remove
- Cleaning and maintenance of powder coatings: Carry out in accordance with procedures detailed in powder coating manufacturer and applicator guarantees.

VICTORY PAVILION

TENDER ADDENDUM

The following amendments to the specification and drawings are to be included within the tenders:

L10 WINDOWS/ ROOFLIGHTS/ SCREENS/ LOUVRES

330A Aluminium Windows

- Handles colour: white and are to be lockable

495A Daylight Pipe

- Omit the supply and installation of the daylight pipes

M50 RUBBER/ PLASTICS/ CORK/ LINO/ CARPET TILING/ SHEETING

150A Sheet Flooring

- Product reference: Change to Altro Reliance 25

155A Sheet flooring to shower areas

- Product reference: Change to Altro Aquarius or Pices

DRAINAGE:

- Add Floor drains to Changing Rooms 017 and 020 as clause R11/ 315B and revision to drawing 15.
- Add 100mm branch foul drain from floor drains in the Changing Rooms as revision to drawing 14.

isting storm
as shown
ol survey

Proposed PPIC
CL 99.700
IL 99.030

Existing 100mm

SW
PPIC

Rwdb/AG

600

340

Rwdb/AG

600

340

3820

4180

600

140

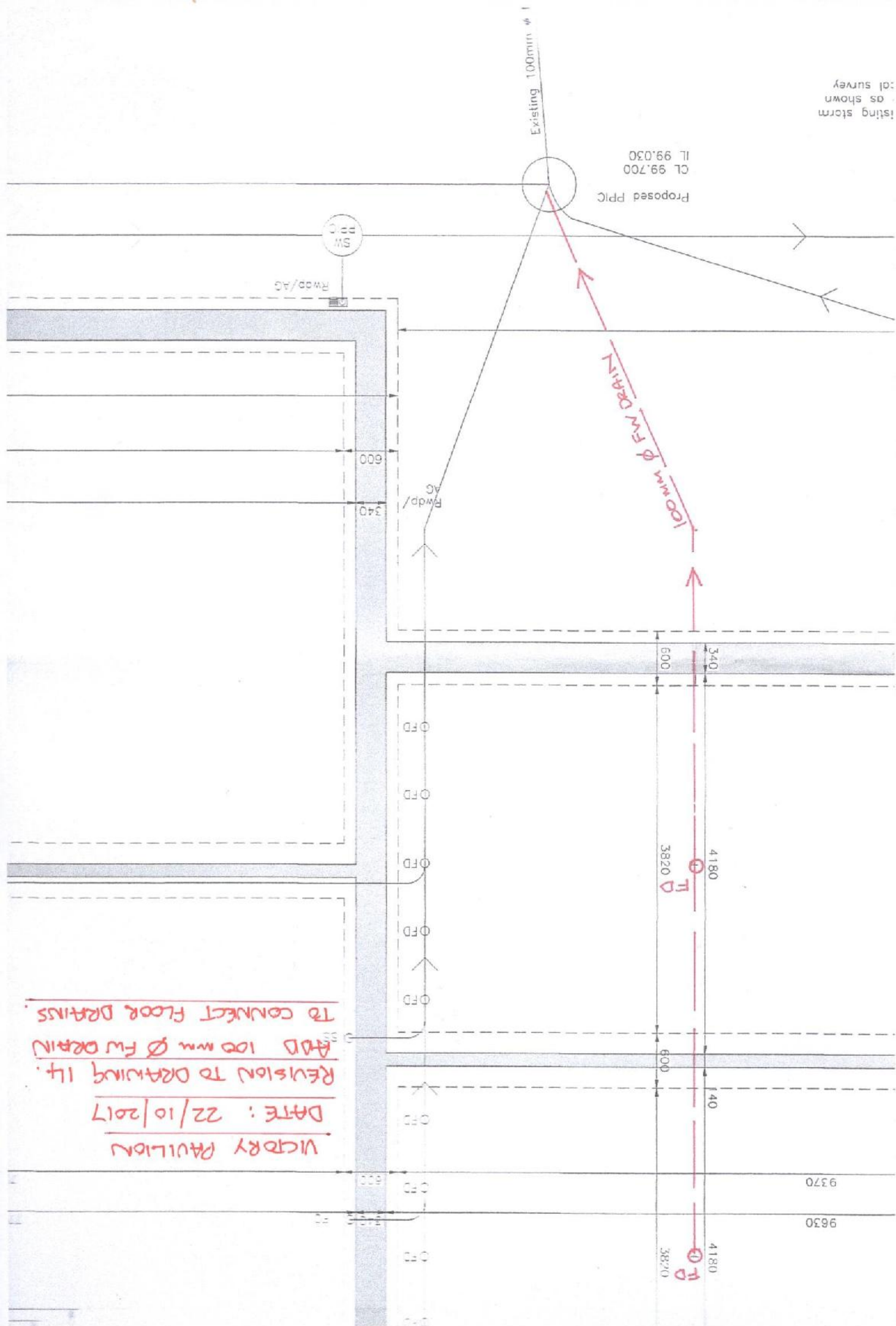
9370

9630

3820

4180

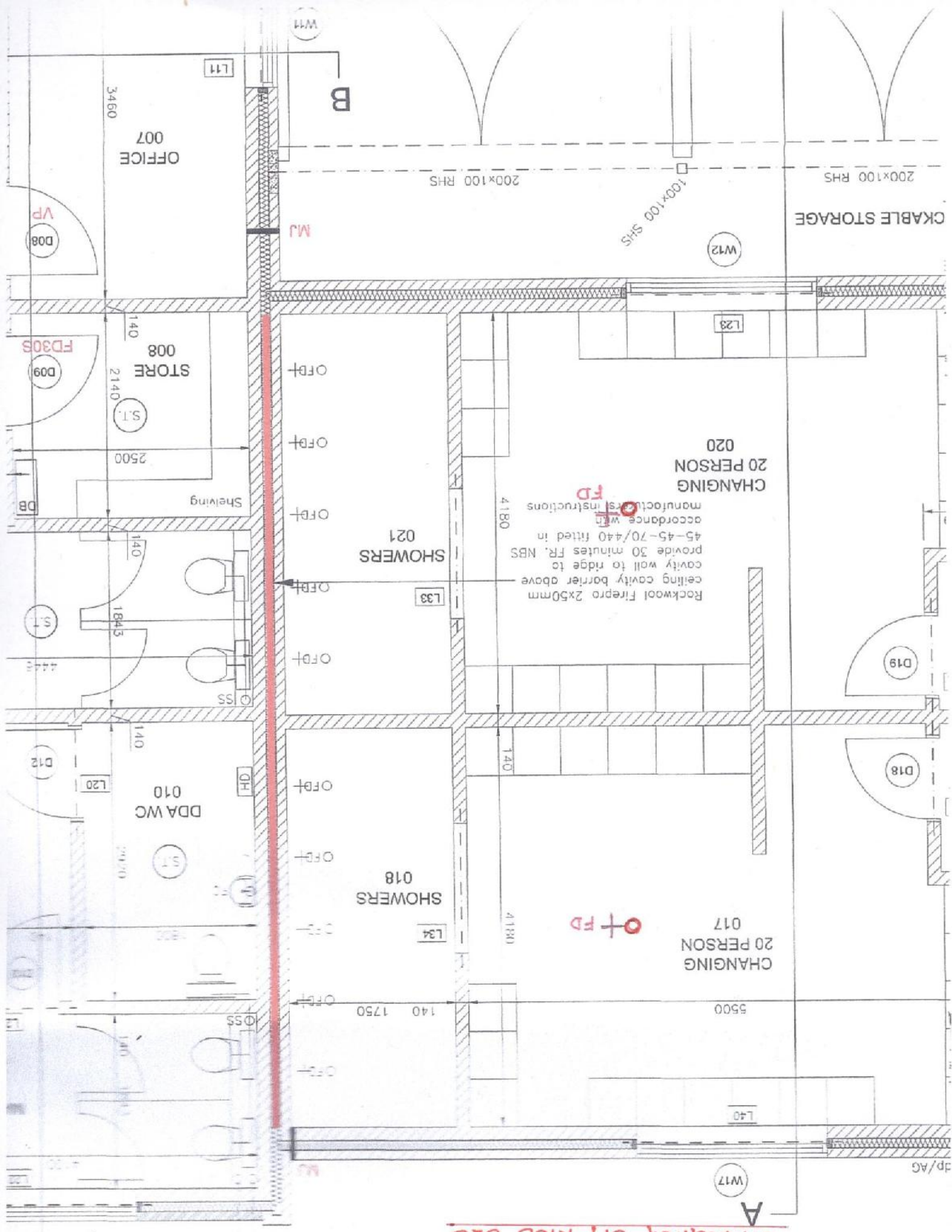
VICTORY PAULION
DATE: 22/10/2017
REVISION TO DRAWING 14.
ADD 100mm Ø FW DRAIN
TO CONNECT FLOOR DRAINS.



DATE : 22/10/2017

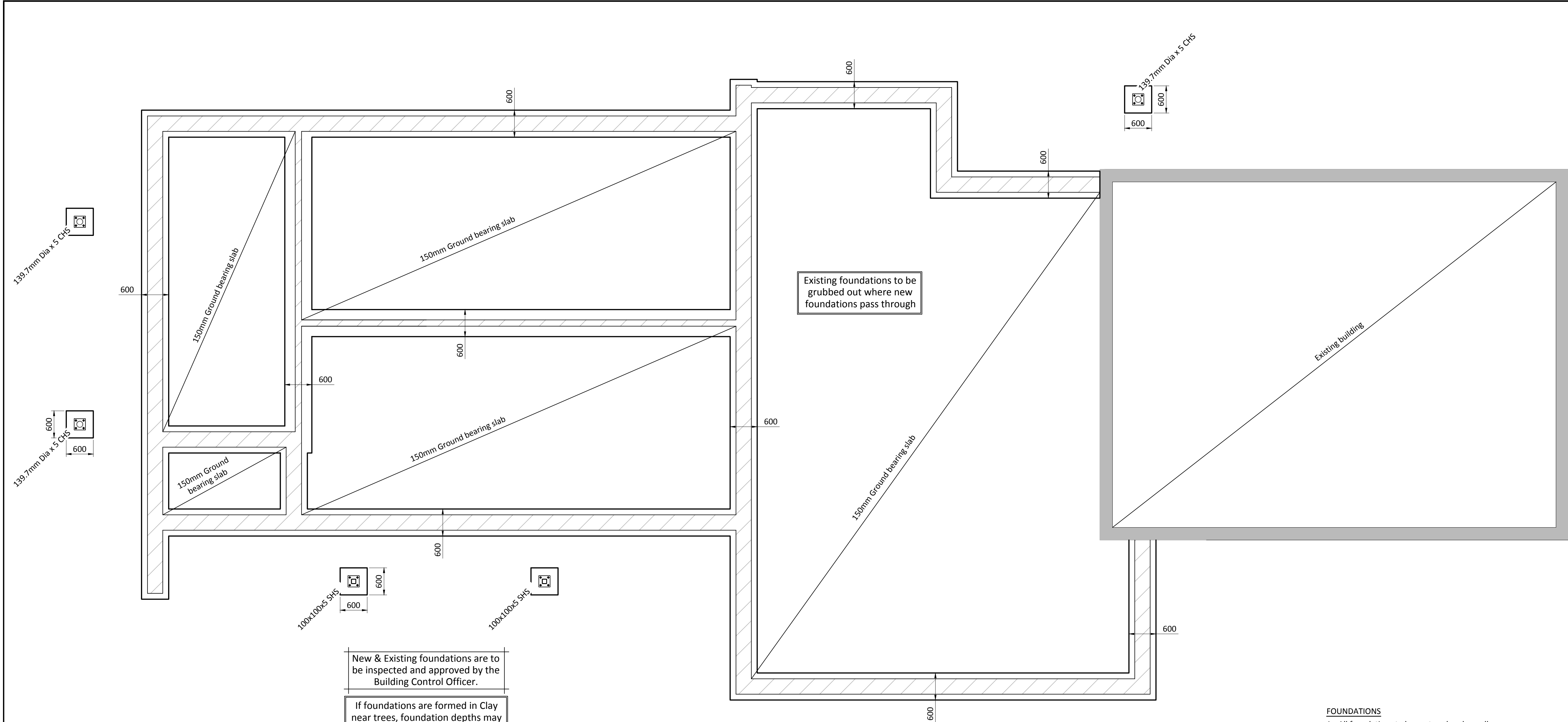
REVISION TO DRAWING IS

ADD FLOOR DRAIN TO CHANGING 017 AND 020

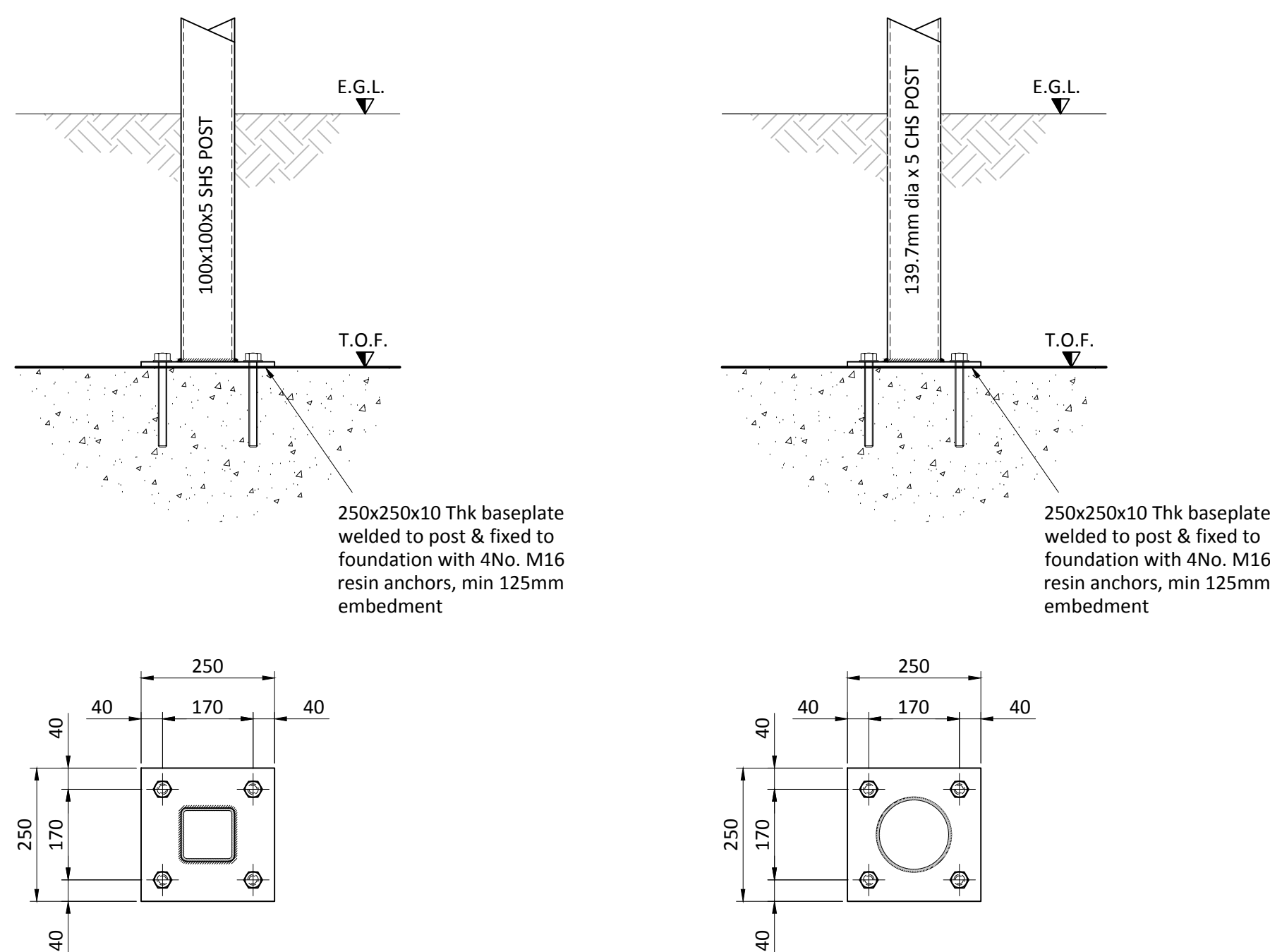


SECTION NO 4 – CIVIL/STRUCTURAL ENGINEERS DRAWINGS

- 1 Drawings
- 1.1 A Winterbotham Ltd Drawings Nos 1064/01 and 02 are included hereinafter
- 1.2 The Site Investigation Report is included in the Appendices hereinafter

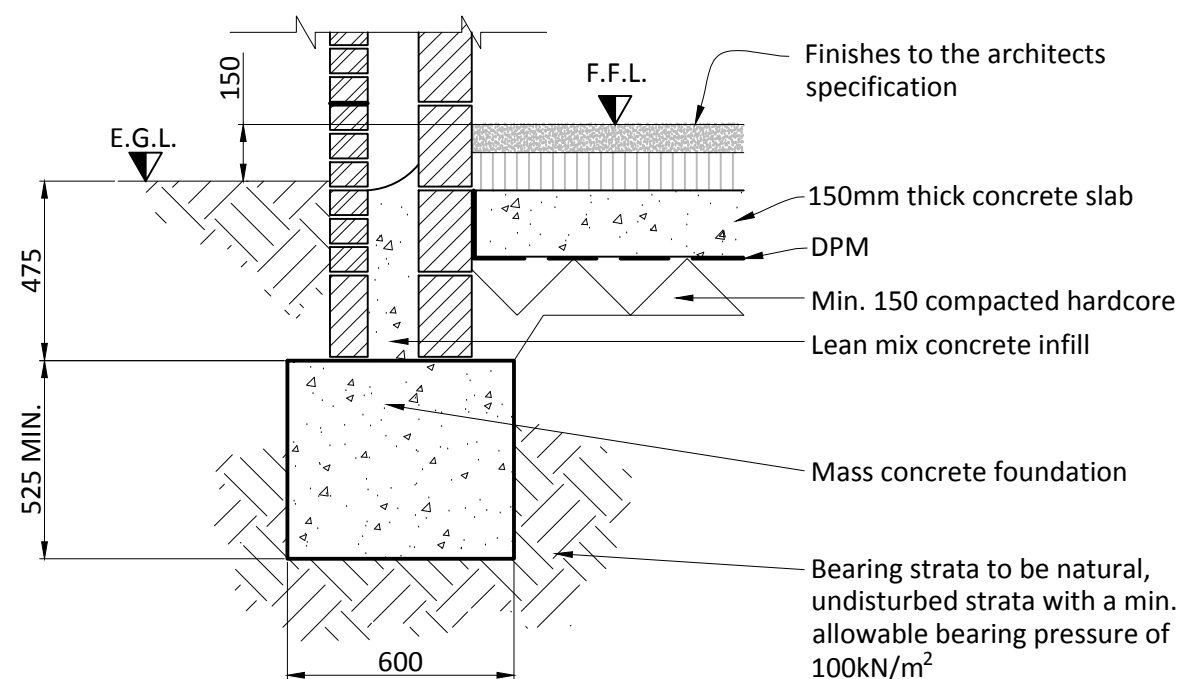


Foundation & Ground Floor Plan



SHS Baseplate Detail

CHS Baseplate Detail



Typical Foundation Detail

- FOUNDATIONS**
- All foundations to be centered under walls u.n.o.
 - Foundations to bear onto undisturbed natural bearing strata.
 - Formation to foundations to be a minimum of 1.0m below ground level.
 - Bearing strata to provide a minimum nett allowable bearing pressure of 100kN/m².
 - Formations to foundations to be inspected by B.C.O.

- SPECIFICATION FOR FOUNDATION CONCRETE**
- Concrete mix shall conform to BS 8500-2 and BS EN 206-1.
 - Provide designated concrete Gen3.
 - Concrete to comply with the design chemical class DC-1 & ACEC class AC-1, in accordance with BRE SD1
 - Concrete shall be adequately vibrated with a mechanical vibrator.

- STEELWORK**
- All steelwork within wall depth (cavity & inner leaf) and below ground to receive 2No. coats of bitumastic paint, which should then be protected from damage.
 - All UB/UC/SHS/RHS/CHS steelwork sections to be grade S355 u.n.o.
 - All internal steelwork to be painted to suit interior environment & corrosive category C1 (very low) to ISO 12944.
 - All external steelwork to be hot dip galvanised to BS EN ISO 1461.
 - Fire protection to steelwork to be in accordance with local authorities requirements and/or architects specification.
 - All bolts to be grade 8.8 (size as noted) and all welds to be 6mm continuous fillet welds (u.n.o.) to BS EN 1011-2.
 - All beams to have a min. bearing length of 150mm u.n.o.
 - Steelwork execution class to be EXC2 in accordance with BS EN 1090-2.

- MASONRY**
- All load bearing blockwork to be min. 3.6N strength u.n.o.
 - All ties to be stainless steel. frame ties to be 'Ancon' type SPB (u.n.o.) & debonded frame ties to be type PPB with plastic sleeves.
 - All bonded ties to have min 50mm embedment, all debonded ties to have min 100mm embedment.
 - Frame ties to be Tek screwed or shot fired to steelwork. 'ancon' isolation sleeves, or pads, to be provided where frame ties are fixed to steel columns/posts.
 - Wall ties to be provided at 450mm vertical crs & 750mm horizontal cts u.n.o.

- GENERAL NOTES**
- This drawing to be read in conjunction with all relevant engineers, architects and services drawings.
 - All dimensions are in millimeters u.n.o. **DO NOT SCALE THIS DRAWING.**
 - The contractor is to check all dimensions and report any errors and omissions to the engineer.
 - Lengths of beams, joists etc to be taken from site dimensions by the contractor.
 - All relevant notices to be issued, as necessary, in accordance with the party wall act 1996 by the client.
 - The contractor shall be responsible for ensuring that adequate temporary support is provided, as required, during the works.
 - All proprietary products to be installed in accordance with the manufacturers specifications.
 - All padstones to be cut from prestressed concrete lintel sections u.n.o. padstone sizes to be as noted on drawings. padstones to be positioned centrally under beams and laid on a full mortar bed.
 - All resin anchor bolts to be 'rawl' r-kf2 kemfast bonded anchors installed in accordance with manufacturers instructions.
 - All through bolts to be 'rawl' r-hpt expansion anchors installed in accordance with manufacturers instructions.
 - It is assumed that trial pits, to expose and investigate existing foundations, will be inspected by the local authority and actioned appropriately.
- CDM RESIDUAL RISKS**
- There are no residual risks that a competent contractor should not be able to effectively manage unless specifically noted on the drawing.

SETTING OUT / DIMENSIONS

The builder is to refer to the architects drawings for setting out dimensions and levels.

Beam lengths are to be determined from site dimensions by the builder.

Builder to confirm the levels of new beams in relation to existing floors with the architect / client.

CONSTRUCTION

© 2017 Copyright: A Winterbotham Ltd

Rev	Description	Date



Architect	Church Architectural	
Client	Cainscross Parish Council	
Project	Victory Park, Church Road, Stroud, Glos. Extension to Existing Football Pavillion	
Description	Foundation and Ground Floor Plan and Sections	
Scale at A1	1:50, 1:20, 1:10	Drawn By A.W.
Drawing No	1064 / 01	Date Jan 2017
		Rev



- ## STEELWORK
1. All steelwork within wall depth (cavity & inner leaf) and below ground to receive 2No. coats of bitumastic paint, which should then be protected from damage.
 2. All UB/UC/SHS/RHS/CHS steelwork sections to be grade S355 u.n.o.
 3. All internal steelwork to be painted to suit interior environment & corrosive category C1 (very low) to ISO 12944.
 4. All external steelwork to be hot dip galvanised to BS EN ISO 1461.
 5. Fire protection to steelwork to be in accordance with local authorities requirements and/or architects specification.
 6. All bolts to be grade 8.8 (size as noted) and all welds to be 6mm continuous fillet welds (u.n.o.) to BS EN 1011-2.
 7. All beams to have a min. bearing length of 150mm u.n.o.
 8. Steelwork execution class to be EXC2 in accordance with BS EN 1090-2.

- ### MASONRY
9. All load bearing blockwork to be min. 3.6N strength u.n.o.
 10. All ties to be stainless steel. frame ties to be 'Ancor' type SPB (u.n.o) & debonded frame ties to be type PPB with plastic sleeves.
 11. All bonded ties to have min 50mm embedment, all debonded ties to have min 100mm embedment.
 12. Frame ties to be Tek screwed or shot fired to steelwork. 'ancor' isolation sleeves, or pads, to be provided where frame ties are fixed to steel columns/posts.
 13. Wall ties to be provided at 450mm vertical crs & 750mm horizontal cts u.n.o.

GENERAL NOTES

1. This drawing to be read in conjunction with all relevant engineers, architects and services drawings.
2. All dimensions are in millimeters u.n.o. **DO NOT SCALE THIS DRAWING.**
3. The contractor is to check all dimensions and report any errors and omissions to the engineer.
4. Lengths of beams, joists etc to be taken from site dimensions by the contractor.
5. All relevant notices to be issued, as necessary, in accordance with the party wall act 1996 by the client.
6. The contractor shall be responsible for ensuring that adequate temporary support is provided, as required, during the works.
7. All proprietary products to be installed in accordance with the manufacturers specifications.
8. All padstones to be cut from prestressed concrete lintel sections u.n.o. padstone sizes to be as noted on drawings. padstones to be positioned centrally under beams and laid on a full mortar bed.
9. All resin anchor bolts to be 'rawl' r-k2 kemfast bonded anchors installed in accordance with manufacturers instructions.
10. All through bolts to be 'rawl' r-hpt expansion anchors installed in accordance with manufacturers instructions
11. It is assumed that trial pits, to expose and investigate existing foundations, will be inspected by the local authority and actioned appropriately.

CDM RESIDUAL RISKS

There are no residual risks that a competent contractor should not be able to effectively manage unless specifically noted on the drawing.

SETTING OUT / DIMENSIONS

The builder is to refer to the architects drawings for setting out dimensions and levels.

Beam lengths are to be determined from site dimensions by the builder.

Builder to confirm the levels of new beams in relation to existing floors with the architect / client.

PADSTONES:

440mm long x 2150mm deep x wall width, unless noted otherwise.

LINTELS

To be Standard Duty Load rating to suit the wall construction, unless noted otherwise.

CONSTRUCTION

© 2017 Copyright: A Winterbotham Ltd

Rev	Description	Date



Architect	Church Architectural
Client	Cainscross Parish Council
Project	Victory Park, Church Road, Stroud, Glos. Extension to Existing Football Pavillion

Roof Support Structure Plan and Sections

Scale at A1 1:50, 1:20, 1:10	Drawn By A.W.	Date Jan 2017
Drawing No 1064 / 02		Rev

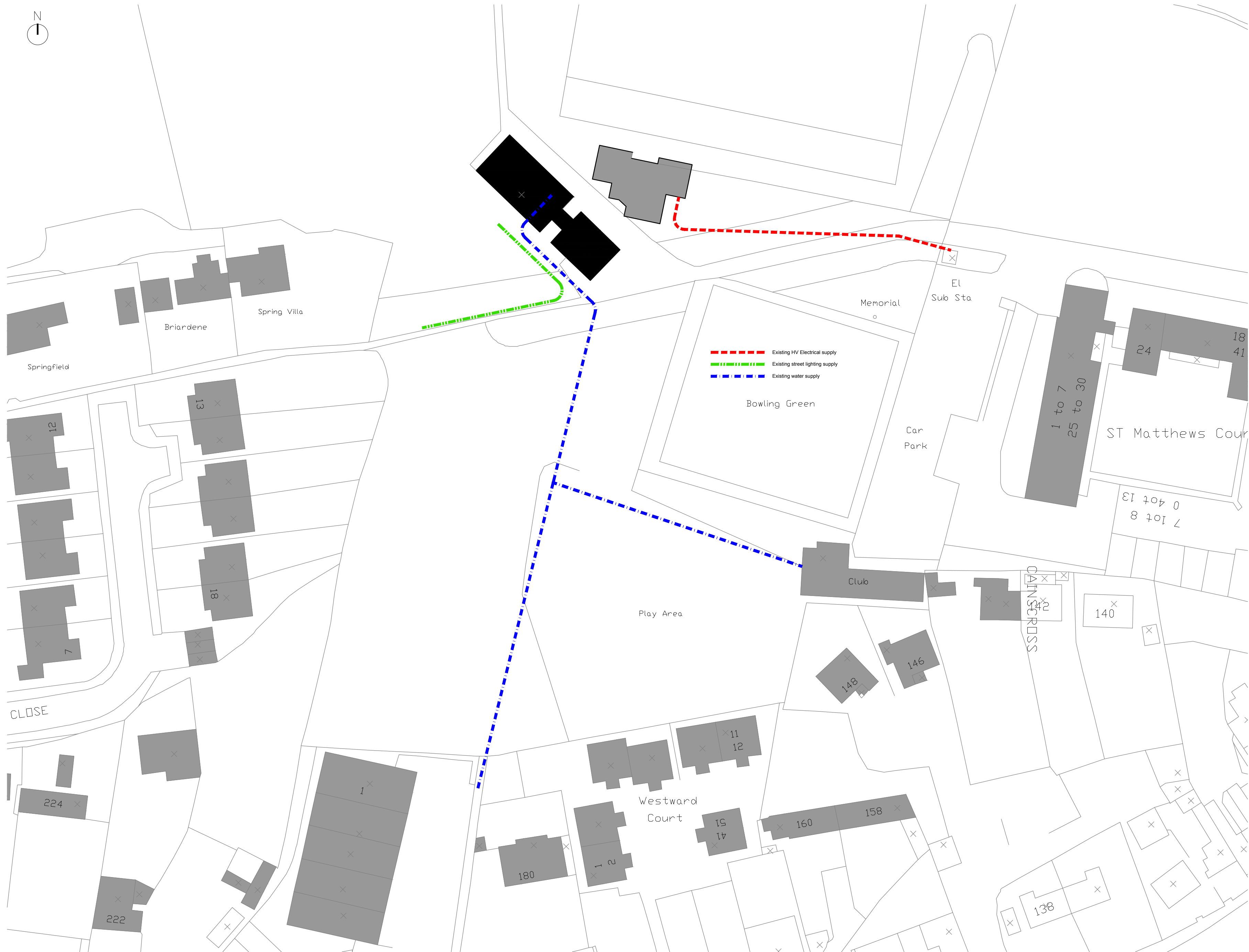
SECTION NO 5 – SERVICES ENGINEERS DRAWINGS AND SPECIFICATION

1 Drawings

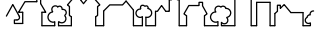
- 1.1 Church Architectural Drawing Nos 100, M001-005 inc and 6001, 6100 – 6105 inc are included hereinafter

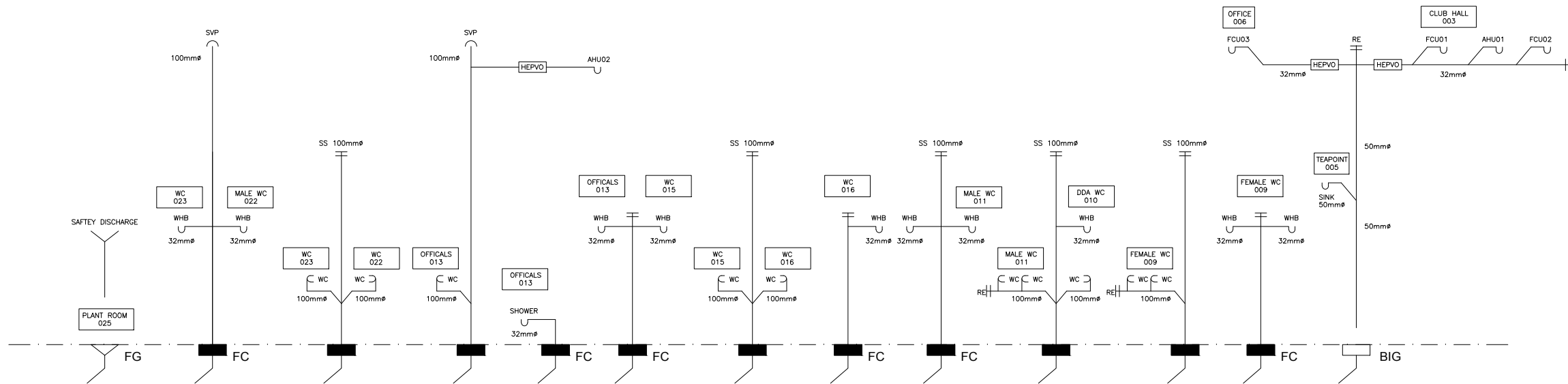
2 Specification

- 2.1 The Mechanical and Electrical Specification Rev P1 dated 24 April 2017 is included hereinafter
- 2.2 Omit £10,000 Provisional Sum from Appendix C: Tender Breakdown and refer to Section No 7 hereinafter
- 2.3 BJP Consultancy Group Tender Addendum 1 dated September 2017 in regard to the above mentioned Mechanical and Electrical Specification is included hereinafter
- 2.4 It should be noted the existing water main also supplies the adjoining Bowling Club as shown on the drawings and is to be maintained at all times



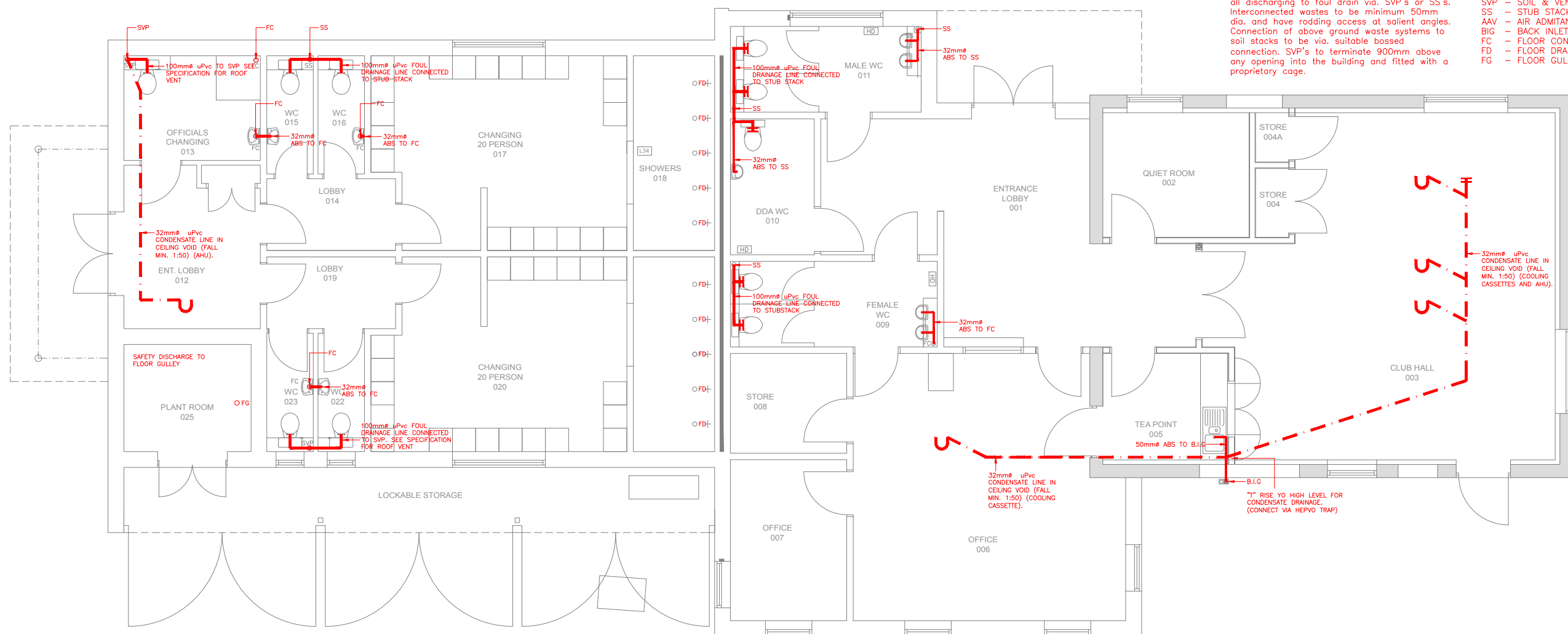
SITE PLAN 1:500

Client PROPOSED EXTENSION	
VICTORY PARK CHURCH ROAD STROUD GLOS. GL5 4JE	
CAINSCROSS PARISH COUNCIL	
Title SERVICES PLAN AS EXISTING	
CHURCH ARCHITECTURAL Rory Brock M: 07712 259378 April Church M: 07979 541397  The Cube, Bath Road, Stroud, GL5 4BJ E-mail - aprilandory@icloud.com	
Drawn	RWB
Scale	AS STATED @ A2
Date	SEP 2017
Drawing Number 100	
Revisions	



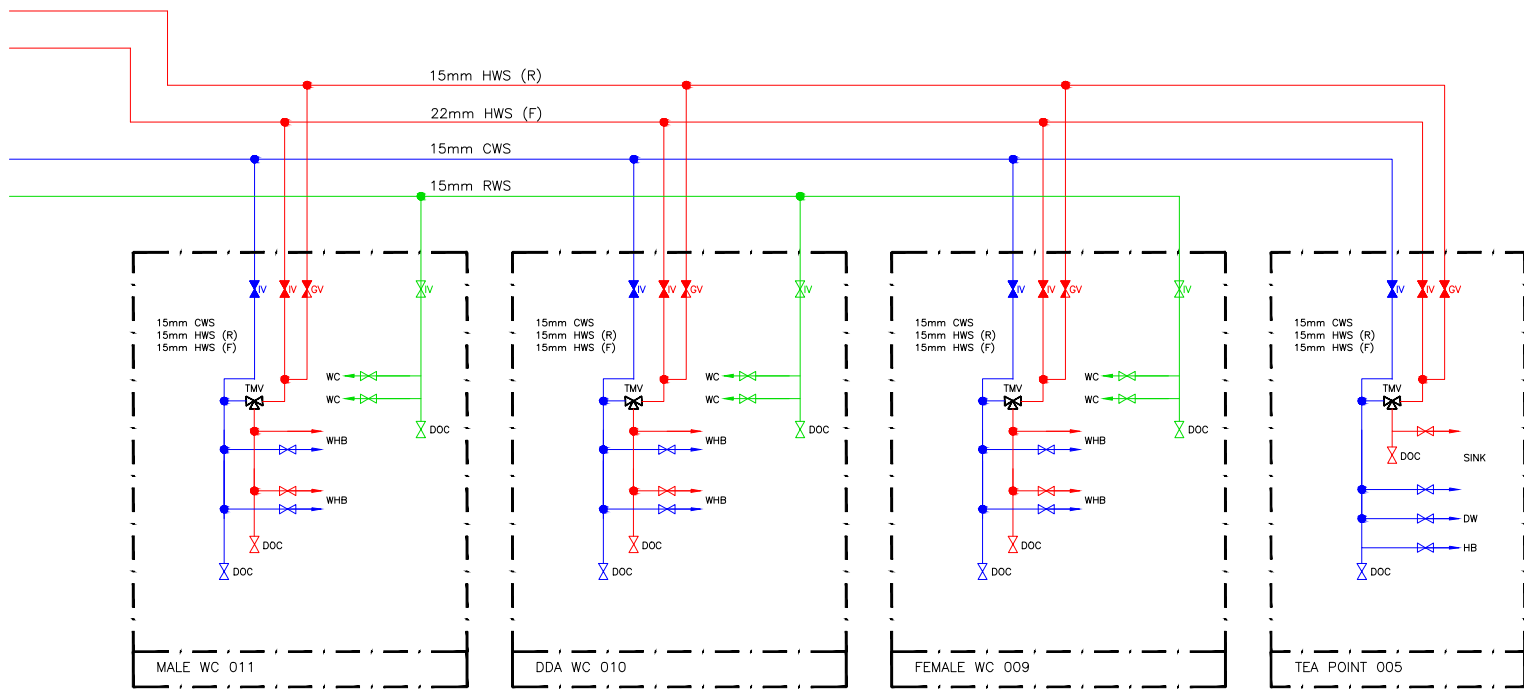
WASTES
All waste fittings to have a minimum 75mm deep seal trap. Waste sizes to be WC – 100mm, Basin – 32mm and Sinks – 40mm, all discharging to foul drain via SVP's or SS's. Interconnected wastes to be minimum 50mm dia. and have rodding access at salient angles. Connection of above ground waste systems to soil stacks to be via suitable bossed connection. SVP's to terminate 900mm above any opening into the building and fitted with a proprietary cage.

- SVP – SOIL & VENT PIPE
- SS – STUB STACK
- AAV – AIR ADMITTANCE VALVE
- BIG – BACK INLET GULLEY
- FC – FLOOR CONNECTION
- FD – FLOOR DRAIN
- FG – FLOOR GULLEY

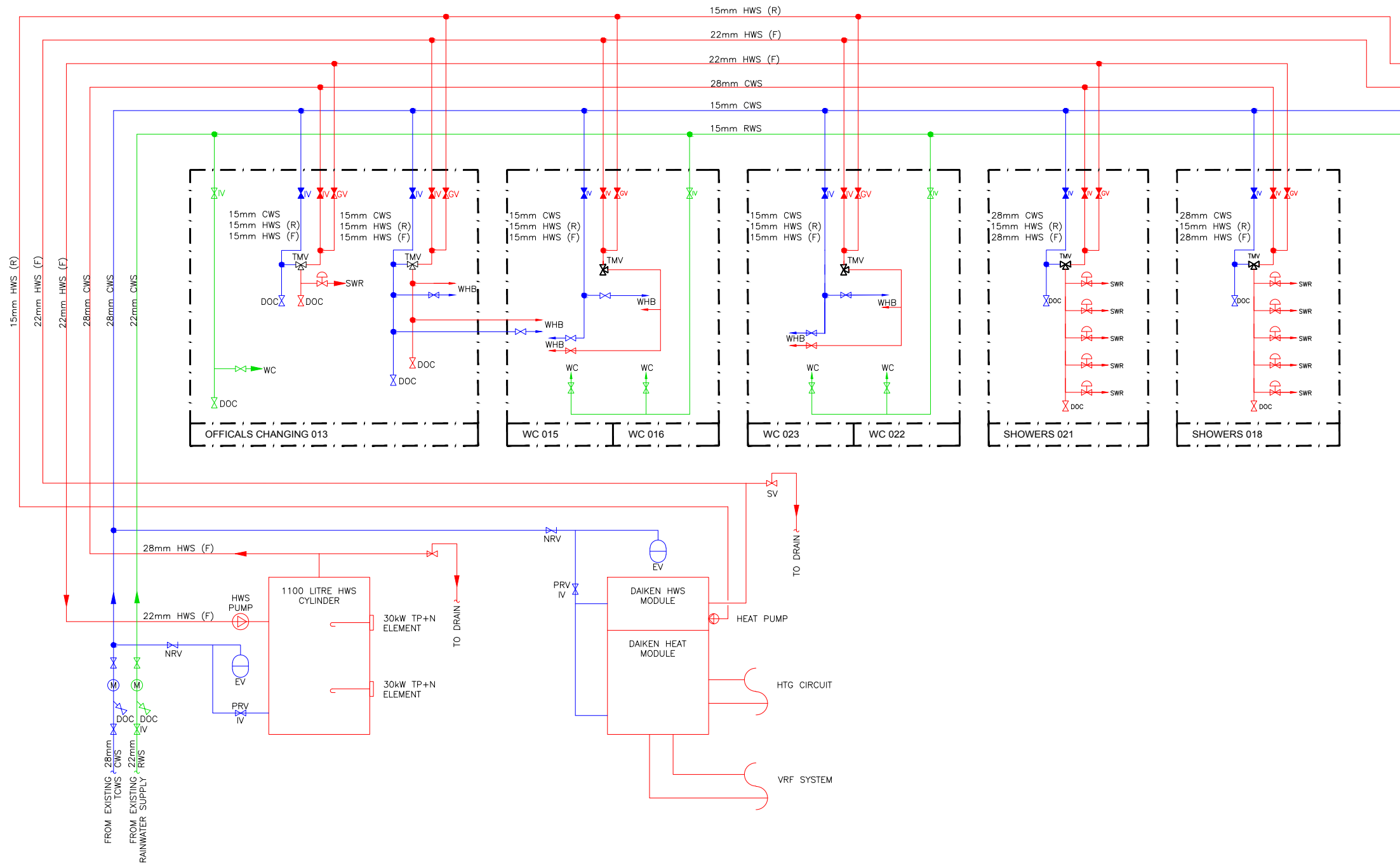


GROUND FLOOR PLAN 1:50

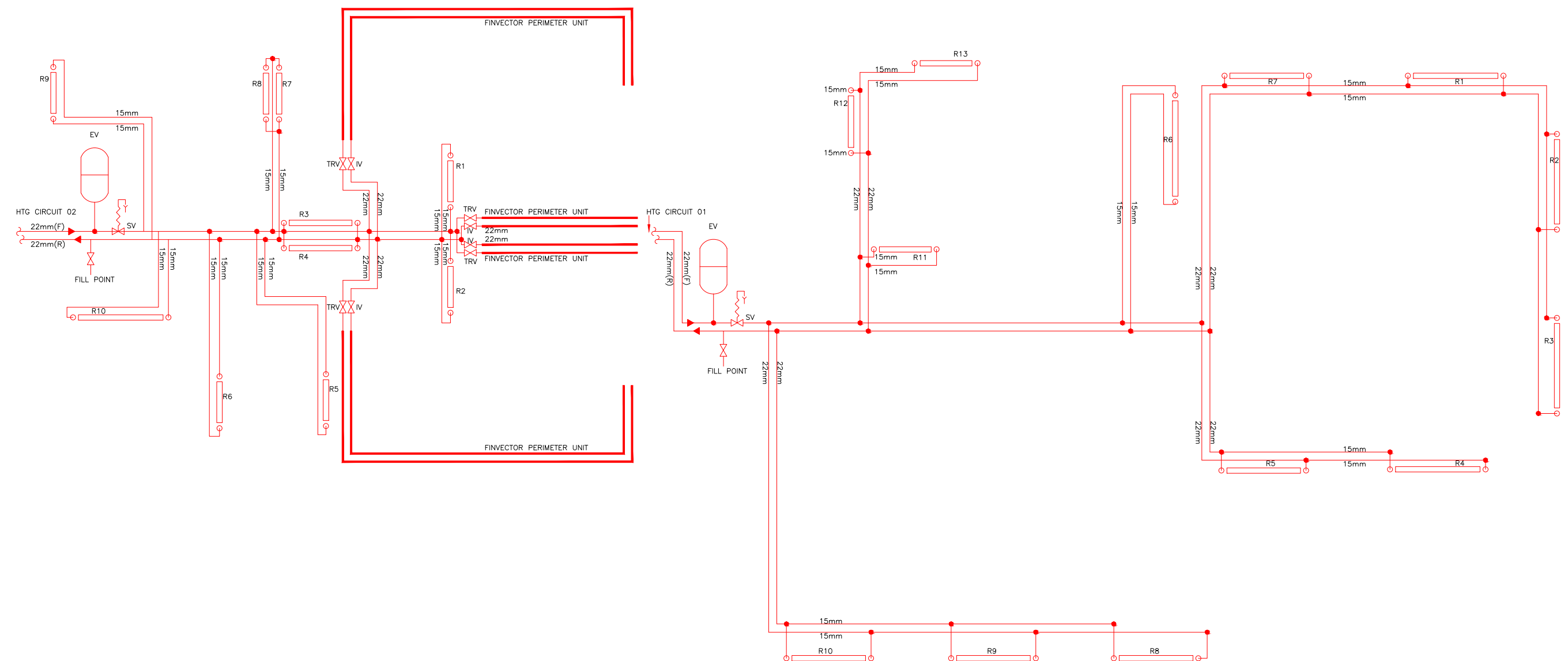
Client PROPOSED EXTENSION	
VICTORY PARK CHURCH ROAD STROUD GLOS. GL5 4JE	
CAINSCROSS PARISH COUNCIL	
Title ABOVE GROUND DRAINAGE LAYOUT & SYSTEM DIAGRAM	
CHURCH ARCHITECTURAL Roy Brock M: 07712 251378 April Church M: 07927 541397 The Cube, Both Road, Stroud, GLS 4BJ E-mail: ap@churchofthecube.com	
Drawn	
Scale	1:50 @ A1
Date	FEB 17
Drawing Number	M001
Revisions	



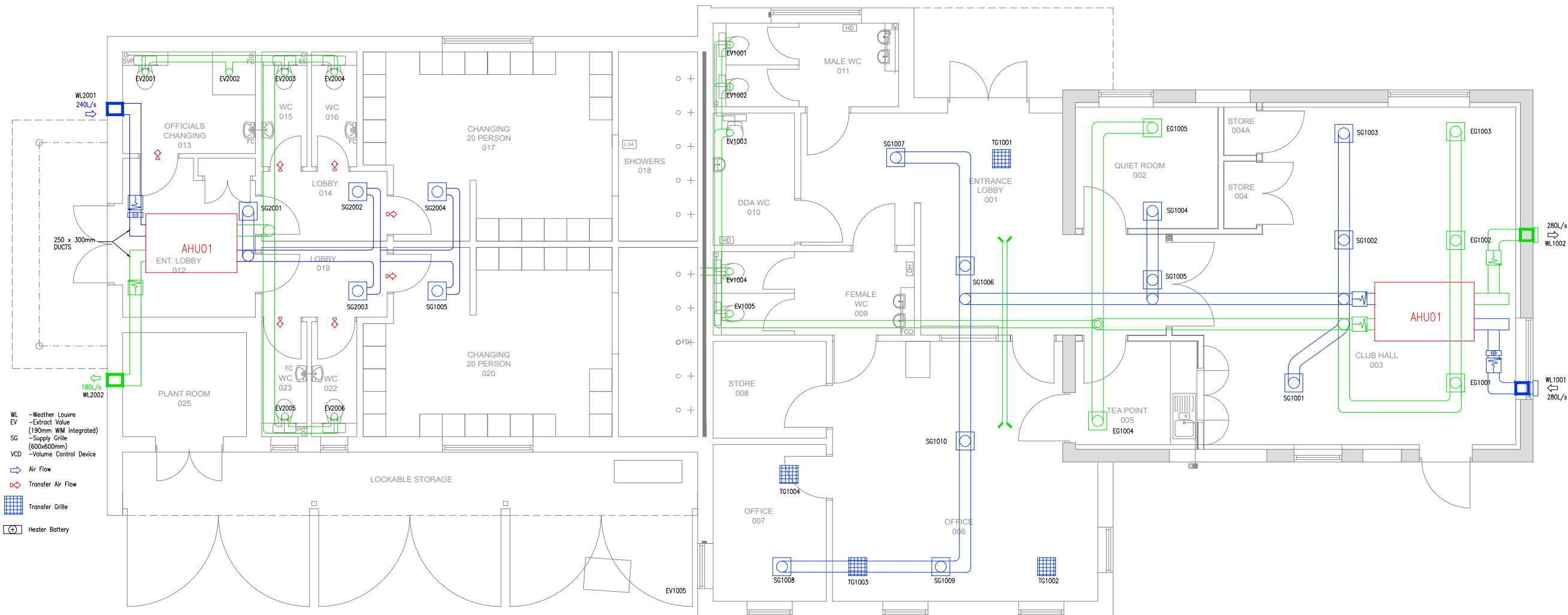
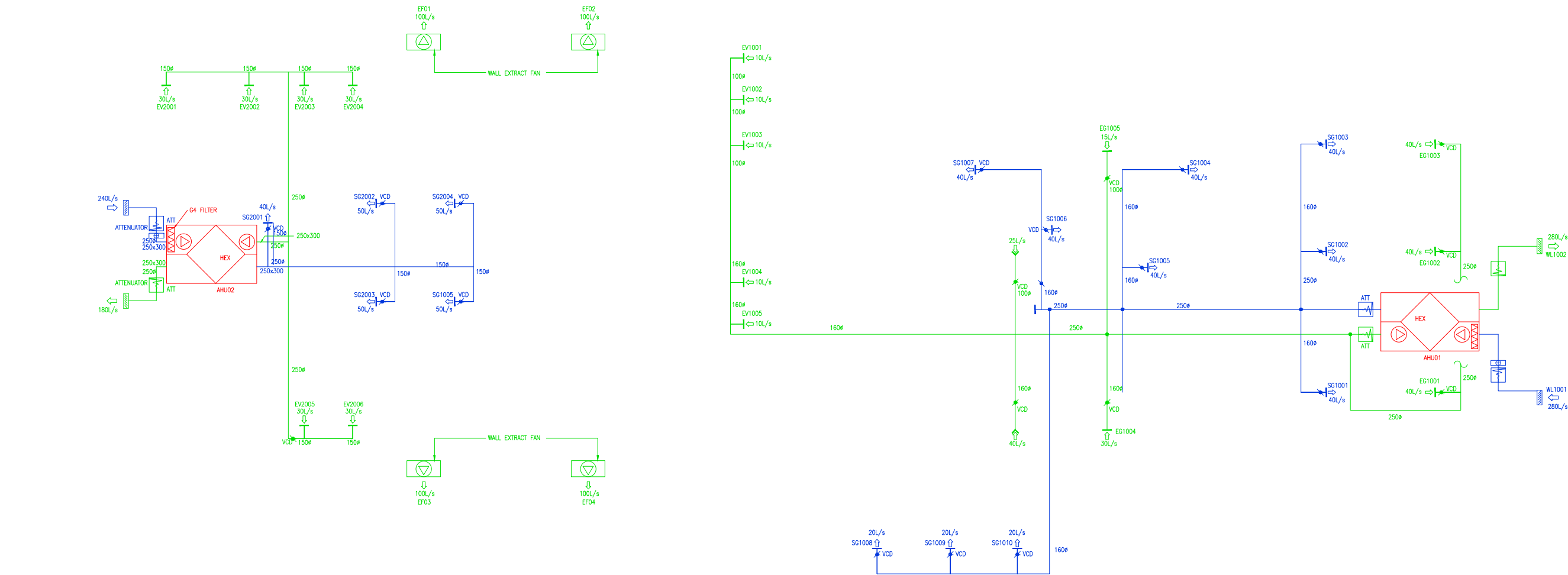
- DW - DISHWASHER
- HB - HYDROBOIL
- WHB - WASH HAND BASIN
- WC - WATER CLOSET
- SWR - SHOWER OUTLET
- HWS(F) - HOT WATER SERVICE FLOW
- HWS(R) - HOT WATER SERVICE RETURN
- CWS - COLD WATER SERVICE
- RWS - RECLAIMED WATER SERVICE



Client	PROPOSED EXTENSION
VICTORY PARK CHURCH ROAD STROUD GLOS. GL5 4JE	
CAINSCROSS PARISH COUNCIL	
Title	DOMESTIC SERVICES SYSTEM DIAGRAM
CHURCH ARCHITECTURAL Bury Brock M 07712 159378 April Church M 07779 541397 <i>architectural</i> The Cube, Bath Road, Stroud, GL5 4EJ E-mail - apb@architectural.co.uk	
Drawn	
Scale	1:50 @ A1
Date	FEB 17
Drawing Number	M002
Revisions	







WL - Weather Louvre
 EV - Extract Value
 SG - Supply Grille
 VCD - Volume Control Device
 → Air Flow
 ⇄ Transfer Air Flow
 [Grid] Transfer Grille
 [Battery] Heater Battery

Client

PROPOSED EXTENSION

VICTORY PARK
CHURCH ROAD
STROUD
GLOS. GL5 4JE

CAINSCROSS PARISH COUNCIL

Title

VENTILATION LAYOUT &
SYSTEM DIAGRAM

CHURCH
ARCHITECTURAL

Rory Brock
M.07712 259378

April Church
M.07779 641397

ammonia
The Cube, Bath Road, Stroud, GL5 4BJ
E-mail - ap@ammonia.co.uk

Drawn

Scale

Date

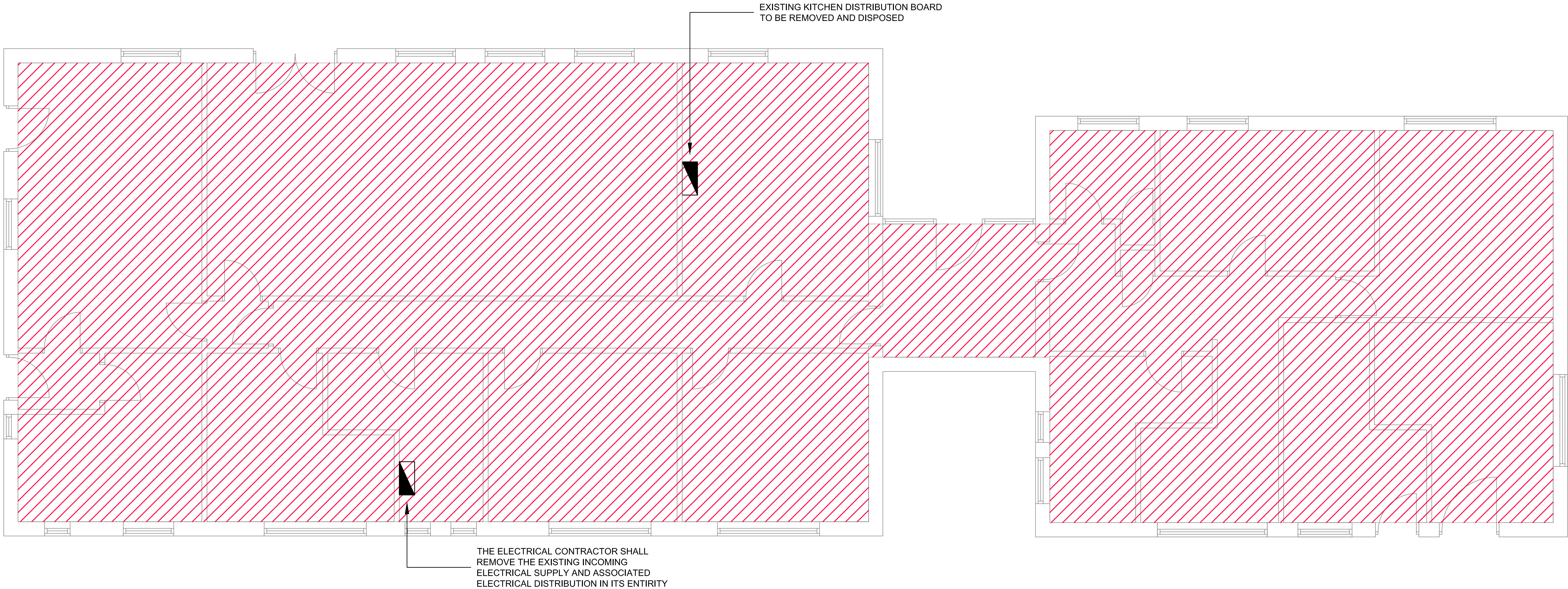
Drawing Number

1:50 @ A1

FEB 17

M005

Revisions



NOTES

- DO NOT SCALE FROM THIS DRAWING. ALL MEASUREMENTS ARE IN MILLIMETERS UNLESS STATED OTHERWISE. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ALL RELEVANT DRAWINGS.
- THE ELECTRICAL CONTRACTOR SHALL ALLOW TO SURVEY THE EXISTING BUILDING DURING THE TENDER PERIOD TO ASCERTAIN THE FULL EXTENT OF THE ELECTRICAL REMOVAL WORKS. THE ELECTRICAL CONTRACTOR SHALL ALLOW TO REMOVE AND DISPOSE OF THE EXISTING LV DISTRIBUTION SYSTEM, CONTAINMENT, LIGHTING, SMALL POWER, FIRE DETECTION AND ALARM AND SECURITY SYSTEMS IN THEIR ENTIRETY AND SHALL ALLOW FOR ALL COSTS ASSOCIATED WITH THE REMOVAL WORKS AT THE TIME OF TENDER.
- THE ELECTRICAL CONTRACTOR SHALL REMOVE AND DISPOSE OF REDUNDANT EQUIPMENT IN ACCORDANCE WITH THE WEEE REGULATIONS.
- THE ELECTRICAL CONTRACTOR SHALL LIAISE WITH THE MAIN BUILDING FABRIC CONTRACTOR AND SHALL REFER TO THE ASBESTOS REMOVAL AND DEMOLITION SURVEY PRIOR TO REMOVAL WORKS AND SHALL ENSURE THAT SAFE SYSTEMS OF WORK ARE IN PLACE PRIOR TO REMOVAL AND DEMOLITIONS.
- THE ELECTRICAL CONTRACTOR SHALL LIAISE WITH WESTERN POWER DISTRIBUTION AND ARRANGE FOR THE ISOLATION, DISCONNECTION AND REMOVAL OF THE INCOMING ELECTRICAL SUPPLY AND ASSOCIATED METER.
- THE ELECTRICAL CONTRACTOR SHALL ALLOW TO TRACE THE EXISTING EXTERNAL SUPPLY CABLE TO THE STREET LIGHTING COLUMNS AND SHALL RECORD AND CAPTURE THE EXISTING TIME CLOCK SETTINGS FOR FUTURE REINSTATEMENT. THE ELECTRICAL CONTRACTOR SHALL REMOVE THE EXISTING SUPPLY CABLE TO THE PROPOSED NEW CABLE JOINT LOCATION. THE ELECTRICAL CONTRACTOR SHALL NOTE THE LOCATION OF THE CABLE JOINT SHOWN IS INDICATIVE ONLY AND SHALL BE DETERMINED BY THE CONTRACTOR AS PART OF THEIR DESIGN DEVELOPMENT.

LEGEND	
	EXISTING INCOMING SUPPLY, METER AND ASSOCIATED DISTRIBUTION TO BE REMOVED
	EXTENT OF REMOVAL WORKS

Client

PROPOSED EXTENSION

VICTORY PARK
CHURCH ROAD
STROUD
GLOS. GL5 4JE

CAINSCROSS PARISH COUNCIL

Title

ELECTRICAL SERVICES
PROPOSED REMOVALS
AND MODIFICATIONS

CHURCH
ARCHITECTURAL

Rory Brock
M: 07712 259378
April Church
M: 07979 541397
1 Congate, Chapel Fields, Randwick, Stroud, GL4 6HF
Email: april@rchurch.co.uk

Drawn

ML

Scale

1:50 @ A1

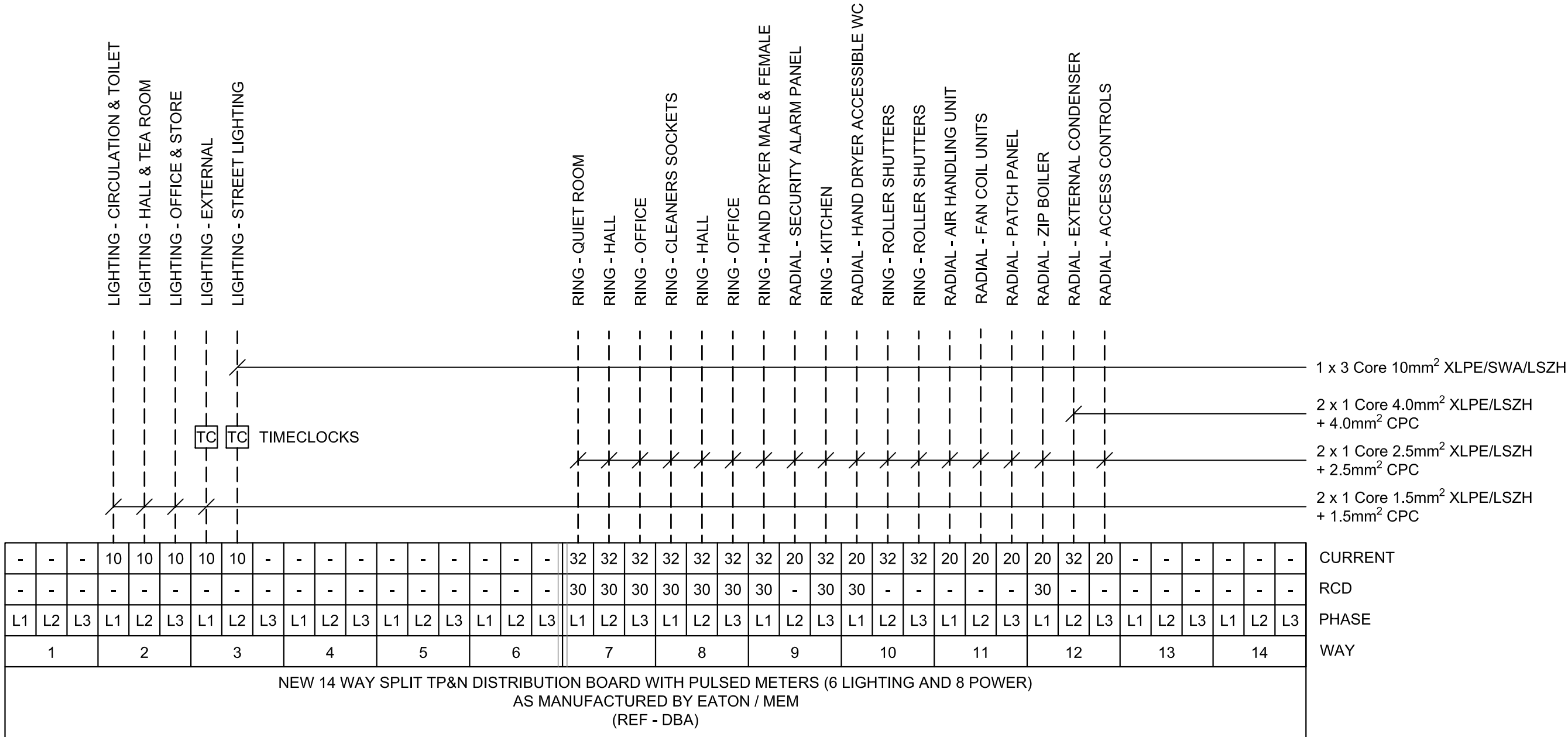
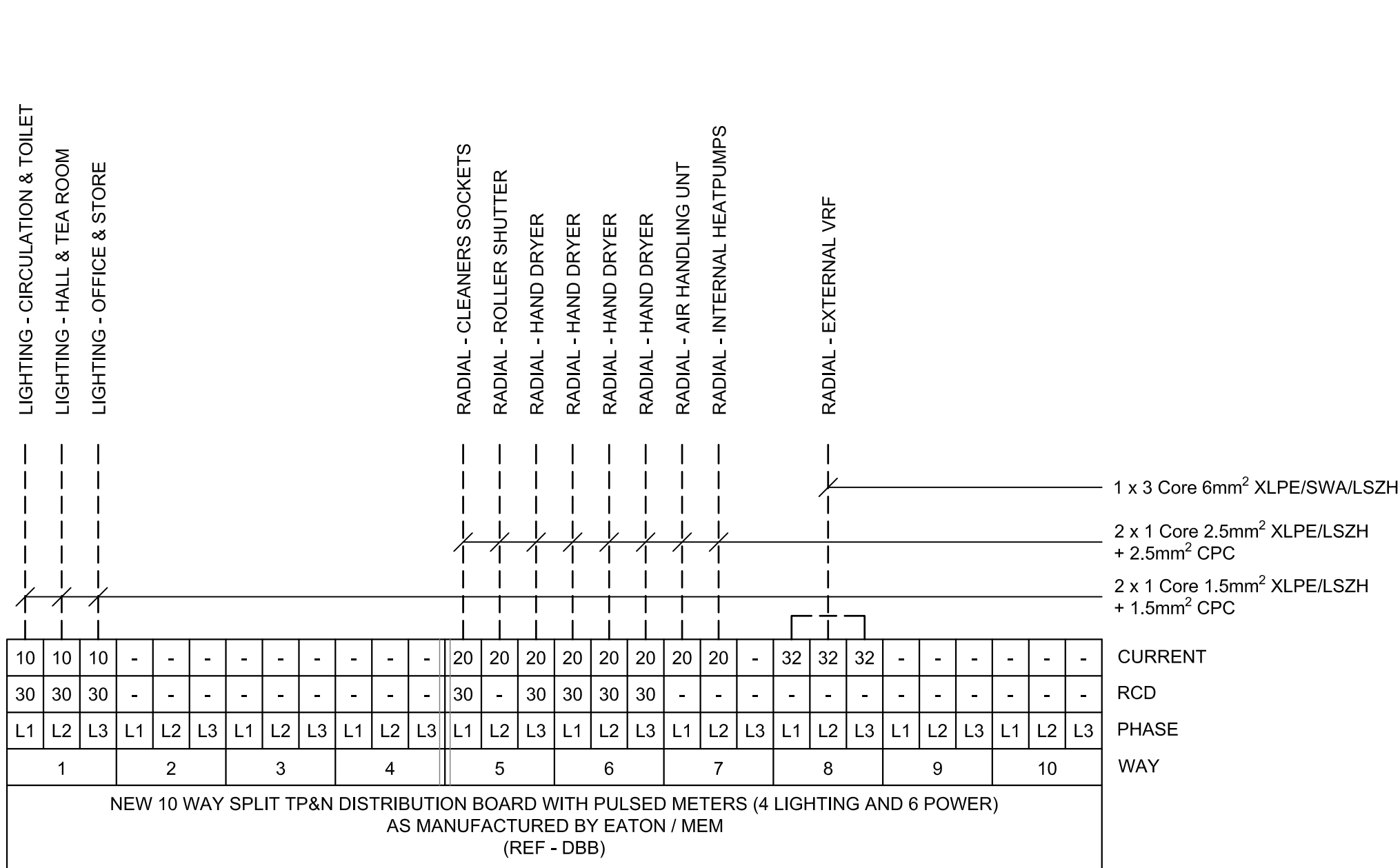
Date

11/01/2017

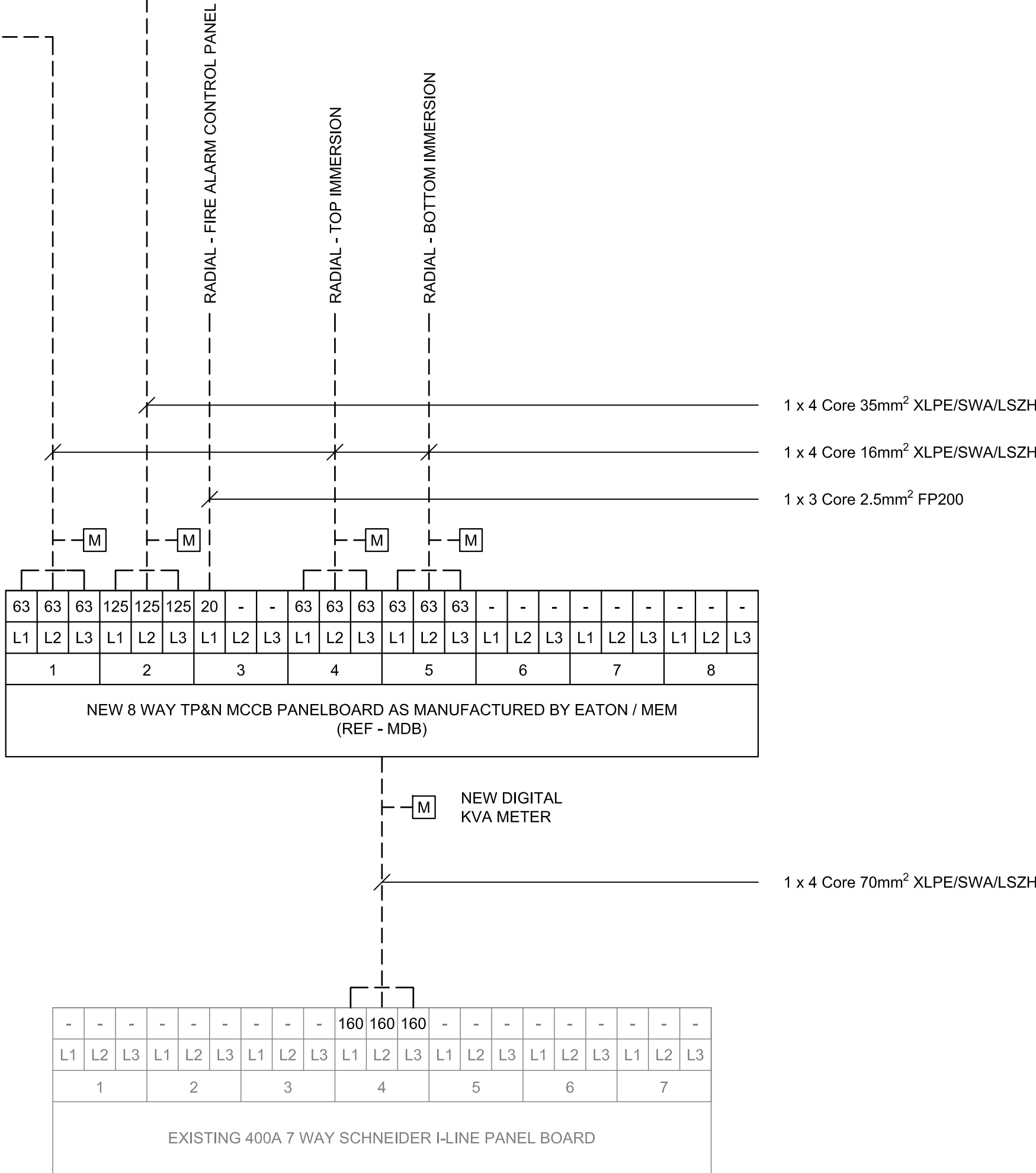
Drawing Number

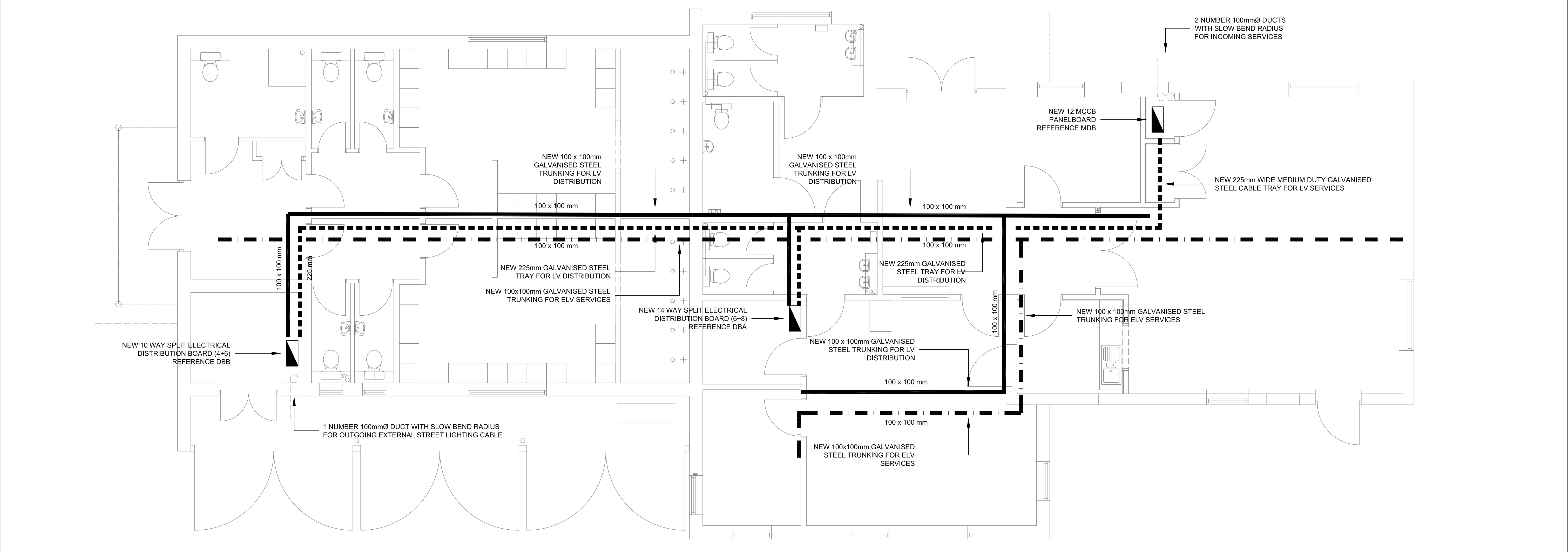
6001

Revisions

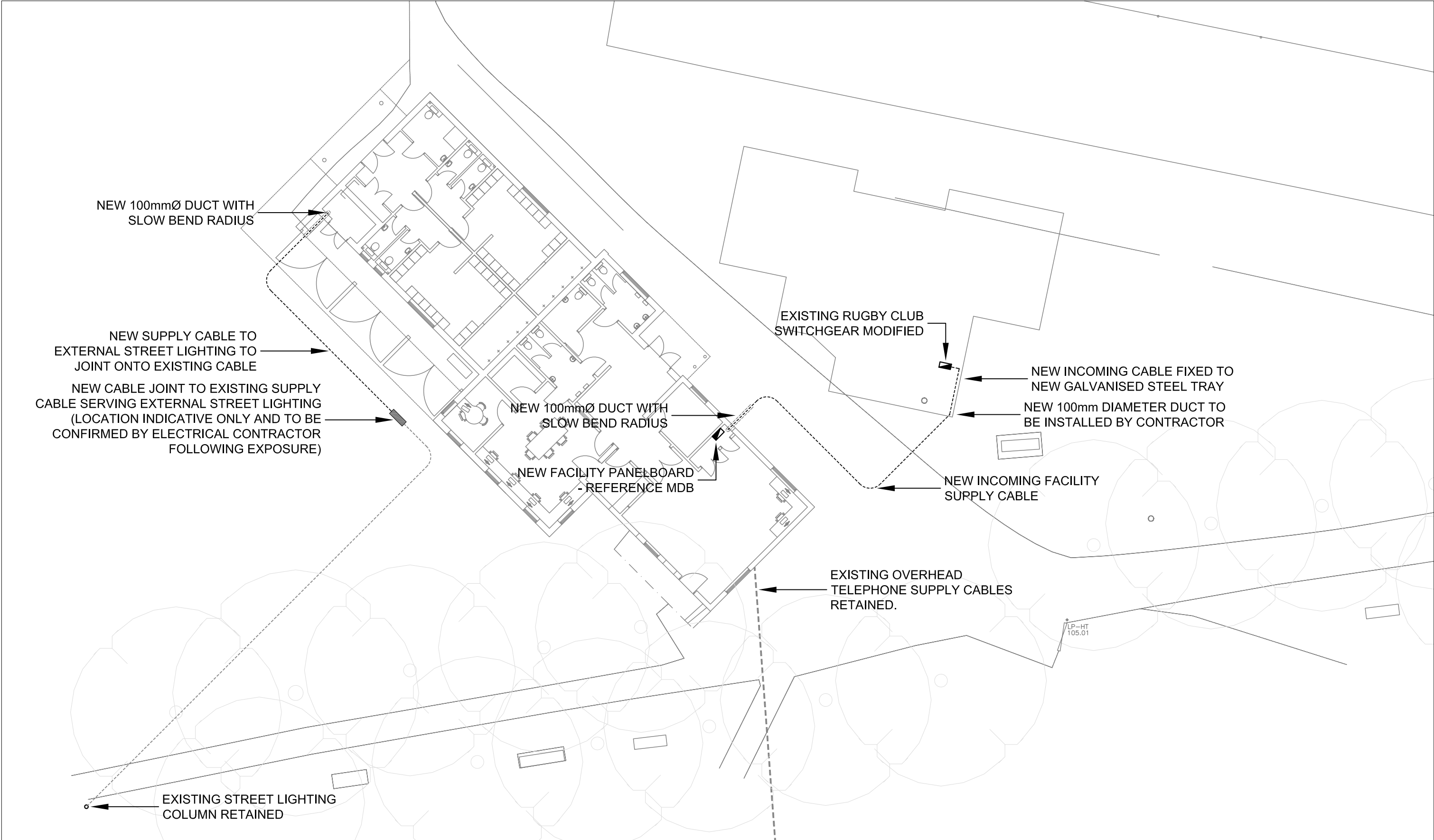


- NOTES**
- DO NOT SCALE FROM THIS DRAWING. ALL MEASUREMENTS ARE IN MILLIMETERS UNLESS STATED OTHERWISE. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ALL RELEVANT DRAWINGS.
 - THE ELECTRICAL CONTRACTOR SHALL ALLOW TO LIAISE WITH WESTERN POWER DISTRIBUTION TO INCREASE THE INCOMING ELECTRICAL SUPPLY CAPACITY TO THE EXISTING RUGBY PAVILION TO 160 KVA. THE CONTRACTOR SHALL SPATIALLY COORDINATE THE INSTALLATION WITH WPD. THE ELECTRICAL CONTRACTOR SHALL ALLOW FOR ALL COSTS INCLUDING BUILDERS WORK ASSOCAITED WITH THE PROVISION OF THE NEW INCOMING ELECTRICAL SUPPLY.
 - THE ELECTRICAL CONTRACTOR SHALL ALLOW TO SUPPLY AND INSTALL A NEW PANELBOARD AS MANUFACTURED BY EATON MEM (OR EQUAL AND APPROVED). THE NEW PANELBOARD SHALL BE SUPPLIED COMPLETE WITH ADDITIONAL METER CHAMBERS AND WIREWAYS AS NECESSARY TO PROVIDE A FULLY FUNCTIONAL SYSTEM.
 - THE ELECTRICAL CONTRACTOR SHALL ALLOW TO SUPPLY AND INSTALL NEW SPLIT METERED ELECTRICAL DISTRIBUTION BOARDS AS MANUFACTURED BY EATON / MEM (OR EQUAL AND APPROVED) OF THE SIZES AND TYPES DETAILED ON THE TENDER DRAWINGS. THE ELECTRICAL CONTRACTOR SHALL ALLOW TO SUPPLY AND INSTALL NEW CIRCUIT BREAKERS TO MATCH THAT OF THE DISTRIBUTION BOARD PAN ASSEMBLY. GENERALLY MCB CIRCUIT BREAKERS SHALL BE TYPE C FOR LIGHTING CIRCUITS AND TYPE B FOR SMALL POWER CIRCUITS.
 - THE ELECTRICAL CONTRACTOR SHALL ENSURE THAT ALL CIRCUIT WIRING INSTALLED IS BASEC APPROVED. THE ELECTRICAL CONTRACTOR SHALL ALLOW FOR ALL CONTAINMENT NECESSARY TO PROVIDE A FULLY FUNCTIONAL SYSTEM.
 - THE ELECTRICAL CONTRACTOR SHALL ENSURE THAT ALL METERS PROVIDED COME COMPLETE WITH FUNCTIONALITY TO PROVIDE FUTURE CONNECTION TO A BMS SYSTEM.
 - UPON COMPLETION OF THE WORKS, THE ELECTRICAL CONTRACTOR SHALL TEST THE INSTALLATION IN ACCORDANCE WITH THE REQUIREMENTS OF BS 7671 (AMD 3) AND PROVIDE SIGNED AND DATED ELECTRICAL TEST CERTIFICATION FOR INCLUSION WITHIN THE O&M MANUAL. HANDOVER SHALL NOTE BE CONSIDERED PRIOR TO RECEIPT OF THIS INFORMATION.





PROPOSED CONTAINMENT LAYOUT
(SCALE 1:50)



PROPOSED EXTERNAL SERVICE LAYOUT
(SCALE 1:200)

LEGEND	
	NEW ELECTRICAL DISTRIBUTION BOARD
	NEW IP4X GALVANISED STEEL TRUNKING FOR LV SERVICES (SIZE AS INDICATED)
	NEW GALVANISED STEEL CABLE TRAY FOR SUB-MAIN DISTRIBUTION (SIZE AS INDICATED)
	NEW GALVANISED STEEL TRUNKING FOR ELV SERVICES (SIZE AS INDICATED)

NOTES:

- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ALL RELEVANT DRAWINGS.
- THE ELECTRICAL CONTRACTOR SHALL NOTE THAT THIS DRAWING IDENTIFIES THE MAIN CONTAINMENT ROUTES ONLY. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE SIZING AND SELECTION OF ALL SECONDARY CONTAINMENT NECESSARY TO PROVIDE A FULLY FUNCTIONAL SYSTEM.
- THE ELECTRICAL CONTRACTOR SHALL ALLOW TO SUPPLY AND INSTALL ALL CONTAINMENT FOR SUB-MAIN DISTRIBUTION AS MEDIUM DUTY GALVANISED STEEL CABLE TRAY WITH RETURN FLANGE. NEW CABLE TRAY SHALL BE AS MANUFACTURED BY LEGRAND SWIFT RANGE OR EQUAL AND APPROVED.
- FINAL CIRCUITS SHALL BE INSTALLED INTO A NEW GALVANISED STEEL CONDUIT AND TRUNKING INSTALLATION WHICH THE ELECTRICAL CONTRACTOR SHALL ALLOW TO SUPPLY AND INSTALL. THE ELECTRICAL CONTRACTOR SHALL ENSURE THAT ALL TRUNKING AND CONDUIT PROVIDES A MINIMUM ENVIRONMENTAL PROTECTION OF IP4X ALONG ITS ENTIRE LENGHT.
- THE ELECTRICAL CONTRACTOR SHALL LIAISE WITH THE BUILDING CONTRACTOR AND SHALL ENSURE THAT ALL NECESSARY BUILDING SERVICE DUCTS ARE INSTALLED TO ENABLE THE BUILDING SERVICE INSTALLATION TO BE COMPLETED TO PROVIDE A FULLY FUNCTIONAL SYSTEM. THE ELECTRICAL CONTRACTOR SHALL ENSURE THAT ALL DUCTS ARE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF NJUG AND HAVE A SHALLOW BEND RADIUS WITH A MINIMUM BEND RADIUS OF 600mm.
- CONTAINMENT FOR TELEPHONE SERVICES AND DATA SHALL COMPRISE OF GALVANISED STEEL TRUNKING AS MANUFACTURED BY LEGRAND OR EQUAL AND APPROVED.
- THE ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL ALL CONTAINMENT FROM A SINGLE MANUFACTURER AND SHALL USE THEIR PROPRIETARY PRODUCTS INCLUDING TEE'S, SETS AND BENDS.
- THE ELECTRICAL CONTRACTOR SHALL ALLOW TO TRACE AND ISOLATE THE EXISTING STREET LIGHTING CABLE AND JOINT THE EXISTING TO A NEW SUPPLY CABLE (NOTE THE LOCATION SHOWN IS INDICATIVE ONLY AND SHALL BE DETERMINED BY THE CONTRACTOR AS PART OF THEIR DESIGN).
- UPON COMPLETION OF THE WORKS THE ELECTRICAL CONTRACTOR SHALL TEST THE INSTALLATION IN ACCORDANCE WITH THE REQUIREMENTS OF BS 7671 AND SHALL PROVIDE SIGNED AND DATED ELECTRICAL TEST CERTIFICATION FOR THE INSTALLATION IN GOOD TIME FOR HANDOVER. THE ELECTRICAL CONTRACTOR SHALL NOTE THAT HANDOVER SHALL NOT BE CONSIDERED PRIOR TO RECEIPT OF THIS INFORMATION.

Client

PROPOSED EXTENSION

VICTORY PARK
CHURCH ROAD
STROUD
GLOS. GL5 4JE

CAINSCROSS PARISH COUNCIL

Title

ELECTRICAL SERVICES
PROPOSED
CONTAINMENT LAYOUT

CHURCH
ARCHITECTURAL

Rory Brock
M: 07712 255378
April Church
M: 07979 541397

1 Craggale, Chapel Fields, Randwick, Stroud, GL4 6HF
E-mail: april@churcharchitectural.co.uk

Drawn

ML

Scale

1:50 @ A1

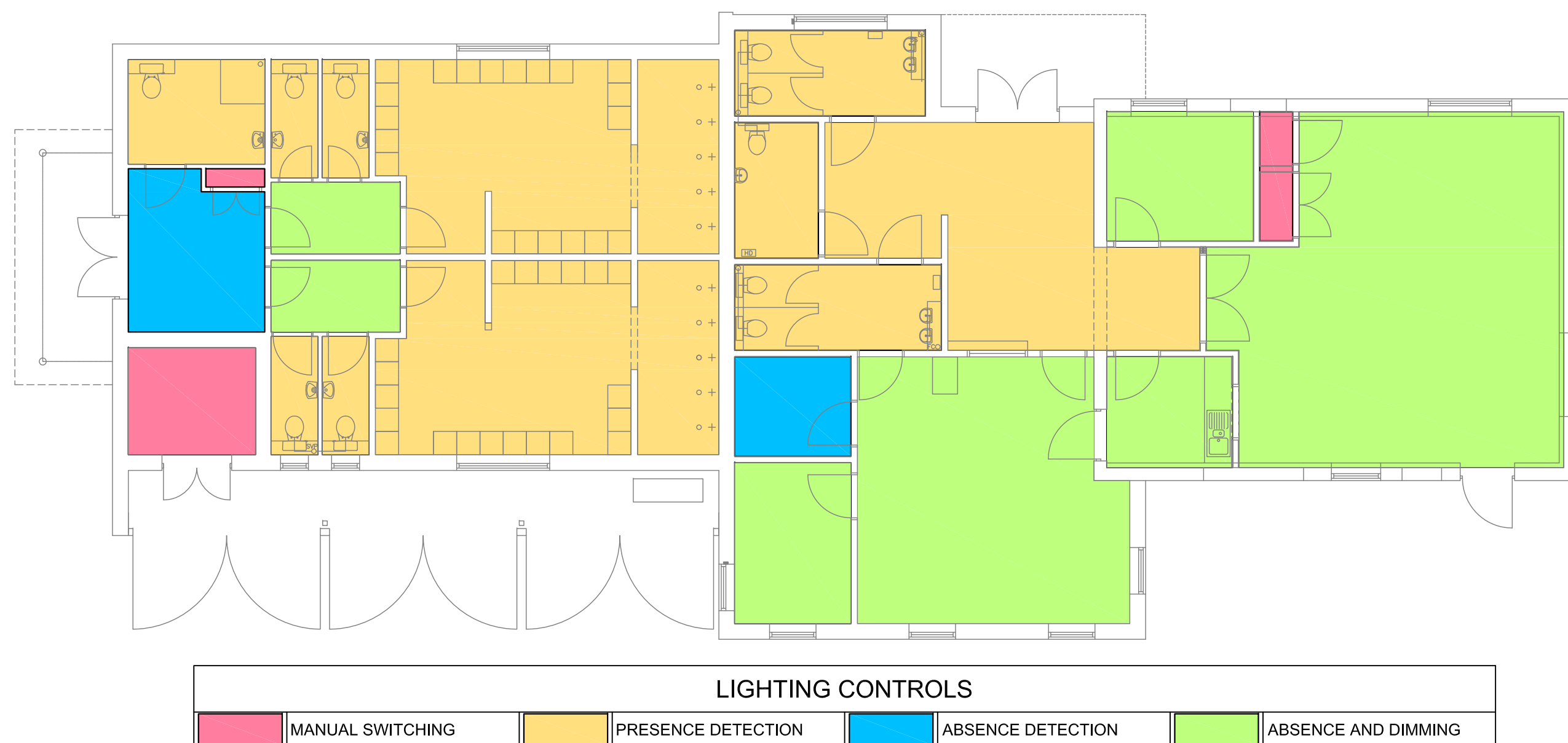
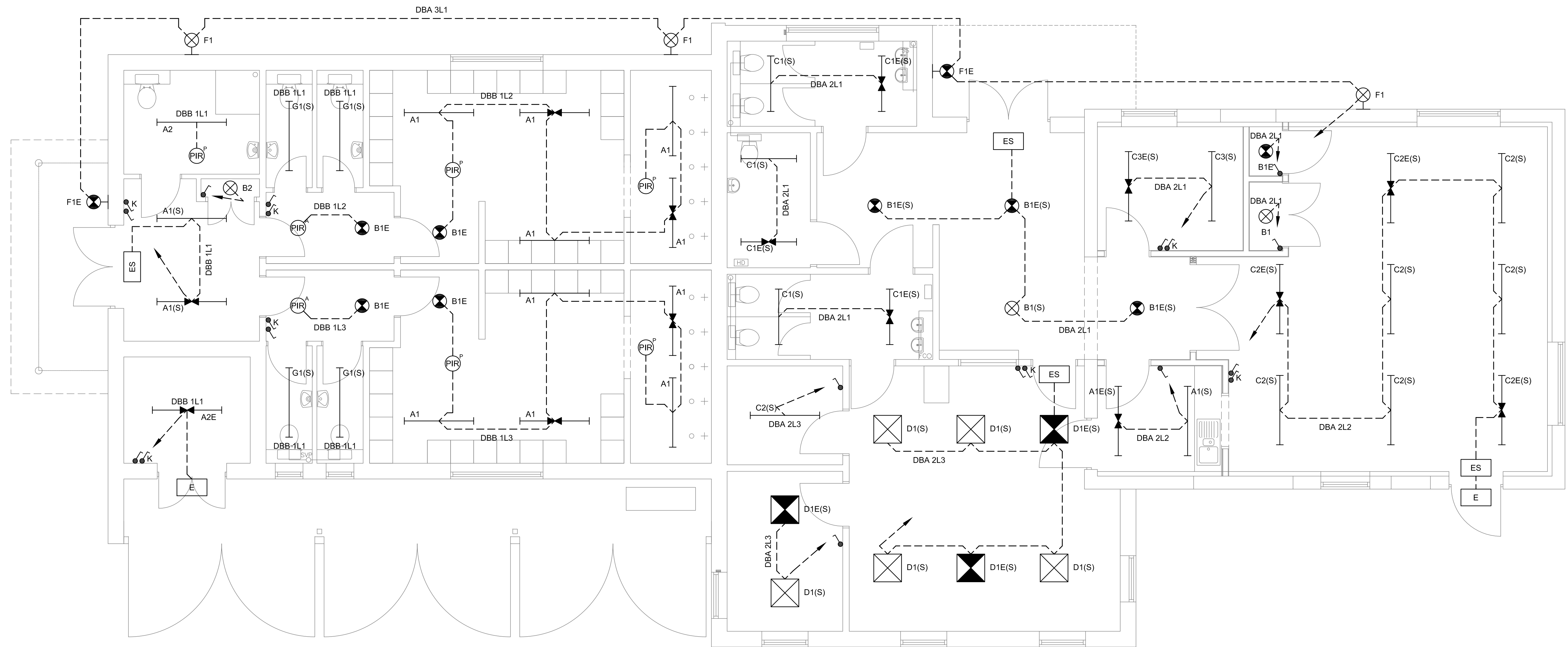
Date

11/01/2017

Drawing Number

6101

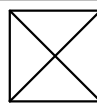
Revisions



NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ALL RELEVANT DRAWINGS.
2. THE ELECTRICAL CONTRACTOR SHALL ALLOW TO SUPPLY AND INSTALL ALL LUMINAIRES FROM A SINGLE MANUFACTURER AS THORLUX LIGHTING (OR EQUAL AND APPROVED). THE ELECTRICAL CONTRACTOR SHALL SUPPLY LUMINAIRES OF THE TYPES IDENTIFIED WITHIN THE SCHEDULE OF LUMINAIRES. ALTERNATIVES SHALL ONLY BE CONSIDERED IF THEY ARE SUBMITTED WITH SUPPORTING LIGHTING CALCULATIONS WHICH MEET OR EXCEED THE PERFORMANCE REQUIREMENTS.
3. THE ELECTRICAL CONTRACTOR SHALL ALLOW TO SUPPLY AND INSTALL NEW CIRCUIT WIRING TO ALL LUMINAIRES. WIRING SHALL BE OF THE TYPE AND SIZES IDENTIFIED ON THE ELECTRICAL DISTRIBUTION BOARD SCHEDULES AND SHALL GENERALLY COMPRISE OF XLPE/LSZH SINGLE CORE CABLES DRAWN INTO A CONDUIT AND TRUNKING INSTALLATION. THE ELECTRICAL CONTRACTOR SHALL ENSURE THAT ALL NEW WIRING IS BASEC APPROVED.
4. THE ELECTRICAL CONTRACTOR SHALL ALLOW TO SUPPLY AND INSTALL NEW CONTAINMENT THROUGHOUT THE INSTALLATION. NEW CONTAINMENT SHALL COMPRISE OF GALVANISED STEEL CONDUIT AND TRUNKING. THE ELECTRICAL CONTRACTOR SHALL ENSURE THAT ALL TRUNKING AND CONDUIT PROVIDES A MINIMUM ENVIRONMENTAL PROTECTION OF IP4X ALONG ITS ENTIRE LENGTH.
5. THE ELECTRICAL CONTRACTOR SHALL ENSURE THAT THE EXTERNAL LIGHTING INSTALLATION IS PROVIDED WITH BOTH PHOTOCELL AND TIME CLOCK CONTROL.
6. THE ELECTRICAL CONTRACTOR SHALL MODIFY THE EXISTING ELECTRICAL SUPPLY TO THE STREET LIGHTING COLUMNS AND SHALL ALLOW TO TRACE AND ISOLATE THE EXISTING ELECTRICAL SUPPLY AND SHALL ALLOW TO PROVIDE A NEW SUPPLY CABLE TO JOINT WITH THE EXISTING SUPPLY CABLE. THE ELECTRICAL CONTRACTOR SHALL NOTE THE LOCATION SHOWN IS INDICATIVE ONLY AND SHALL BE DETERMINED BY THE CONTRACTOR AS PART OF THEIR DESIGN PROPOSAL.
7. UPON COMPLETION OF THE WORKS THE ELECTRICAL CONTRACTOR SHALL TEST THE INSTALLATION IN ACCORDANCE WITH THE REQUIREMENTS OF BS 7671 AND SHALL PROVIDE SIGNED AND DATED ELECTRICAL TEST CERTIFICATION FOR THE INSTALLATION IN GOOD TIME FOR HANDOVER. THE ELECTRICAL CONTRACTOR SHALL NOTE THAT HANDOVER SHALL NOT BE CONSIDERED PRIOR TO RECEIPT OF THIS INFORMATION.

LEGEND

	NEW MODULAR RECESSED LED LUMINAIRE
	NEW SURFACE MOUNTED LINEAR LED LUMINAIRE
	NEW SURFACE MOUNTED LED LUMINAIRE
	NEW WALL MOUNTED LED LUMINAIRE
	DENOTES NEW THREE HOUR EMERGENCY CONVERSION OF GENERAL LUMINAIRE
	NEW SELF CONTAINED EMERGENCY BULKHEAD LUMINAIRE SUITABLE FOR THREE HOUR OPERATION
	NEW SELF CONTAINED EMERGENCY BULKHEAD LUMINAIRE SUITABLE FOR THREE HOUR OPERATION COMPLETE WITH RUNNING MAN LEGEND
	NEW ONE WAY GRID SWITCH WITH CONTRASTING MOULDED FRONT PLATE
	NEW ONE WAY SECRET EMERGENCY GRID SWITCH WITH CONTRASTING MOULDED FRONT PLATE
	NEW CEILING MOUNTED PIR PRESENCE DETECTOR
	NEW CEILING MOUNTED PIR ABSENCE DETECTOR

PROPOSED EXTENSION

FACTORY PARK
CHURCH ROAD
TROUD
LOS. GL5 4JE

AINSCROSS PARISH COUNCIL

ELECTRICAL SERVICES
PROPOSED LIGHTING
LAYOUT

CHURCH
ARCHITECTURAL

Rory Brock
M: 07712 259378

April Church
M: 07979 541397

ate, Chapel Fields, Randwick, Stroud, GL6 6HR
E-mail: aprilandroy@icloud.com

	ML

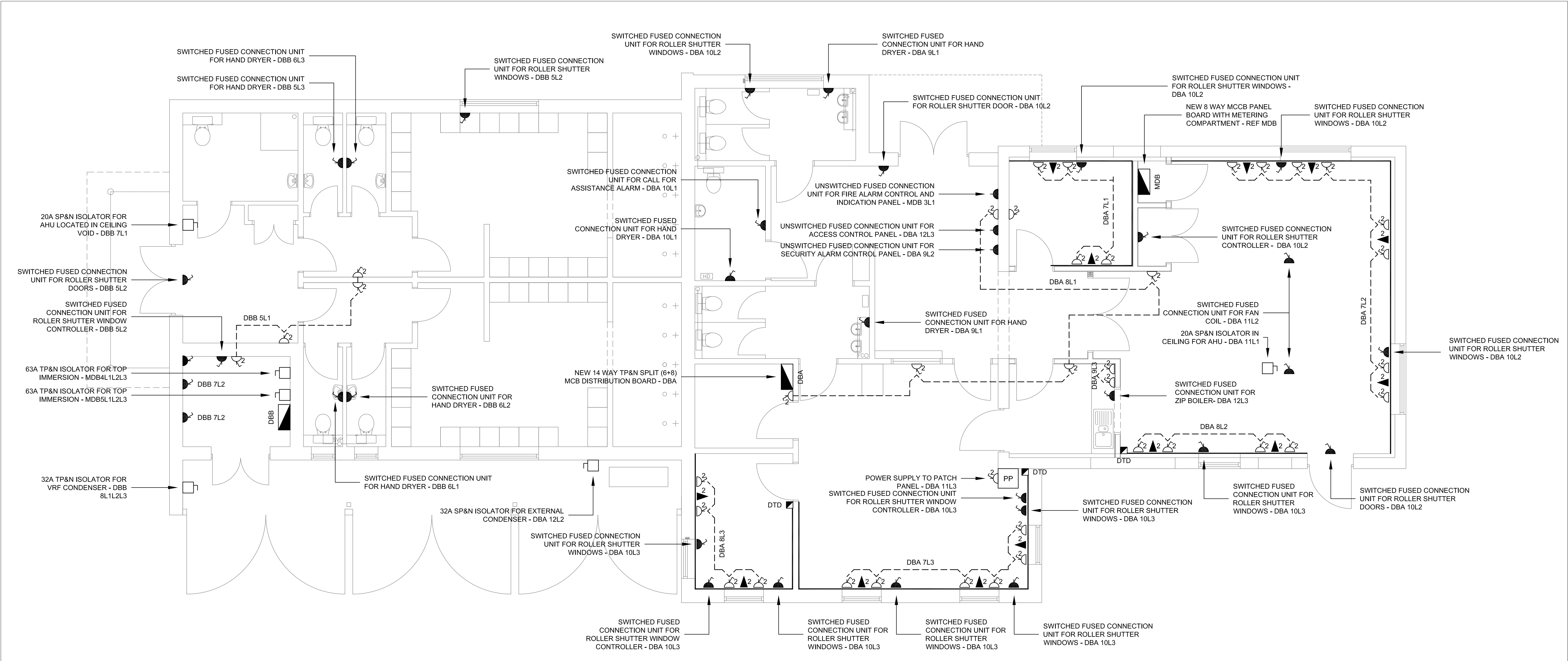
1:50 @ A1

	11/01/2017

ing Number

102

ports						



PROPOSED SMALL POWER LAYOUT
(SCALE 1:50)

NOTES:

1. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ALL RELEVANT DRAWINGS.
2. DO NOT SCALE FROM THIS DRAWING. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR UNDERTAKING FINAL SPATIAL COORDINATION AND SHALL CONFIRM ALL DIMENSIONS PRIOR TO INSTALLATION.
3. THE ELECTRICAL CONTRACTOR SHALL ALLOW TO SUPPLY AND INSTALL ALL PRIMARY AND SECONDARY CONTAINMENT NECESSARY TO PROVIDE A FULLY FUNCTIONAL SYSTEM CONTAINMENT SHALL GENERALLY COMPRISE OF GALVANISED STEEL TRUNKING AND CONDUIT WHICH PROVIDES A MINIMUM ENVIRONMENTAL PROTECTION OF IP4X ALONG ITS ENTIRE LENGHT.
4. THE ELECTRICAL CONTRACTOR SHALL ALLOW TO SUPPLY AND INSTALL NEW CIRCUIT WIRING OF THE TYPE AND SIZES IDENTIFIED ON THE ELECTRICAL DISTRIBUTION BOARD SCHEDULES AND SHALL GENERALLY COMPRISE OF XLPE/LSZH SINGLE CORE CABLES DRAWIN INTO A CONDUIT AND TRUNKING INSTALLATION. THE ELECTRICAL CONTRACTOR SHALL ENSURE THAT ALL NEW WIRING IS BASEC APPROVED.
5. THE ELECTRICAL CONTRACTOR SHALL NOTE THAT THE INCOMING TELEPHONE LINE AND ANY ASSOCAITED BROADBAND CONNECTION SHALL BE ARRANGED BY THE CLIENT DIRECTLY; HOWEVER, THE ELECTRICAL CONTRACTOR SHALL ALLOW FOR ALL INTERNAL WIRING AND CONTAINMENT NECESSARY TO PROVIDE A FULLY FUNCTIONAL SYSTEM.
6. THE ELECTRICAL CONTRACTOR SHALL ENSURE THAT ALL ITEMS OF MECHANICAL PLANT ARE PROVIDED WITH A LOCAL MEANS OF ISOLATION. THE ELECTRICAL CONTRACTOR SHALL ENSURE THAT ALL EQUIPMENT IS APPROPRIATE FOR ITS ENVIRONMENTAL CONDITIONS.
7. UPON COMPLETION OF THE WORKS THE ELECTRICAL CONTRACTOR SHALL TEST THE INSTALLATION IN ACCORDANCE WITH THE REQUIREMENTS OF BS 7671 AND SHALL PROVIDE SIGNED AND DATED ELECTRICAL TEST CERTIFICATION FOR THE INSTALLATION IN GOOD TIME FOR HANDOVER. THE ELECTRICAL CONTRACTOR SHALL NOTE THAT HANDOVER SHALL NOT BE CONSIDERED PRIOR TO RECEIPT OF THIS INFORMATION.

LEGEND	
	NEW ELECTRICAL DISTRIBUTION BOARD (SIZE AND TYPE AS INDICATED)
	NEW TWIN SWITCHED SOCKET OUTLET
	NEW UNSWITCHED FUSED CONNECTION UNIT
	NEW SWITCHED FUSE CONNECTION UNIT
	NEW PATCH PANEL HOUSING ASSOCIATED ACTIVE EQUIPMENT
	NEW DUAL CAT 5e IT OUTLET
	NEW ELECTRICAL ISOLATOR - RATING AS INDICATED
	DADO TRUNKING DROPS FROM CEILING TO DADO LEVEL
	NEW DADO TRUNKING
	NEW ELECTRIC CIRCUIT

Client

PROPOSED EXTENSION

VICTORY PARK
CHURCH ROAD
STROUD
GLOS. GL5 4JE

CAINSCROSS PARISH COUNCIL

Title

ELECTRICAL SERVICES
PROPOSED SMALL
POWER LAYOUT

CHURCH
ARCHITECTURAL

Rory Brock
M: 07712 255378
April Church
M: 07979 541397

1 Congate, Chapel Fields, Randwick, Stroud, GL4 4HF
E-mail: april@victorychurch.co.uk

Drawn

ML

Scale

1:50 @ A1

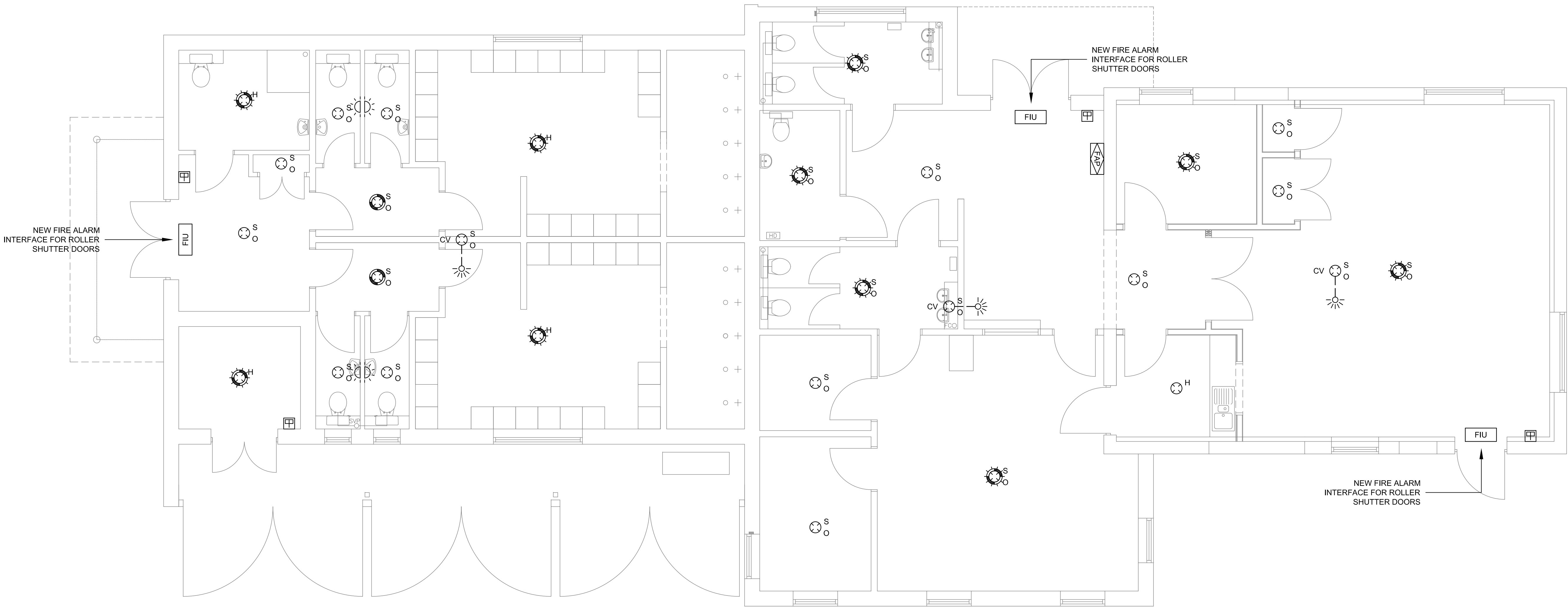
Date

11/01/2017

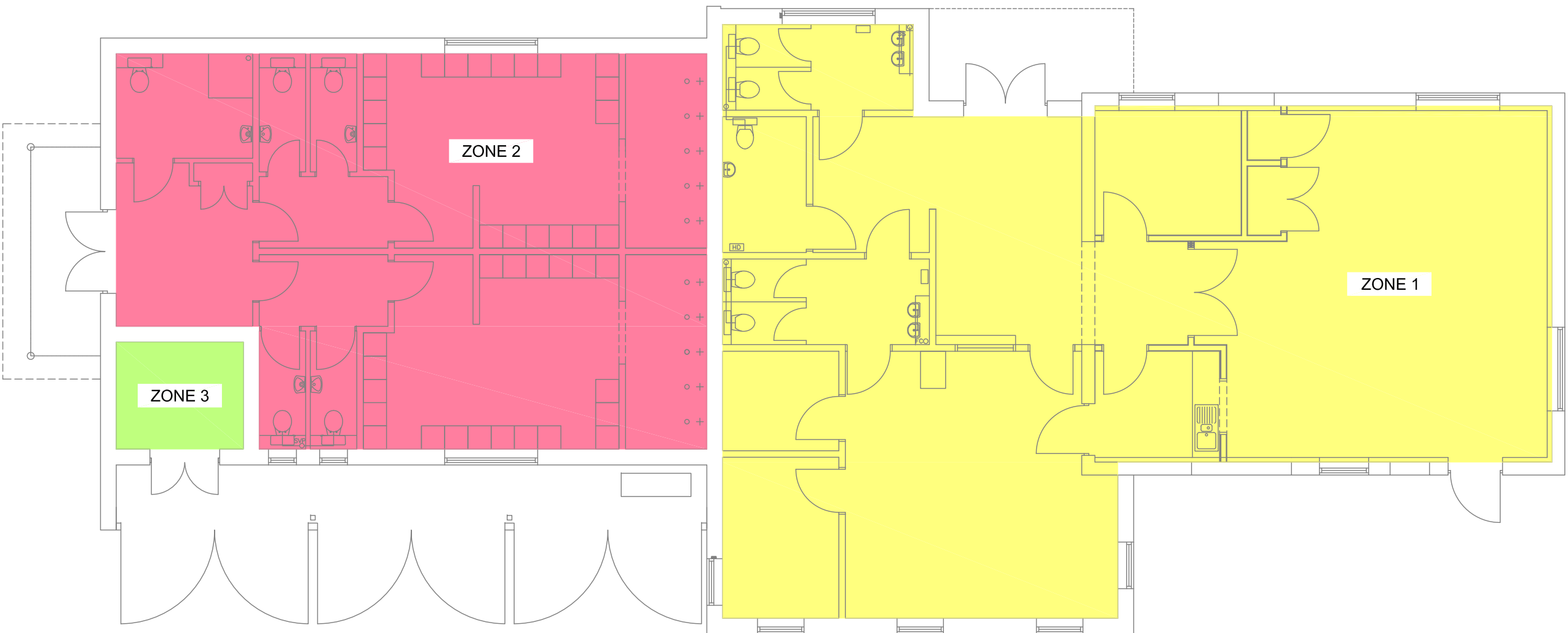
Drawing Number

6103

Revisions



PROPOSED FIRE ALARM DETECTION & ALARM LAYOUT
(SCALE 1:50)



PROPOSED FIRE ALARM ZONE CHART
(SCALE 1:100)

NOTES

- DO NOT SCALE FROM THIS DRAWING. ALL MEASUREMENTS ARE IN MILLIMETERS UNLESS STATED OTHERWISE. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ALL RELEVANT DRAWINGS.
- THE ELECTRICAL CONTRACTOR SHALL EMPLOY A SPECIALIST TO COMPLETE THE DETAILED DESIGN OF THE FIRE DETECTION AND ALARM SYSTEM TO PROVIDE PROTECTION TO AN L1/P1 CATEGORY AS DEFINED IN BS 5839. THE EVACUATION STRATEGY SHALL BE SINGLE STAGE.
- THE ELECTRICAL CONTRACTOR SHALL ALLOW TO SUPPLY AND INSTALL A FIRE ALARM INTERFACE ADJACENT TO ALL ACCESS CONTROLLED DOORS TO ENSURE THAT THEY RELEASE DURING A FIRE ALARM ACTIVATION. THE UNIT SHALL BE POSITIONED ADJACENT TO THE ACCESS CONTROL SYSTEM AND LOCATED WITHIN THE CEILING VOID WHERE AVAILABLE.
- THE ELECTRICAL CONTRACTOR SHALL ALLOW TO INSTALL ALL NEW INTERNAL CIRCUIT WIRING AS DATWYLER LIFELINE WITH RED OVERSHEATH OR EQUAL AND APPROVED.
- THE ELECTRICAL CONTRACTOR SHALL ALLOW TO SUPPLY AND INSTALL THE NEW FIRE DETECTION AND ALARM SYSTEM ONTO NEW MEDIUM DUTY GALVANISED STEEL CABLE TRAY WITH RETURN FLANGE, WHERE CABLE RUNS DO NOT EXCEED TWO CABLES THE ELECTRICAL CONTRACTOR MAY FIX DIRECT TO THE BUILDING FABRIC WITH APPROPRIATE METALLIC FIXINGS.
- THE ELECTRICAL CONTRACTOR SHALL ALLOW TO PROVIDE ZONE ISOLATORS AT THE START OF EVERY ZONE. FIRE ALARM ZONE ISOLATORS SHALL BE LOCATED WITHIN STORE ROOMS AND WITHIN SUSPENDED CEILINGS / SERVICE BULKHEADS WHERE THESE EXIST.
- THE FIRE ALARM CONTROL AND INDICATING PANEL SHALL BE FED FROM A DEDICATED CIRCUIT DERIVED FROM THE FACILITY MAIN SWITCHBOARD. LOCAL ISOLATION SHALL BE PROVIDED BY A 20A SECRET KEY SWITCH.
- UPON COMPLETION OF THE WORKS, THE FIRE ALARM SYSTEM SHALL BE SOAK TESTED AND COMMISSIONED IN ACCORDANCE WITH BS 5839-1. THE ELECTRICAL CONTRACTOR SHALL PROVIDE SIGNED AND DATED CERTIFICATION PRIOR TO THE SYSTEM BEING BROUGHT INTO SERVICE.

LEGEND

	NEW FIRE ALARM CONTROL AND INDICATION PANEL
	NEW MANUAL FIRE ALARM CALL POINT
	NEW OPTICAL SMOKE DETECTOR
	NEW HEAT DETECTOR RATE OF RISE
	NEW BASE MOUNTED SOUNDER
	NEW COMBINED BASE MOUNTED SOUNDER / VISUAL INDICATOR
	NEW VISUAL INDICATOR
	NEW REMOTE ACTIVATION LED
	NEW FIRE ALARM INTERFACE
	NEW OPTICAL SMOKE DETECTOR LOCATED WITHIN CEILING VOID

Client

PROPOSED EXTENSION

VICTORY PARK
CHURCH ROAD
STROUD
GLOS. GL5 4JE

CAINSCROSS PARISH COUNCIL

Title

ELECTRICAL SERVICES
PROPOSED FIRE
DETECTION AND ALARM
LAYOUT

CHURCH
ARCHITECTURAL

Rory Brock
M: 07712 255378

April Church
M: 07979 541397

1 Craggale, Chippingfields, Handwick, Stroud, GL4 4HR
E-mail: april@churcharchitectural.co.uk

Drawn

ML

Scale

1:50 @ A1

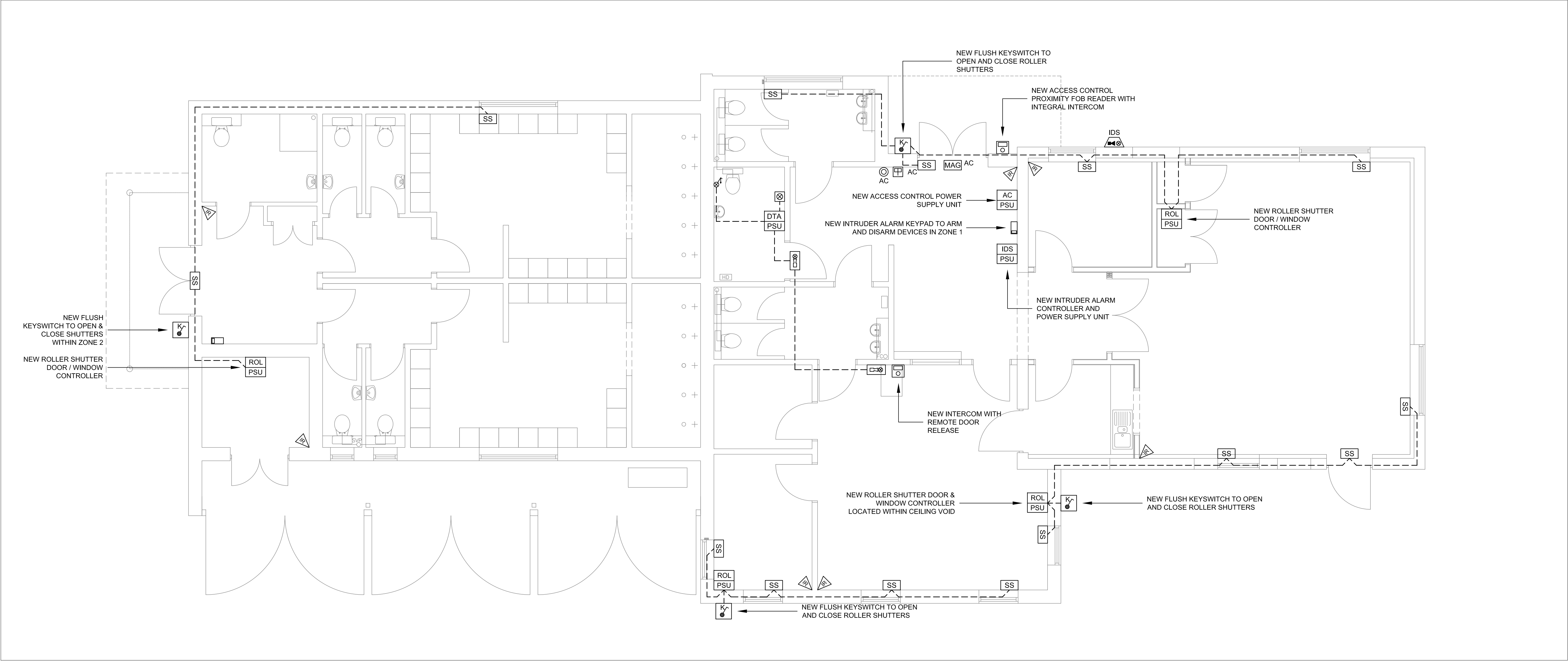
Date

11/01/2017

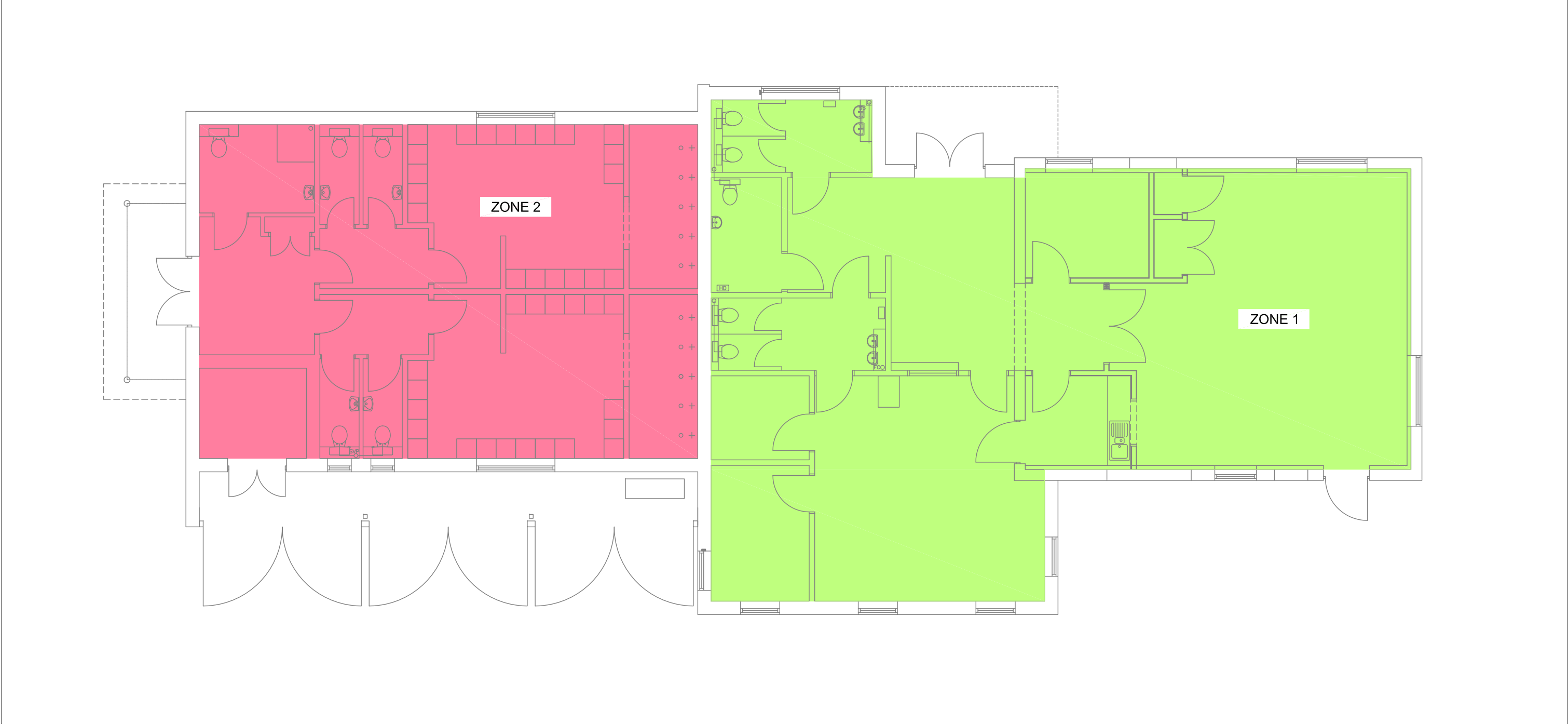
Drawing Number

6104

Revisions



PROPOSED SECURITY DETECTION AND ALARM LAYOUT
(SCALE 1:50)



PROPOSED INTRUDER ALARM ZONES
(SCALE 1:100)

NOTES

- DO NOT SCALE FROM THIS DRAWING. ALL MEASUREMENTS ARE IN MILLIMETERS UNLESS STATED OTHERWISE.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ALL RELEVANT DRAWINGS.
- THE ELECTRICAL CONTRACTOR SHALL APPOINT A SPECIALIST CONTRACTOR TO DEVELOP THE DETAILED DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF THE SECURITY DETECTION AND ALARM SYSTEM AND ROLLER SHUTTER INSTALLATION. THE SPECIALIST CONTRACTOR SHALL SELECT ALL EQUIPMENT FROM A SINGLE SUPPLIER AS HONEYWELL OR EQUAL AND APPROVED. THE SPECIALIST CONTRACTOR SHALL BE RESPONSIBLE FOR THE FINAL SPATIAL COORDINATION OF ALL COMPONENTS AND SHALL PROVIDE ALL MATERIALS AND EQUIPMENT NECESSARY TO PROVIDE A FULLY FUNCTIONAL SYSTEM.
- THE ELECTRICAL CONTRACTOR SHALL ALLOW TO SUPPLY AND INSTALL ALL SMALL POWER AND CONTAINMENT NECESSARY TO ENABLE THE SPECIALIST CONTRACTOR TO UNDERTAKE THE WORKS.
- THE ELECTRICAL CONTRACTOR SHALL NOTE THAT THE LOCATIONS FOR INTRUDER ALARM ZONAL EXTENSORS ARE INDICATIVE AND SHALL BE CONFIRMED AND DEVELOPED AS PART OF THE SPECIALIST SUB-CONTRACTORS SCOPE OF SUPPLY.
- THE ELECTRICAL CONTRACTOR SHALL ALLOW TO ZONE THE SECURITY DETECTION AND ALARM SYSTEM INTO ZONES TO INCLUDE:
 - THE HALL & OFFICE
 - THE CHANGING ROOMS
- THE ELECTRICAL CONTRACTOR SHALL UPON COMPLETION OF THE WORKS TEST THE COMPLETE ELECTRICAL INSTALLATION AND PROVIDED SIGNED AND DATED ELECTRICAL TEST CERTIFICATION FOR ALL SYSTEMS INSTALLED.

LEGEND

	NEW INTRUDER ALARM POWER SUPPLY AND CONTROL UNIT
	NEW INTRUDER ALARM KEYPAD
	NEW DUAL TECHNOLOGY MOVEMENT DETECTOR
	NEW EXTERNAL SELF ACTUATING SIREN & STROBE
	NEW ROLLER SHUTTER POWER SUPPLY / CONTROL UNIT
	NEW WALL MOUNTED OVERRIDE KEY SWITCH FOR ROLLER SHUTTERS
	CONNECTION POINT FOR ROLLER SHUTTERS
	NEW CALL FOR ASSISTANCE POWER SUPPLY / CONTROL UNIT
	NEW CALL FOR ASSISTANCE PULL CORD WITH REASSURANCE LIGHT
	NEW CALL FOR ASSISTANCE RESET UNIT WITH REASSURANCE LIGHT
	NEW CALL FOR ASSISTANCE OVER DOOR TONE & INDICATOR LIGHT

Victory Park

Mechanical and Electrical Specification

24th April 2017



Contents

A64 PRELIMINARIES	3
C10 REMOVAL OF COMPLETE SYSTEMS	41
C21 TOXIC/HAZARDOUS MATERIAL REMOVAL	43
R11 FOUL DRAINAGE ABOVE GROUND	44
S12 DOMESTIC WATER SERVICES	46
T32 LOW TEMPERATURE HOT WATER (LTHW) HEATING	51
T62 VRF SYSTEMS	54
U10 GENERAL VENTILATION	56
V12 LV SUPPLY/PUBLIC UTILITY SUPPLY	59
V20 LV DISTRIBUTION	61
V21 GENERAL LIGHTING	72
V22 GENERAL LV POWER	79
V40 EMERGENCY LIGHTING	83
V41 STREET/AREA/FLOOD LIGHTING	87
W15 FACILITIES FOR THE DISABLED	90
W40 ACCESS CONTROL	93
W41 SECURITY DETECTION AND ALARM	96
W50 FIRE DETECTION AND ALARM	101
W51 LV EARTHING AND BONDING	109
W60 BUILDING MANAGEMENT & CONTROLS	114
W70 STRUCTURED CABLING SYSTEM	117
APPENDIX A: ELECTRICAL Y-CLAUSES	123
APPENDIX B: FORM OF TENDER	151
APPENDIX C: TENDER BREAKDOWN	152
APPENDIX D: SCHEDULE OF LUMINAIRES	153

A64 PRELIMINARIES

A64.100.000 PROJECT PARTICULARS

A64.100.010 THE PROJECT:

- Particulars of the project as a whole are given in the main contract preliminaries.

A64.100.020 THE EMPLOYER:

The employer is Cainscross Parish Council.

A64.100.040 CONTRACT ADMINISTRATOR:

The term Contract Administrator (CA) is used throughout this specification and his duties will be carried out by

Jeni Marshal
Cainscross Parish Council
39 Westward Road
Cainscross
Stroud
Gloucestershire
GL5 4JA
Tel: 01453 756036

A64.100.190 PRIVATE SERVICE PROVIDERS:

- Cold Water
 - Manage the removal of the existing electrical cold water supply to the football pavilion and arrange for the provision of new.
- Electricity Supply
 - Manage the removal of the existing electrical supply to the football pavilion and arrange for the upgrade of the electrical supply capacity to the existing rugby pavilion.
- Telephone
 - The provision of telephones shall be managed directly by the client, however, the electrical contractor shall make all provision of internal interconnecting wiring and liaison with utilities.

A64.200.000 DEFINITIONS

A64.200.010 GENERAL:

Where used in the documentation the following definitions shall apply and shall be interpreted as such:

- Works: All services shown on the drawings and described in the specification shall be deemed to be included in the contract.
- Drawings: The tender drawings.
- Elsewhere: Detailed or specified elsewhere in other clauses, sections, shown on the drawings or contained in the specification or conditions of contract.
- Services: Services means the inclusion of one or more system.
- System: All equipment, accessories, controls, supports and ancillary items, including supply, installation, connection, testing, commissioning and setting to work necessary for that section of the Works to function.
- Design process: All the activities necessary to convert design input into design output
- Review: Give notice and submit details to the CA for his comment and review, which shall be granted in writing only. In the event of the CA not accepting that submitted, resubmit alternative details for review or modify that submitted in accordance with the CA comments. Review of any submittal by the CA shall not mean that the CA is responsible for the correctness of the submittal or its suitability for purpose and does not relieve any contract responsibilities.
- Competent person: A person, by reason of theoretical and practical training or actual experience or both, is competent to perform the task or function or assume the responsibility in question and is authorised to perform such a task or function.
- Duct: An enclosed space specifically intended for the distribution of services, with direct access for personnel.
- Trench: A covered horizontal service space in the floor or ground with access from above.
- Cavity: A space enclosed within the elements of a building within which services are installed,

- e.g. the space between ceiling and floor above. See Building Regulations.
- Service Areas: Includes areas within a building with limited finishes such as loading bays, car parks etc.
- Concealed Services: Includes installations within ducts, trenches or cavities.
- Exposed Services: Includes installations outdoors or unprotected within service or occupied areas.
- Terminal Units: Terminal units such as radiators, convectors, fan coil units, induction units, variable or constant volume air boxes and other like equipment.
- Ancillaries: All specified fittings, accessories, inserts, test points, bracketing, terminal equipment connected to and installed in the engineering services system.
- CIBSE: The Chartered Institution of Building Services Engineers
- BSRIA: The Building Services Research and Information Association
- IET: The Institution of Engineering and Technology
- FRS: Fire Research Station
- HSE: Health and Safety Executive

A64.200.020 DEFINITIONS OF TECHNICAL TERMS

The definitions of technical terms associated with the engineering services installations are those included the latest edition of:

- CIBSE - Guides; Commissioning Codes; Technical Memoranda; Building Energy Codes; Lighting Guides; Application Manuals;
- BSRIA - Technical Publications
- BS 7671 Requirements for Electrical Installations (IEE Wiring Regulations)
- British Standards, including Codes of Practice.
- Statutory Acts.

A64.300.000 TENDERING INSTRUCTIONS

A64.300.010 GENERAL:

This section outlines the tendering procedures and requirements.

A64.300.020 SCOPE:

- These conditions are supplementary to those stated in the invitation to tender and on the Form of Tender and Agreement.

A64.300.030 TENDER DOCUMENTS

The tender documents consist of the following:

- Invitation to tender.
- Form of tender.
- Project health and safety plan.
- Specification for the Works.
- Set of tender drawings for the Works.
- Pricing schedule for the Works.
- Declaration of non-collusion.
- Contract programme.
- Warranty.
- Draft log book.

A64.300.040 PRIVACY OF INFORMATION:

The information contained in the tender documentation shall be treated as private and confidential.

A64.300.050 CHECKING DOCUMENTS:

Check the tender documentation for obvious errors and omissions. Should any such errors or omissions be discovered inform the office issuing the documents immediately in writing in order that a correction may be issued before the date for submission of the tender.

A64.300.060 TENDER ACKNOWLEDGEMENT:

Acknowledge receipt of the tender documentation and confirm submission of a tender in accordance with the instructions to tender.

A64.300.070 PERIOD OF VALIDITY:

Tenders must remain open for consideration (unless previously withdrawn) for a period from the date fixed for submission of tenders of not less than 90 days.

A64.300.080 TENDER PROCEDURE:

Refer to the main contract preliminaries.

A64.300.090 ACCEPTANCE OF INSTRUCTIONS:

The submission of a tender will denote the acceptance of an undertaking to comply with all the clauses contained in the tender documentation unless items of non-compliance are identified as part of the tender submission.

A64.300.100 ACCEPTANCE OF TENDER:

The Employer and his representatives

- Offer no guarantee that the lowest, or any tender, will be recommended for acceptance or accepted.
- Will not be responsible for any cost incurred in the preparation of any tender.

A64.300.120 INSPECTION OF SUPPLEMENTARY DOCUMENTS:

Supplementary documents relating to the contract are available for inspection prior to the submission of the tender.

No adjustment shall be made in the tender sum or claim for additional monies or an extension of time allowed due to failure to inspect the above documents and to make due allowance for the information contained therein.

A64.300.130 SITE VISIT:

Before tendering, ascertain the nature of the site, access thereto and all local conditions and restrictions likely to affect the execution of the Contract Works.

- Inspect any existing installations relevant to the works and study any relevant existing records.
- No claims will be allowed after submission of a tender for lack of information or other reasons which could have been resolved by such a visit to the site.
- Arrangements for visiting the site must be made with prior agreement through:
 - The project manager

A64.300.140 RETURN OF DRAWINGS AND SPECIFICATIONS:

The complete tender documentation is to be returned to the office of issue when requested should the Tenderer not be successful in their bid.

A64.300.150 ALTERATIONS TO TENDER DOCUMENTS:

No alterations or erasures to the text of any part of the tender documentation shall be permitted. Any tender containing such alterations or erasures may be rejected.

A64.300.160 TENDER ERRORS:

- Errors in the priced subcontract specification will be dealt with in accordance with the Code of Procedure for Single Stage Selective Tendering 1996.
 - Alternative 2.
(The word 'specification' being substituted for 'bills of quantities').
- In the event of a Tenderer discovering a genuine error in their tender after it has been deposited, attention in writing may be drawn to the error and an amendment submitted. The amendment may be accepted if deposited on or before the time fixed for receipt of tenders.
- No adjustment shall be permitted to the sum inserted in the form of tender after the date and time fixed for receipt of tenders.

A64.300.170 UNQUALIFIED TENDERS:

- Other than as part of an alternative offer as described elsewhere, no account will be taken of any qualification or special conditions that a Tenderer may impose on their tender.
- Any tender containing such additional conditions may be rejected.

A64.300.180 ALTERNATIVES:

- Alternative equipment, specialists or methods of carrying out the works in addition to those described in the tender documents may be submitted. Alternative offers shall be indicated on the

appropriate document and include:

- Details of the alternative equipment, specialist or method proposed.
- Full technical data for each such alternative together with details of any consequential amendments to the design and/or other parts of the works. Demonstrate compliance with any stated British (or other equivalent recognised International) Standards.
 - A detailed breakdown of any omissions or additions to the basic tender sum indicated on the appropriate document.
 - The impact of all proposed alternative equipment or materials on Part L compliance.
- Confirm equivalence in quality, operation and space requirements to those items which have been specified by name. Demonstrate the proposed alternative is fully equivalent to the specified item and identify any constructional, cost, programme, maintenance or other differences
- Include for all necessary measures to ensure alternative manufacturer's equipment and the total installation is equivalent to that specified.
- The Tenderer shall include the costs necessary for re-sizing and reselection of associated equipment (including pipework, ductwork and cable sizes) resulting from the proposed alternative together with all resulting design and coordination.
- Alternative offers will only be considered if accompanied by a compliant tender.

A64.300.190 EXCLUSIONS:

If any part(s) of the Works cannot be tendered as defined in the tender documents, the CA must be informed as soon as possible, defining the relevant part(s) and stating the reasons for the inability to tender.

A64.300.195 INTERPRETATION OF THE TENDER DOCUMENTATION:

- Should there be any doubt about the precise meaning of any item for any reason whatsoever, the tenderer must inform the office of issue of the tender documents in writing in order that the correct meaning may be given.
- Any clarification of the meaning or intent shall be issued in writing only and no other means of communication shall be valid. All Tenderers will be notified of any such explanation.
- No liability will be admitted, nor claim allowed, in respect of errors in a tender due to mistakes that should have been rectified in the manner described above.

A64.300.200 PROCUREMENT OF MATERIALS:

Allow for the procurement of materials and equipment from suppliers at such a time, and in such a manner as may be necessary to allow for the completion of the Works in accordance with the contract programme.

Clearly state in the tender submission any foreseen difficulties with delivery periods for selected equipment or proposed alternatives.

- No additional costs resulting from non-compliance will be accepted.

A64.300.201 A LIST OF PROPOSED MANUFACTURERS/SUPPLIERS:

A list of proposed manufacturers/suppliers of products, equipment and plant, including all items for which the choice of manufacturer/supplier is at the discretion of the Subcontractor, must be submitted

- Within 1 week of appointment.

A64.300.202 SELECTION OF MANUFACTURERS/SUPPLIERS:

Where manufacturers, suppliers or installers of products are not identified by name select products that comply in all respects with the specification and demonstrate such compliance

- Where manufacturers, suppliers or installers of products are identified by name, or names, but reference is made to "Or approved" equivalent alternatives may be selected and shall be submitted to the CA for approval.

A64.300.210 SUBLETTING:

- Where it is proposed to sublet any portion(s) of the Works a schedule must be submitted with the tender.

A64.310.000 TENDER SUBMISSION

A64.310.010 GENERAL:

This section details the particular tender submission requirements shall be as detailed within the main contract preliminaries.

A64.310.031 TENDER STAGE METHOD STATEMENTS:

Method statements must be submitted:

- Before the execution of the Contract.
- When requested by the CA.

Provide the following method statements in addition to those stated elsewhere:

- Health and safety statement to include:
 - Management procedures.
 - Any significant and unavoidable risks that might arise as a result of executing the Works.
 - An outline of the health and safety procedures to be undertaken to safeguard the operatives and of any person who may be affected by the Works.
 - A copy of the company's health and safety policy document including risk assessment procedures
 - Accident records for the last five years
 - Details of any Health and Safety Executive enforcement action
 - Details of staff responsible for health and safety on this project with details of their qualifications and duties.
- Management procedures to be adopted for the project.
- Managing and resourcing of design duties and responsibilities including design capability.
- Commissioning and testing procedures and management.
- Quality control management and procedures.
 - The method statement must:
 - Indicate the quality control programme
 - Demonstrate compliance with the contract in regard to materials and workmanship.
 - Demonstrate the establishment of standards by means of sample installation and submission of samples prior to installation.
- Statement outlining the management team, stating the definition of each person's role, and the commitment to the project.
 - Include the curriculum vitae and references for each of the key personnel that will be used on the project.
 - A line management diagram starting at the site supervisors and rising through the management levels.
 - Details shall be provided for both site and office based teams staff.
- The Tenderer, at his discretion and at the same time, can submit method statements for other parts of the Works.

A64.310.032 PROGRAMME:

Submit with the tender a programme indicating the sequence and timing of the principal parts of the works including periods for planning, design, procurement, installation and commissioning.

A64.310.050 PROPOSALS FOR ANNUAL MAINTENANCE CONTRACT:

Submit with the Tender a supplementary proposal for an annual maintenance contract as detailed elsewhere.

A64.310.060 TECHNICAL INFORMATION:

Technical information relating to the tender must be submitted with the Tender.

A64.320.000 PRICING AND COSTS

A64.320.010 GENERAL:

This section details particular requirements for the pricing of the tender documentation and cost procedures during the contract.

A64.320.020 BASIS OF CONTRACT:

The contract shall be on a lump sum based on the specifications and drawings.

A64.320.030 TENDER PRICING DOCUMENT:

Alterations and qualifications to the specification must not be made without the written consent of the CA. Tenders containing such alterations or qualifications may be rejected.

Costs relating to items in the specification that are not priced will be deemed to have been included elsewhere in the tender.

The Tenderer shall complete all sections of the tender pricing document in full.

Items described in the pricing document are abbreviated for the purpose of the schedule. The Tenderer is to make full allowance for all works associated with the installation of a particular element. Items entered in the pricing document shall be deemed to include all costs involved in carrying out the Works.

- Where required the Tenderer must identify separately the cost of all items specifically described under preliminaries.
- Provisional items will be adjusted at the final agreed rates when information is issued in respect of these items.

A64.320.040 SCHEDULE OF RATES:

A schedule of rates must be submitted

- With the tender.

A quantified schedule of rates accepted by the CA shall only constitute part of the contract in the following respects:

- The descriptions of the works and the rates and prices contained therein shall be used for the purpose of adjusting variations
- The quantities contained therein shall be used to facilitate the preparation and the checking of interim applications for payment
- The provisional and prime cost sums contained therein shall be subject to adjustment in accordance with the rules and procedures contained in the contract conditions.

A64.320.050 ERRORS:

Errors in the priced subcontract specification will be dealt with in accordance with the Code of Procedure for Single Stage Selective Tendering 1996.

- Alternative 2.

(The word 'specification' being substituted for 'bills of quantities')

A64.320.060 PROVISIONAL SUMS:

Include in the contract price the provisional sums of

- Modifications to the incoming electrical supply **£5,000**
- Connection to remote monitoring Centre **£500**
- Unforeseen Work **£4,500**

Any part or the whole of these sums unexpended will be deducted from the final amount due.

A64.320.070 PRIME COST SUMS:

The term Prime Cost Sum shall mean the nett cost paid for an item or items of equipment or material or work executed.

The Tenderer shall indicate the percentage addition required for any profit and costs for handling, ordering and Main Contractor's discount, etc., in addition to P C Sum in

- the forms of tender

A64.320.080 OVERTIME AND ALLOWANCES:

- Include for all necessary overtime and other expenses in the contract price that may be necessary in order to complete the Works in compliance with the contract programme.
- Payment will be made for the extra cost of overtime only if a prior written CA instruction to work such overtime has been issued together with agreement to accept the costs involved.

A64.320.090 SUBMISSION OF FINAL ACCOUNT:

Submit a draft final account to the CA using the contract procedures for checking purposes together with all the necessary supporting documents.

- Immediately after the practical completion of the contract Works.

Prepare the valuation of variations, omissions and provisional work forming part of the Works and where appropriate in accordance with principles defined in this sub-clause.

The basis for the determination of such valuation shall be the Quantified Schedule of Rates prepared and submitted at the time of tender and accepted by the CA.

All valuations as aforesaid prepared shall be submitted using the contract procedures to the CA for approval.

A64.320.100 INSTRUCTIONS AND VARIATIONS:

All instructions shall be issued in writing and confirmed in a similar manner.

Submit the cost of each variation showing the quantities and rates applicable for all materials, etc employed in accordance with the agreed contract schedule of rates. Submit to the CA

- Within 5 working days of the receipt of written instructions.
No work will be certified for payment until all the necessary information is provided.

A64.320.110 DAYWORKS:

Where authority is given for work to be executed on a daywork basis, original vouchers giving the full particulars of hours worked, names of craftsmen and labourers, description of work executed and materials and plant used, must be forwarded to the CA.

Submit to the CA using contract procedures not later than the end of the week following that in which the work has been executed.

The daywork sheets shall be numbered in sequence, and all sheets are to be signed by the

- Agent/foreman responsible.
- Site representative of the CA.

Such signatures are only to be taken as certifying that the time, materials and plant are correct, and shall not be held to justify a claim that the work shall be so charged or that it cannot be measured and priced according to the terms of the contract.

- Dayworks shall be allowed only in the case of works that cannot be measured and valued.

A64.400.000 CONTRACT CONDITIONS

A64.400.010 CONDITIONS OF CONTRACT:

The conditions of the Main Contract are detailed within the main contract preliminaries.

A64.400.040 INSURANCES:

- Under the terms and conditions of the Main Contract the Contractor is required to secure certain policies of insurance, the benefits of which extend to the Sub-Contractor, either partly or in whole. Examine these policies and obtain such supplementary cover as shall be necessary.

A64.400.050 EMPLOYER/SUB-CONTRACTOR FORM OF AGREEMENT:

The Sub-Contractor will be required to enter into an Employer/Sub-Contractor Form of Agreement.

The agreement shall be signed under seal prior to commencing work on site.

A64.400.060 WARRANTIES:

- Enter into the following warranties – Twelve month defects.

A64.400.070 SUB-CONTRACT GUARANTEE BOND:

- Ensure compatibility with the main contract guarantee bond.

A64.410.000 PARTICULAR CONDITIONS

A64.410.010 GENERAL:

This section details particular conditions and requirements for the project.

A64.410.020 INFORMATION PROVIDED BY OTHERS:

Instructions, drawings, or other information required to be provided by the CA will be provided in due time upon written request provided always that such information is not requested unreasonably distant from nor unreasonably close to the date upon which it is necessary.

Provide written request to the CA in good time for any information required.

A64.410.030 PROVIDE EVERYTHING NECESSARY:

Provide everything necessary for the proper execution and completion of the contract works to the true intent and meaning of the contract documents.

- Details of construction or materials which have not been referred to in the contract documents but the necessity for which may reasonably be implied or inferred from the said documents or which are usually or essential to the completion of the Works, shall be installed with no additional cost.

A64.410.040 SUPPLY OF INFORMATION:

The CA will provide supplementary information from time to time as may be necessary to enable the completion of the Works in accordance with the contract conditions. Allow for such progressive release of further information by the CA during the course of executing the Works.

In order to facilitate the orderly and timely production of all further information that shall be considered necessary, submit to the CA for approval a programme indicating the progressive release of such information to enable the completion of the Works in accordance with the contract conditions.

A64.410.041 CO-ORDINATION OF TRADES:

Allow for co-ordinating the contract works with the works of other trades and installations which may be on site during the period of the contract.

A64.410.042 CO-OPERATION WITH OTHERS:

Ensure that the contract works integrates with that of others and that full co-operation is maintained during the execution of the Works with that of others.

Co-operate with the Contractor, other subcontractors, suppliers, local authorities and statutory undertakings in the execution of the Works.

In the event of any extra costs being caused by failure to programme and arrange the execution of the Works so that it fully integrates with that of others, the installer of the Works may be liable for any additional costs thereby incurred.

A64.410.050 NOTICE OF OPERATIONS:

Work that requires interruption or interference with the operation of any existing services or buildings shall not be commenced without prior written permission of the CA.

A64.410.060 NOISE AND NUISANCE:

Ensure that the contract works are undertaken with as little noise as possible.

- Ensure no nuisance by noisy working is caused to
 - occupants of premises next to the site boundary

Take all necessary precautions to prevent nuisance from smoke, rubbish and other causes.

Fit all compressors, percussion tools and vehicles with effective silencers of a type recommended by the manufacturer's of the equipment.

A64.410.070 SUPPRESSORS:

Ensure all internal combustion engines used in the execution of the contract works are fitted with efficient suppressors in the ignition system in accordance with the recommendations of British Standards so as to prevent electrical interference to radio or television receiving equipment in the vicinity.

All temporary electrical installations, such as motors or the like, shall be prevented from creating such interference and shall be fitted with suppressor equipment in accordance with British Standards and to the satisfaction of the CA.

A64.410.080 PROGRAMME:

Provide a detailed programme(s) clearly illustrating how the overall programme

- Will be achieved within the contract period.
- Demonstrate compliance with the Main Contract programme.

Provide the detailed programme

- within one week of the award of the contract

Due allowance is to be made in the programme(s) for, but not limited to, the following:

- Statutory authority approvals including Building Regulations.
- The latest dates for release of final information required from the CA.
- Required method statements.
- Ordering dates and manufacturing periods. The proposed delivery to site for each item of major plant to be clearly defined.
- The period required for the production, approval and issue of:
 - builder's work information
 - co-ordinated working drawings
 - installation drawings
 - manufacturers drawings.

Allow adequate time for the examination and approval by the CA. Actual activities of production, adjustment, resubmission and review must be identified

- Installation periods for each system
- Work resulting from instructions issued in respect to the expenditure of provisional sums.
- Concurrent work by other trades.
- Any temporary works necessary for the completion of the engineering services installations.
- Period required for operating the systems, load simulation tests and final adjustment.
- Environmental load testing.
- Period for instructing the Employer training.
- Pre-commissioning, commissioning and performance testing of the engineering services installations.

- The period required and latest dates for the production, approval and issue of record drawings and operating and maintenance instruction manuals.
- Provide programme information as
 - simple bar chart type.
- Provide a separate and detailed commissioning programme for agreement with the CA. Make due allowance for the following.
 - Commissioning, demonstration and instruction procedures.
 - Provision of written notice before each (or series of) test, inspection, commissioning or demonstration procedures are to be carried out, not less than
 - Demonstration to the CA that test instruments and equipment are accurate.

A64.410.090 PROGRESS:

At regular intervals as agreed with the CA provide progress reports during the execution of the contract works in addition to any other similar information required by the contract conditions.

The reports shall include:

- particulars of materials and equipment on site, or installed
- site labour employed
- progress of the works
- Record progress of the Works weekly on a copy of the programme.

Mark up for inspection and record purposes a set of the latest drawings as the works progress. The progress drawings shall be available for inspection by the CA at any time.

A64.410.100 ORDERING SCHEDULE:

- Prepare an ordering schedule for submission to the CA that shall indicate the following data:
 - Item of material or plant
 - Manufacturer
 - Date of order and reference number
 - Acknowledgement of order and reference
 - Delivery period quoted
 - Date required on site
 - Allowable programme float
 - Date delivered to site
- Update and modify and submit the ordering schedule on a regular basis as agreed with the CA. Indicate on the schedule any possible problems and when delivery to site has been achieved.

A64.410.110 CONTINUITY OF THE WORKS:

No undertaking is given that the works will necessarily be able to proceed continuously.

- No claim will be allowed for discontinuity of work due to the necessity to conform to the contract programme.

A64.410.120 DRYING OUT:

Make due allowance in the sequence of the work to provide heat for drying out. This activity shall not relieve any responsibilities to hand over the installation in good order.

The interim period from the time of commencement of use for drying out to the handover shall not be considered as constituting any part of the defect liability period.

A64.410.130 WORKING HOURS:

Working hours shall be 8am to 5pm.

A64.410.140 ACCESS TO THE SITE:

Access to the site shall be via written agreement with the project manager.

A64.410.180 POLICE REGULATIONS:

Ascertain and comply with any Police regulations or requirements as may affect the contract works.

A64.410.190 USE OR DISPOSAL OF MATERIALS:

- Remove from the site any rubbish and debris arising out of the execution of the contract works
 - on a daily basis.
- Clear all rubbish and any debris arising out of the execution of the contract works to a central area where others will remove it from the site

- on a daily basis.
- Do not discharge any oil, noxious liquids or gases and all water discharged shall be reasonably free from impurities.

A64.410.200 STORAGE:

Weatherproof, safe and secure storage shall be provided for all materials and equipment.

All materials and equipment and materials shall be offloaded, stored and transported in accordance with manufacturer's recommendations.

All electrical equipment and components shall be kept dry and free from dust.

Plug, cap or seal open ends on all ductwork, tubes, conduit, trunking and associated equipment whilst in storage and during transportation to site.

Provide racks to prevent distortion of pipes, conduit and similar materials.

A64.410.210 PROTECTION AND PACKAGING:

All plant, equipment, materials and prefabricated elements of the Works shall be properly packaged and protected against damage during delivery, storage and until fully, finally and properly installed and set to work.

Submit to the CA a method statement on protection proposals for both stored and installed plant, equipment and materials.

Protection shall also include adverse effects of environmental conditions prevalent in the stored and installed location.

Any plant or equipment subject to incorrect storage or inadequate protection will be deemed unacceptable for incorporation into the works and new plant or equipment will be required as a replacement.

Damaged plant, equipment and materials or that suffering from deterioration shall be replaced prior to handover.

All plant, equipment and materials shall be protected against ingress of water and dust, formation of condensation, extremes and rapid changes of temperature, building works and operations of others. All open ends of pipes, ducts, conduit, and trunking etc shall be capped except when being worked upon.

- After removal of any temporary protection paint parts liable to corrosion.

Install items such as grilles, diffusers, light fittings, switches, electrical accessories etc as near to practical completion as practicable.

A64.410.220 CONFIDENTIALITY:

No information related to the contract works shall be given to the press or other media without the written permission of the CA or Employer.

A64.410.230 PHOTOGRAPHS:

No unauthorised photographs of the site or the Works or any part thereof shall be taken except with the permission in writing of the CA.

Photographs shall not be published or otherwise circulated without the permission of the CA.

A64.410.240 MATERIALS USED:

No acoustic insulation or thermal insulation or sound attenuation materials shall be manufactured with any form of animal hair.

All materials supplied shall be a type that will not support bacteria.

Substances publicised by the Health and Safety Executive, Building Research Establishment, British Standards Institution or other authorities or professional bodies as being deleterious to Health and Safety shall not be incorporated into any part of the Works.

Deleterious materials shall not be utilised on any part of the Works. Deleterious materials include but not limited to:

- halon/CFC's
- asbestos or products containing asbestos
- urea formaldehyde or materials which may release formaldehyde
- materials comprised in whole or part of man-made and/or naturally occurring mineral fibres which have a diameter of 3 microns or less and a length of 200 microns or less or which contain fibres not sealed or otherwise not stabilised to ensure that fibre migration is prevented
- lead where the metal or its corrosion products may be directly ingested, inhaled or absorbed
- polyurethane or polyisocyanate foam
- polychlorinated biphenyls (PCBs) or similar compounds

- pentachlorophenol, lindane or tributyltin (TBT) oxide
- extruded polystyrene other than low ozone depletion materials
- any other substances generally known to be deleterious at the time of installation

All jointing materials shall be of a type approved by the respective authority.

Warrant that deleterious materials are not incorporated in the Works.

Notify the CA, in writing, as soon as reasonably practicable of any material designated by the Building Research Establishment, British Standards or codes of practice as deleterious at any time during the contract.

A64.410.250 ADVERTISING:

No form of advertising will be allowed on any part of the site or the Works without written CA approval.

A64.410.270 BENEFICIAL USE OF INSTALLATIONS:

- Systems used before practical completion not for the benefit of the Employer must have all defective consumable elements replaced by new including:
 - lamps and tubes
 - filters

A64.410.280 DEFECTS LIABILITY:

Liability for making good defects in the Works shall be for a period of twelve months from the date of issue of the certificate of practical completion for the installations.

If it is necessary to replace or renew any portion of the contract works as part of liability for defects, the defects liability period in respect of that portion of the contract Works shall be deemed to commence from the date of such replacement or renewal.

The CA may require that new tests be carried out to demonstrate that the plant is continuing to work satisfactorily if the replacement or renewal may affect the efficiency of the Works or any portions thereof.

In the remedying of defects in the contract Works take all necessary precautions to minimise the risk of damage to the buildings, the decorations, the fittings and the equipment.

- In the event of such damage occurring bear the cost of replacement or making good, subject to the proviso of being granted the benefit of any settlement in respect of such damage accepted by the insurers under the insurance policies taken out in accordance with the requirements of the contract.
- Agree with the CA a programme for the carrying out and the completion of any work not finally finished at the time of the contract Works being offered for acceptance and which does not prejudice the issue of a practical completion certificate. This work may be requested to be executed out of normal hours and no additional costs will be accepted for this action.
- Prior to practical completion submit a method statement for the approval of the CA outlining how the defects which arise during the defects liability period will be rectified to ensure that disruption to the use of the building is kept to a practical minimum.
- No additional costs will be accepted for undertaking works executed out of normal hours.
- Prepare and submit records of failures or malfunctions of any part of the contract Works during the defects liability period, together with details of remedial action taken, subsequent re-testing and the results.
- Notify the CA of damage, failures or malfunctions to the contract Works demonstrably caused by incorrect operation of the installations, vandalism or other actions by a third party.
- Inform the CA in writing when all defects are finally rectified so that an inspection may be carried out prior to the issue of a Final Certificate.

A64.410.290 RIGHT OF ACCESS DURING DEFECTS LIABILITY PERIOD:

Right of access will not be unreasonably withheld, at all reasonable working hours and at own risk and expense, to any part of the contract works for the purpose of inspecting the working of the installations or to the records of the working and the performance thereof.

Subject to CA approval, that shall not be unreasonably withheld, undertake any tests considered necessary at own risk and expense.

During the defects liability period and all necessary remedial works and/or rectification of defective materials and equipment liaise closely with the Employer's staff. All such work shall be carried out in such a manner as to avoid or minimise shut-down time and inconvenience to the Employer.

A64.410.300 RATIONALISATION OF COMPONENTS:

Similar items of apparatus and equipment shall be made and provided by the same manufacturer where practicable and corresponding parts of all apparatus and equipment shall be interchangeable to reduce the need for different attention and spares.

A64.410.310 SUPPLY OF COMPUTER HARDWARE AND SOFTWARE:

Obtain on behalf of the end user all appropriate licences, permissions, copyright waivers, rights of use and the like from the owners of the software rights. Ensure that the end user is properly registered with the software supplier for support and appropriate updating. Ensure that application software is written in compliance with BS 7649.

A64.410.320 FIRE PRECAUTIONS:

Take all reasonable fire precautions in respect of stores, workshops and other installations. Where it is necessary to use any naked flame or welding equipment in executing the contract works and where combustible materials are in use, adequate protection shall be given to other adjacent materials and personnel. Suitable fire extinguishers shall be readily available at the position where such work is proceeding.

A64.410.321 INTERFERENCE WITH TRAFFIC:

Maximum facilities for access and transit shall be provided in all works that may interfere with the traffic on the roads, paths and footways. Should any part of the Works be executed in such a way as to cause unnecessary obstruction to traffic with neglect to remove or remedy the same forthwith when called upon to do so, then any obstruction shall be removed and the costs recovered.

A64.410.330 DAMAGE TO STRUCTURE:

- Exercise due care and attention in carrying out the contract works and be fully responsible for any damage caused to the structure or building finishes.
- Obtain permission from the CA before any holes are cut in floors, walls or steelwork, etc.

A64.410.335 METHOD STATEMENTS:

- Submit method statements to the CA prior to commencement of the contract works for the following work activities
 - Each item of work

A64.410.340 INSPECTION BEFORE CONCEALMENT:

Whenever work requiring inspection or testing is subsequently to be concealed give the following the notice to the CA so that inspections may be made or tests witnessed before concealment

- 5 working days notice

A64.410.350 EQUIPMENT GUARANTEES:

Plant and equipment guarantees shall commence at the date of practical completion and run for a minimum of 12 months after this date.

Any costs associated with this requirement shall be included in the contract price.

A64.410.360 SITE MODIFICATIONS:

Site modifications to assemblies shall not be made without written approval of the CA.

Where site modifications to assemblies are authorised undertake in accordance with manufacturer's certified drawings and instructions.

Ensure that all modifications undertaken comply with the relevant standards and all test certification obtained.

A64.410.370 DIMENSIONS:

- Where installations are dependent upon site dimensions ensure that these are available before proceeding with the Works.
- Dimensions should not be scaled from drawings.
- Where dimensions are indicated on drawings check these on site, as appropriate, to ensure building construction tolerances and manufacturing tolerances can be accommodated.
- Equipment should not be ordered or manufactured using dimensions indicated on the Tender drawings.

A64.430.000 QUALITY

A64.430.010 QUALITY CONTROL:

Prepare and submit to the CA a method statement to indicate fully the quality control programme for the contract works

Time scale

- Within one week of contract appointment

A64.430.020 WORKMANSHIP AND MATERIALS:

All materials, articles and workmanship shall be of the best quality and execution as detailed in the specification and drawings.

All equipment and materials to be installed shall be new unless otherwise indicated.

All equipment shall be installed in accordance with the manufacturer's written instructions and recommendations.

All materials considered by the CA to be unsound or not in accordance with the specification shall immediately be removed and properly replaced to the satisfaction of the CA at no additional cost. All work carried out imperfectly or with faulty materials must be immediately removed and properly replaced to the satisfaction of the CA at no additional cost.

The manufactured articles specified shall serve as a quality standard.

Where manufactured items are not specified by name submit with the tender all necessary details of proposed articles. The CA shall approve these articles before their use is permitted.

A64.430.030 DEFECTS:

Agree with the CA a system of recording defects that should include

- A reference to identify the defect
- Description of the defect
- Remedial works proposed
- Agreement to remedial works proposed
- Confirmation of defect clearance

A64.500.000 ORGANISATION

A64.500.010 SITE STAFF:

- Employ a competent full-time site based project manager/engineer and supporting team dedicated full time to the project and not involved in the installation of the Works who shall have full authority to act in connection with the contract works.
- Staff of sufficient number and competence in the opinion of the CA, shall be provided as necessary for design, drawing and technical information production, programming and administration to ensure efficient and satisfactory execution of the contract works.
- Provide all necessary superintendence during the execution of the contract works. The said staff shall be in attendance on site during the whole time that work is in progress.
- Employ on the site suitable qualified engineering staff to be in charge of the contract works from commencement to completion. The said staff shall be in attendance on site during the whole time that work is in progress.
- Responsibility for all drawings and technical information production shall be undertaken by a nominated engineer
- Curriculum Vitae shall be submitted with the tender for
 - all key staff
- Any change made to the appointment of staff during the contract works shall be agreed with the CA with maximum notice being provided.
- If the CA is of the opinion that any member of the site staff has been guilty of a serious breach of his duties, he may by notice require that person to be replaced within one week of the notification.

A64.510.000 SUBMITTALS AND APPROVALS

A64.510.010 GENERAL:

This section outlines the requirements and procedures for submittals to the CA.

A64.510.020 SUBMITTALS:

Prior to any orders being placed the CA shall review all drawings and manufacturer's details.

Submittals shall be in a clear, definable and easily read format with the specified technical details, notes, performance data and calculations where applicable all in the English language.

Where drawings are to be examined the manufacturer's details shown on the drawings must have been previously approved.

Agree with the CA where samples of materials offered for review are to be sent.

Issue progressively drawings, calculations and submittals as agreed in advance with the CA for review.

The timescale for review or comment or otherwise on all submittals shall be five working days.

A64.510.030 SCHEDULE OF DRAWINGS AND SUBMITTALS:

Provide a schedule of all proposed drawings and submittals required for comment. The schedule shall be provided

- weeks from contract appointment

Indicate as a minimum the following information on the schedule:

- Drawing number and revision number
- Drawing title and service
- Scale
- Latest date required on site and/or for manufacturing purposes
- Date required for final comment
- Date for submission for comment
- Date of commencement of drawing production

The schedule shall be updated as necessary on a regular basis at intervals agreed with the CA during the contract period.

The programme for production of drawings and other submittals should include the necessary time for:

- Submission
- Examination
- Alterations and re-submission in the event of the initial submission not being accepted
- Final issue

Allow adequate time in the programme in order not to cause delays.

The full extent of all submittals shall be indicated in the schedule.

Group submittals for a particular part of the building or building engineering service as agreed with the CA.

A64.510.050 EQUIPMENT PERFORMANCE DETAILS:

Details of the equipment selected for inclusion into the Works shall include the following information:

- Plant item description, reference identification and serial number.
- Electrical input rating - kVA, Volts, Phase.
- Operating mode - duty, standby, generator etc.
- Starting characteristics - starter type, current, starts/hour and starting time.
- Performance characteristics - (full load current and power factor).
- Noise level.
- Weight.

The format of the information shall be as agreed with the CA.

A64.510.051 PREPARATION OF DRAWINGS:

Agree with the CA a document numbering system prior to preparing any documents.

All drawings shall be prepared using a computer aided draughting system and the software used to produce drawings shall be approved prior to commencement of drawing production.

Each service shall be represented by a separate layer/overlay, for subsequent easy modification.

Prior to commencement of drawing production agree the sequence of layers, pen colours and sizes.

The medium for transfer of information shall be

AutoCad drawing files shall be

- DWG

A64.510.060 REVIEW OF SUBMITTALS:

Submittals will be examined for

- compliance in principle with the design intent

Such examination shall not relieve any responsibilities and obligations under the contract.

Examination of any submittal by the CA shall not mean that the CA is responsible for the correctness of the drawing or submittal or its suitability for purpose. These responsibilities shall remain as defined elsewhere and as the contract.

Allow adequate time in the programme for submittals with due allowance for incorporation of comments and resubmission in order not to cause delays.

Each package shall contain all drawings, design calculations, support information, manufacturer's literature, etc necessary to facilitate examination by the CA.

Revised items on drawings shall be clearly indicated and annotated with a revision number/letter.

Submittals will be returned indicating "A", "B" or "C" action.

"A" action

- Examined no comments
- Examined for construction purposes

"B" action

- Examined subject to minor amendments
- Examined subject to incorporation of comments indicated
- For construction provided that work is in compliance with comments made

"C" action

- Examined subject to major amendments
- Rejected with or without comments

In this case the drawings shall be re-submitted after correction or with further information added.

Drawings and submittals with "B" or "C" action shall be adjusted/revised for comments immediately and re-submitted to the CA within five days or earlier if site progress dictates.

Where drawings are revised and updated during the construction stage these shall be issued to the CA for examination of the revision only, the revision being clearly marked.

- Builder's work information and installation drawings shall not be examined in detail but shall be examined by the CA for general suitability.
- Record drawings are to be prepared as the contract works progress and shall be examined in the same manner as for other submittals.
- The timescale for review or comment or otherwise of record drawings shall be

A64.510.070 MISTAKES IN SUBMITTALS:

Examination and/or issue on a CA instruction of submittals shall not be deemed to remove any duties, obligations and responsibilities under the contract.

Be responsible for any error, discrepancy or omission in any submittal, presentation or drawing prepared or where others have prepared these for submittal.

The said indemnity shall be subject to the proviso that such error, discrepancy or omission is not due to any inaccurate data, drawing or information provided by the employer or by the CA on his behalf.

A64.510.081 FORM AND NUMBER OF SUBMITTALS TO BE PROVIDED:

All submittals shall be issued to the

- CA
- Provide drawn information in the following forms:
 - Initial copies for comment
 - CAD format
 - comply with BS EN ISO 13567
 - Final copies for distribution
 - CAD format
 - comply with BS EN ISO 13567
- Provide copies of drawn information as follows:
 - Sketch drawings
 - Sketch Schematic drawings
 - Detailed Schematic drawings
 - Detailed design drawings
 - Co-ordination working drawings
 - Installation drawings
 - Manufacturer's drawings
 - Builder's work information
 - Record drawings
 - Site record copy in print form – Two Number

A64.510.090 REVISIONS TO DRAWINGS:

Where revisions take place either under the authority of a CA instruction, or by written agreement with the CA or when revised architectural, structural or services information is issued, all drawings shall be modified accordingly and shall be re-issued for construction purposes subject to examination by the CA.

The issue of revised drawings shall be in accordance with and with regard to the agreed programme for construction and where time is available re-issues shall be grouped together, as agreed with the CA.

A64.520.000 OBLIGATIONS AND RESPONSIBILITIES

A64.520.010 GENERAL:

- Undertake the responsibility for resolving final spatial co-ordination.
- Undertake specific detailed design tasks as indicated elsewhere in the specification.
- Prepare construction programmes for the Works as stated elsewhere and for design activities.
- Co-ordination of the engineering services, with each other and with the building structure and fabric.
- Undertake all on-site co-ordination with all other trades, disciplines, manufacturers and suppliers.
- Undertake the role of lead co-ordinator and agree principles of co-ordination with all parties concerned.
- Incorporate details provided by others into the
 - Design development.
 - Installation information.
- Provide the following drawings as defined elsewhere
 - Co-ordinated working
 - Installation
 - Manufacturer's
 - Record
- Carry out final detailed location and dimensioning of second fix equipment based on architectural information
 - Luminaires
 - Control devices
 - Electrical switches, outlets etc
- Prepare such reports, calculations and details as required for submission to any appropriate authority including the co-ordination of such information by suppliers, specialists, etc needed to be included in any submission.
- Seek full statutory approval of the Works and arrange all necessary attendance, documentation to ensure full approval.
- Demonstrate that all plant and equipment incorporated into the works can be safely and easily maintained in compliance with current legislation.
- Provide compliance statements for all selected plant and equipment demonstrating full compliance with the specification prior to order and commencement of the Works. Highlight for review all non-compliances.
- Fully re-evaluate and take full responsibility for all parts of the design and building elements that may be affected by acceptance of alternative plant selections
- Modify the final detailed spatial co-ordination for approved alternative equipment or materials.
- Supply, deliver to site, unload, store, protect and co-ordinate movement of all plant, equipment and materials required for the Works including lifting and hoisting.
- Fix and install correctly all plant, equipment and materials and ensuring that all associated works are correctly executed.
- Inspect all plant, equipment and materials as delivered or where specified at the manufacturer's works. Inspection and/or tests to be carried out at the manufacturers' works jointly with the CA for equipment as stated elsewhere. Include for the travel and other expenses of the CA for the inspection and/or tests to be carried out at the works.
- Prepare detailed electrical wiring diagrams of all equipment supplied showing all interconnections between equipment to enable all necessary wiring to be undertaken
- Check software engineering and programming is completed so that systems function in the prescribed manner.
- Provide:
 - Removal of rubbish and redundant materials.
 - Clearance on completion.
- Seek utility company comments on the spatial requirements and builder's work associated with the provision of incoming services.
- Assist and collaborate with others in liaison with Statutory Authorities with respect to Building Regulations approvals and compliance. Prepare supporting documentation.

A64.520.015 BUILDER'S WORK OBLIGATIONS AND RESPONSIBILITIES:

- Check the provisions for, and adequacy of builder's work information previously issued prior to the award of the contract.
- Check the spatial requirements and adequacy of builders work information previously issued by others for utilities works.
- Provide final builders work details based on the installation and manufacturer's drawings to facilitate the installation of the works. Provide fully dimensioned drawings showing both size and position of builder's work making due reference to the structural engineering and architectural final dimensioned detailed drawings.
- Detail all access requirements including access to false ceilings and ducts for maintenance. Provide fully dimensioned and annotated drawings.
- Undertake the redesign of the associated builder's work for approved alternative equipment or materials which subsequently varies the works in any way whatsoever.
- Detailed design and locations of brackets and supports.
 - Submit details of all types of brackets and supports including fixing details.
 - Submit load and thrust calculations.
- Design, supply and installation of support for plant and services.
 - Steelwork.
 - Brackets.
 - Hangers and clips etc.
- Detail and supply sleeves, inserts, frames, fixing anchors etc., and any other items required to be cast or built into the structures by others, including coordination of positions to such extent and accuracy to allow structural construction to proceed.
- Detail design, supply, installation and co-ordination of all access platforms, access covers, gratings, ladders, stairs, rails and protecting elements required for future maintenance and operation of plant/equipment.
 - Provide fully dimensioned and annotated drawings.
- Undertake and detail all fire stopping and sleeving systems for the Works where they pass through fire compartments.
- Detail and install fire barriers where a fire rated partition is penetrated.
- Undertake and detail the weatherproofing of all services passing through external elements of the building.
- Undertake and detail all acoustic stopping associated with the Works.
- Detail the final requirements for access to ceiling voids and builder's work ducts for maintenance and operation.

A64.520.025 ELECTRICAL SERVICES:

- Selection of fuse sizes installed in plug tops appropriate for the rating of the connected equipment.
- Design of cable or cable containment terminations on to electrical equipment.
- Detailed design of earthing and bonding requirements for:
 - Electrical engineering services.
 - Mechanical engineering services.
 - Architectural elements.
 - Structural elements.
- Check that cable size selections as specified are not invalidated by the selection of alternative routes during installation or selection of alternative manufacturers.
- Detailed sizing, location, routes and design of electrical containment systems
 - Trunking.
 - Tray.
 - Supporting structures, brackets, fixings etc.
- Design of electrical conduit systems including capacity, location, routes and fixing.
- Undertake a study to determine compliance with G5/4 and BS EN 61000-2-4 (electromagnetic compatibility)
 - Assimilate all relevant technical data including the final selected equipment from all parties prior to the study being undertaken.
 - Issue a report on the study findings in due time to suit the requirements of the programme for the Works.
- Verify spatial requirements, routes and anchor points for cable pulling.
- Provide a report confirming the final metering strategy as installed.

A64.520.040 EXISTING SERVICES OBLIGATIONS AND RESPONSIBILITIES:

- Remove all services as identified within Section C10 of the specification.
- Prepare method statement(s) for the removal of the stated existing services including
 - Risk assessments.
 - Permit to work.
- Determine and define any physical site restrictions, constraints and hazards which may affect the undertaking of visual inspections, including health and safety matters, prior to commencement of the Works.
- Assess the general condition of the following services, based on visual inspection, indicating any faults or defects found and recommended where further specialist investigation is required.
Prepare a report.
 - Prior to commencement of works
- Determine the presence of deleterious materials relating to the services. Submit a report to the CA. The contractor shall note that the building is known to contain asbestos. ***The contractor shall be responsible for undertaking a full demolition and refurbishment survey of the building.***
- Advise on the requirement for any urgent works or required action as a result of non-compliance and any parts of the services installation found to be potentially hazardous.
- Identify special training and other requirements that should be satisfied before commencement of the Works.

A64.520.045 COMMISSIONING:

- Undertake the testing, commissioning, regulation and setting to work of the Works.
- Design all necessary facilities required for setting to work commissioning and testing of the completed installations.
- Appoint an independent specialist responsible for the testing and commissioning.
- Ensure that the commissioning requirements are compatible with any project restraints concerning sectional handover/ phasing.
- Review all designs to ensure that systems are commissionable and highlight for review by the CA any considerations in respect of commissioning.
 - Provide a statement
 - Prior to commencement of the Works.
- Provide a report signed, by a competent person confirming, prior to installation that all system designs can be commissioned.
- Incorporate into the systems design the essential components and features necessary to enable the proper preparation and commissioning of the building services.
- Prepare comprehensive commissioning method statements including procedures, logic diagrams and risk assessments for:
 - Pre-commissioning checks.
 - Setting to work.
 - Commissioning and testing.
 - System proving.
 - Environmental testing of the Works.
- Prepare flushing, chemical cleaning and water treatment method statements, logic diagrams and programme
 - On appointment.
- Produce a detailed commissioning programme
 - On appointment.
- Establish procedures with all parties to allow the demonstration of normal, emergency, shutdown and standby mode operation of plant and systems.
 - Prepare method statement
- Provision of all necessary facilities to enable tests to be witnessed and inspections carried out including all necessary instruments and recorders to monitor systems during the commissioning and environmental proving period.
- Produce record pro-forma documentation for review by the CA relating to the commissioning and testing of plant and systems
 - On appointment.
- Co-ordinate the activities of:
 - Specialists.
- Ensure all certification is attained and witnessed as necessary for inclusion in the record documentation.
- Maintain a log of all significant activities during the testing, commissioning and system proving

process.

- Record all plant and system settings.
- Provide and submit a report for every test, demonstration, balance or commissioning activity witnessed, together with an engineering appraisal on the performance, either on or off-site.
- Provide a final commissioning report, signed by a competent person, detailing the results of the commissioning and commenting on the performance of systems. The report to confirm that each installation is correctly tested and commissioned, achieves the specified performance and in accordance with CIBSE Code M.
- Demonstrate that equipment is capable of the performance and method of operation specified.
- Demonstrate that the overall and complete systems perform correctly in the required manner and as intended by the specification.

A64.520.050 HANDOVER:

- Appoint an independent specialist author for the production of operating and maintenance manuals. The specialist shall be ELECI-TEC LTD (Tel: 07837 166938) or equal and approved.
- Prepare operation and maintenance manuals in accordance with the specified requirements. Ensure that information needed for inclusion in the operating and maintenance manuals is obtained as the works progress. Identify individual sources of information.
- Produce record drawings.
- Modify the record drawings as the works progress so that all alterations from the installation drawings are recorded as the work proceeds
- Modify and update operating details to reflect commissioning results.
- Record all water, gas and electricity meters on completion of the works.
- Prepare planned preventative maintenance schedules for
 - 12 months from practical completion.
 - On appointment.
- Instruct the Employer's staff in the use, operation and maintenance of the installations.
- Fully operate and maintain the installations in accordance with the Employer's normal occupational requirements prior to practical completion.
- Prepare a schedule of all spare parts require for the works including recommendations of any others not stated in the specification.
- Prepare a schedule of all tools required for the works including recommendations of any others not stated in the specification.
- Supply and handover over:
 - All tools.
 - Spares
 - Keys

A64.520.055 DURING THE 12 MONTHS AFTER PRACTICAL COMPLETION:

- Record all plant and system settings following any fine tuning activities.
- Fine tuning activities
 - Assess the need for fine tuning of the Works and prepare statement.
 - Prepare programme in advance and agree with CA.
 - Arrange for the relevant parties to be retained and appointed to provide input to fine tuning activities.
 - Planned with regard to the health and safety of occupants and such that any disturbance to them is minimised.
 - Attended meetings to deal with issues arising from fine-tuning of the Works.
 - Carry out visits to undertake fine tuning of the Works
 - As stated elsewhere.
- Provide a mechanism by which the Employer can provide feedback on the performance of the building both before and after fine tuning.

A64.530.000 LOCAL AUTHORITY REQUIREMENTS

A64.530.010 GENERAL:

This section details the requirements for compliance with Local Authority By-laws.

A64.530.020 STATUTORY AUTHORITY APPROVALS:

- Make full and formal submissions to Building Control/District Surveyor at the earliest opportunity to ensure the approval of the Statutory Authorities for the proposed installation works.

- Notify the District Surveyor, Building Control Officer and Fire Officer directly in respect of all tests and demonstrations relevant to life safety installations, and include for all necessary attendance, documentation, etc., to ensure full Statutory Authority approval of the installation.
- Include for all fees and charges legally required under such Act of Parliament, Regulations or By-Laws in respect of the Works.

A64.530.030 AUTHORITY NOTICES:

- Documents requiring the Employer's signature shall be forwarded to the CA in time to meet the contract works programme in order for the necessary test and supply arrangements to be made.
- No additional costs or extension to programme shall be allowed due to reconnections, revisits etc by supply authorities or failure to programme the works.

A64.530.040 BYE-LAWS, NOTICES, ETC:

Observe and comply with the requirements of all Statutes and Bye-Laws.

Serve notices on the Authorities having control of the road surfaces before the same are broken up and likewise serve notices on the owners of sewers, drains, water, gas or other mains, electric cables, tramways and other services which may in any way be affected by the execution of the Works. Inform all necessary parties when work necessitates such notices to be given.

A64.540.000 HEALTH AND SAFETY

A64.540.010 GENERAL:

- Refer to the Main Contract Preliminaries for the requirements of safety, health and welfare.
- Conform to all safety rules, regulations and codes of practice.
- Check that facilities provided by others fulfil the obligations and advise accordingly.
- Provide all necessary first aid facilities.
- Appoint a "competent person" on the site to manage health and safety during construction.
- Ensure, so far as is reasonably practicable, that all persons employed on, or visiting, the site are adequately informed, instructed, trained, supervised and equipped such that they are able to carry out their duties safely.
- Ensure that safety helmets and other necessary protective clothing are available to site visitors.
- All safety helmets and protective clothing must comply with the latest British Standards.
- Ensure that only authorised persons are allowed into any construction area.
- Ascertain the accuracy and sufficiency of information provided by the Employer or the CA to ensure the safety of all persons and the Works.
- Wherever possible labour saving lifting devices shall be used and materials sized to allow easy manual lifting.

A64.540.020 CDM REGULATIONS:

- The management of health and safety is to be undertaken in conformity with the requirements of The Construction (Design and Management) Regulations 2015, and the corresponding Approved Code of Practice.
- Comply with the requirements of the CDM Regulations by
 - Compiling risk assessments
 - Preparing method statements
 - Providing information on the contract works that might affect the health and safety of any person
 - Providing all necessary input to the Pre-Construction Information and Construction Phase Plan
 - Providing all necessary input to the health and safety file
- Supply any method statements and comply with all CDM procedures required by the CDM co-ordinator and the Principal Contractor.

A64.540.030 PRE-CONSTRUCTION INFORMATION AND CONSTRUCTION PHASE PLAN:

- The Pre-Construction Information provides information required by the CDM Regulations and highlights significant risks to health and safety identified during the design stage.
- Produce the Construction Phase Plan in accordance with the requirements of the CDM Regulations prior to the commencement of works on site
- The Construction Phase Plan shall not be limited to those particular risks identified in the Pre-Construction Information but shall include consideration of all reasonably foreseeable risks
- The Construction Phase Plan must be adequately developed, as far as is reasonably practicable

allowing for any phasing of works, etc., in sufficient time to allow it to be submitted for approval prior to the commencement of any works on site.

- In the case of phased works the health and safety plan relating to the work content of any phase must be adequately developed and submitted for approval prior to the commencement of any work within that phase of the project.
- Where design activities are undertaken or there is involvement in the design of any elements of the contract works co-operate with and provide information to the CDM co-ordinator in accordance with the designer's duties under the CDM regulations.
- Ensure that all sub-contractors are issued with copies of the Construction Phase Plan prior to the submission of their tenders and that they price for compliance.
- Ensure that all sub-contractors complete appropriate assessments of the risks to health and safety in respect of their works as required under applicable statutory legislation, including The Management of Health and Safety at Work Regulations, The Control of Substances Hazardous to Health Regulations and The Control of Substances Hazardous to Health (Amendment) Regulations 2003.
- The Construction Phase Plan shall be reviewed and revised as necessary in line with any information received or any changes in the requirements of the contract works. Any changes shall be promptly advised to all relevant parties.
- Ensure, so far as is reasonably practicable, that all sub-contractors, employees and self employed persons who are at work on the construction of the project conform with the requirements of the Construction Phase Plan.

A64.540.040 COSHH REGULATIONS:

- Comply with The Control of Substances Hazardous to Health Regulations and The Control of Substances Hazardous to Health (Amendment) Regulations 2003.
- Provide with the tender an assessment of the risks in undertaking the contract works
- Provide with the tender a method statement on the steps proposed to meet the requirements of the Regulations
- Undertake COSHH assessments for all activities and substances provided or used on site to assess their potential health hazards.
- Copies of all relevant COSHH assessments must be issued to the operatives concerned and strictly monitored. Particular attention must be given to the use of glues and sealant.
- Where the use of substances falling within the scope of the Regulations forms part of the contract works notify the CA in writing, together with the additional costs, if any, of use of non-hazardous alternative.
- Ensure during the course of the contract works, and under all circumstances, that all substances falling within the scope of the Regulations are positively so identified at all times and that they are transported, handled, stored, used and disposed of in strict accordance with their manufacturer's/supplier's recommendations.
- Where use of substances falling within the scope of the Regulations are required for the operation and maintenance of the completed contract works, ensure that
 - Suitable facilities are available for the on-site storage of such substances and that all necessary warning/instruction notices are provided at the point of their storage and use
 - Provision of any special protective clothing, eye protection and similar safety equipment for the operation and maintenance of the Works and in sufficient quantity for
 - 1 year operation
 - Employer's staff have been fully trained in the use, handling, storage, transport and disposal of the substances concerned prior to handover.
 - The type, use and control of the substances have been fully and correctly identified in the operating and maintenance manuals/health and safety file.

A64.540.050 ASBESTOS:

- The electrical contractor shall appoint an asbestos removal company to undertake a demolition and refurbishment survey of the affected works areas.
- No material or goods containing asbestos shall be incorporated in the contract works.
- Be responsible for certifying at practical completion of any section of the contract works that no asbestos or asbestos related materials have been incorporated or by any sub-contractor employed.

A64.540.060 RISKS TO HEALTH AND SAFETY:

Submit a statement with the tender describing any significant and unavoidable risks which may arise as a result of carrying out the contract works and the measures proposed to safeguard the health and safety of operatives and of any person who may be affected by the contract works.

A64.550.000 BUILDING REGULATIONS REQUIREMENTS

A64.550.010 GENERAL:

This section details the requirements for compliance with the Building Regulations.

A64.550.020 BUILDING REGULATIONS APPROVALS:

- Make full and formal submissions to Building Control/District Surveyor/Approved Inspector at the earliest opportunity to ensure the approval of the relevant Authorities for the proposed installation works.
- Notify the District Surveyor, Building Control Officer and Fire Officer directly in respect of all tests and demonstrations relevant to life safety installations, and include for all necessary attendance, documentation, etc., to ensure full relevant Authority approval of the installation.
- Include for all fees and charges legally required under the Building Regulations in respect of the Works.

A64.600.000 THE SITE

A64.600.010 GENERAL:

This section outlines information on the site.

A64.600.020 SITE LOCATION:

The site is located at Victory Park, Cainscross.

A64.600.030 DESCRIPTION OF THE SITE:

A64.600.050 RISKS TO HEALTH AND SAFETY:

- The nature and condition of the site/building(s) cannot be fully and certainly ascertained before opening up.
- The following risks are or may be present – The existing building is known to contain asbestos. The electrical contractor shall employ a specialist to undertake a demolition and refurbishment survey of affected works areas and shall appoint a specialist to remove and dispose of existing asbestos containing aertex ceilings.

The employer or the CA do not guarantee the accuracy and sufficiency of this information:

Undertake responsibility to obtain any information required to ensure the safety of all persons and the Works.

Comply with the requirements of the CDM Regulations by

- compiling risk assessments for the contract works.
- providing information on the contract works which might affect the health or safety of any person.
- providing appropriate input to the Construction Phase Plan and health and safety file for the works.

A64.610.000 EXISTING SERVICES

A64.610.010 GENERAL:

This section provides information on existing services.

A64.610.020 EXISTING MAINS/SERVICES:

Existing mains/engineering services comprise of Public Utility Supply, LV Distribution, Lighting, Small Power, Security Services, Fire Alarm,. Existing services do not need to be maintained during the construction program.

A64.610.040 RISKS TO HEALTH AND SAFETY:

- The nature and condition of the existing services cannot be fully and certainly ascertained before opening up.
- The following risks are or may be present - The existing building is known to contain asbestos. The electrical contractor shall employ a specialist to undertake a demolition and refurbishment survey of affected works areas and shall appoint a specialist to remove and dispose of existing

- asbestos containing aertex ceilings.
- Undertake responsibility to obtain any information required to ensure the safety of all persons and the Works.
- Comply with the requirements of the CDM Regulations by
 - compiling risk assessments for the contract works.
 - providing information on the contract works which might affect the health or safety of any person.
 - providing appropriate input to the Construction Phase Plan and health and safety file for the works.

A64.610.060 REMOVAL OF EXISTING SERVICES:

All services identified within C10 shall be removed and disposed in accordance with the WEEE directive.

A64.610.070 SURVEY:

- Ascertain the nature of the site and all local conditions and restrictions likely to affect the execution of the Works.
- Before commencing work, carry out a survey and examination of the engineering services.
- Examine all available drawings of the engineering services and report any discrepancies to the CA.

A64.700.000 DESCRIPTION OF THE WORKS

A64.700.010 GENERAL:

This section outlines the extent of the works and provides a description in a brief manner of the scope of each of the building services installations.

A64.700.020 SCOPE OF WORKS:

The engineering services included in the Works and covered by this contract comprise:

- Electrical services.

A64.700.030 EXTENT OF THE WORKS:

The extent of the Works is as follows:

- Electrical services
 - Incoming electrical supplies.
 - Low voltage distribution and switch-gear.
 - Sub-mains distribution.
 - Power installation.
 - Lighting installation.
 - Emergency lighting.
 - Telephone systems.
 - Data systems.
 - Security Alarms
 - Fire alarm systems.
 - Earthing and bonding.
 - Mechanical services field wiring.
 - Spares and tools.
 - Testing and commissioning.
 - Record documentation.

A64.700.040 DESCRIPTION OF THE WORKS:

The following clauses describe in a brief manner the extent of the engineering services.

A64.710.000 GENERAL DESIGN CRITERIA AND STANDARDS

A64.710.070 PLANT OPERATING CONDITIONS:

- Ensure all plant items are suitable for operation in the environment in which they are to be located.
- Ensure all plant, motors, starters and ancillary equipment etc. are suitable for operation at full capacity under the following conditions
 - Height above sea level not exceeding 1000m.
 - Air cooling at an average temperature over 24 hours not exceeding 35°C dry bulb.

- Maximum conditions of 40°C dry bulb and 50 per cent relative humidity.
- Supply voltage approximately sinusoidal
- Atmospheric dust condition, as defined in BS ISO 5011,(mg/m³)
- Provide equipment for operation in the following areas
 - with the environment as specified below
 - Internal
 - Temperature 0 to 40°C
 - External
 - Temperature -20 to 50°C
 - Provide sun shielding
 - Protect equipment to BS EN 60529
 - IP 65

A64.710.090 ELECTRICAL WIRING:

Where systems are specified as being maintained under fire conditions ensure wiring selected is suitable for the temperatures to be encountered.

A64.710.110 STANDARDS AND REGULATIONS:

- Unless stated otherwise the Works shall comply with the appropriate British Standard (BS) or Code of Practice (CP) and where no BS or CP is applicable comply with
 - The Agreement Certificate for the particular item.
 - CIBSE recommendations and guides to current practice.
 - BS 7671 Requirements for Electrical Installations
 - Guidance published by IEE and IET.
- Ensure all equipment and systems are designed and installed in accordance with the relevant standards and that operational compatibility exists between the systems and any other system installed in the same location.
- All product and materials shall have product conformity certification (eg BSI Kitemark, BSI Safety Mark or CARES scheme) or product approval (eg British Board or Agreement Certificate)
- All products must have the recognised 'CE' mark attached.
- Provide certificates of compliance with British Standards, BSI Certification Schemes, and/or other Quality Assurance Schemes
 - when requested by the CA.
- In the absence of specific design, performance or installation standards being stated seek the instructions of the CA prior to commencement of the Works and with adequate time so as not to cause delay.
- When new editions, versions and amendments are published during the construction, seek the instructions of the CA with respect to any modifications or changes necessary.
- References to BSI documents shall be to the versions and amendments listed in the British Standards Catalogue and in subsequent issues of BSI Update Standards up to
 - one month prior to the tender issue date.
- The tender shall be based on the standards and regulations current
 - one month prior to the issue date of the tender.
- As requested by the CA keep copies on site, readily accessible for reference by all supervisory personnel
 - relevant BS Codes of Practice

A64.710.130 ELECTROMAGNETIC COMPATIBILITY:

- Ensure all equipment and systems are installed to provide electromagnetic compatibility within the system and with any other systems installed in the same area.
- Ensure all systems and buildings are assessed for protection to, and that such protection meets the requirements of BS EN 62305.
- Ensure all equipment meets the requirements of the appropriate electromagnetic compatibility standard.
- Household electrical appliances, portable tools and similar apparatus.
 - BS EN 55014.
 - Fluorescent lamps and Luminaires
 - BS EN 55015.
 - Information technology equipment
 - BS EN 55022.

- Mains signalling
 - BS EN 50065.
- Ensure all apparatus covered by the Wireless Telegraphy Act meets regulations issued by Ofcom.
- Ensure all equipment and systems meet the requirements of BS 6701 and BS EN 41003.
- Ensure that all cable installations meet the minimum separation in BS 7671 and BS EN 50174.

A64.710.160 FACILITIES FOR REMOVAL OF EQUIPMENT:

- De-coupling facilities shall be provided for all services connections to equipment and plant and be located adjacent to the equipment such that any removable section, cover or the complete unit can be readily removed or withdrawn without the removal or disturbance to large sections of adjacent services.
- Ensure isolation and drain down of any item of equipment without isolating large sections of the remaining system.

A64.710.170 SOFTWARE:

Obtain on behalf of the end user all appropriate licences, permissions, copyright waivers, rights of use and the like from the owners of the software rights. Ensure that the end user is properly registered with the software supplier for support and appropriate updating. Ensure that application software is written in compliance with BS 7649.

A64.710.180 EU DECLARATION OF CONFORMITY:

Provide an EU Declaration of Conformity prior to delivery to site.

- For all equipment.

The declaration shall state the following as a minimum:

- The manufacturer or his authorised representative.
- Description of equipment.
- The harmonised standard(s) that have been applied.
- The signatory who has been empowered to enter into commitments on behalf of the manufacturer.
- The last two digits of the year in which the CE marking was affixed.
- Where only a Declaration of Incorporation for component parts of the assembly can be provided advise all aspects to be considered to enable others to provide a Declaration of Conformity.

A64.720.000 BUILDERS WORK

A64.720.020 BUILDER'S WORK RESPONSIBILITIES:

- The requirements for and responsibilities with regard to builder's work items are in addition to that normally provided as is normal custom and practice in the building industry.
- Confirm and amplify any information provided by the CA.
- Provide builder's work information, appropriate to the stage of design development. Revise, supplement and/or issue final information, drawings/details for the actual requirements of the contract works.
- Provide fully dimensioned drawings showing both size and position of builder's work making due reference to the structural engineering and architectural final dimensioned detailed drawings.
- As approved by the CA Mark out on site, all cut holes and chases required, any pockets cast in concrete, any inserts, any built in sleeves or similar items.
 - All builders work information shall be provided to comply with the programme and include sufficient time for the necessary approvals.
- All materials provided for fixing by others are to be included in the contract works cost and supplied in accordance with the programme.

A64.720.030 SCOPE OF BUILDER'S WORK:

- Builder's work is
 - included in the contract works and consists of the installation of a new suspended ceiling, formation of a new electrical cupboard and penetrations for electrical containment. The contractor shall allow to make good all areas following the installation of services.
- Builder's work excludes drilling and/or plugging walls, floors, ceilings etc., for fixings for services and such work is included in the contract works.
- Provide the following as necessary for the complete installation
 - all supporting steelwork
 - brackets, clamps and fixings

A64.720.040 MARKING OUT OF BUILDER'S WORK HOLES ON SITE:

- If approved by the CA, mark on site actual locations of minor non-structural holes through walls, partitions, floors etc and also chases in non fair-faced walls, etc for conduits, pipes and the like in preference to providing drawings of such builder's work requirements. The CA is to be given the opportunity to inspect prior to work being carried out.
- The CA shall inspect all marking out on site prior to work commencing.
- Establish a method of working with the CA to ensure the works may proceed without hindrance.
- The maximum size for a non-structural hole for marking on site shall be

A64.720.050 BUILDER'S WORK INFORMATION TO BE PROVIDED:

- All builder's work drawings shall be fully dimensioned.
- Builder's work drawings to be provided shall be as follows:
- Details of all bases for plant formed in concrete, brickwork or blockwork
 - to a scale of not less than 1:50
- Details of all attendant builders work, holes, chases, etc for conduits, cables and trunking etc and any item where access for a function of the installation is required
 - to a scale of not less than 1:50
- Details of all types of purpose made brackets for supporting service or plant/equipment
 - to a scale of not less than 1:50
- Details of all accesses into ceilings, ducts, etc
 - to a scale of not less than 1:50
- Details of all special fixings, inserts, brackets, anchors, suspensions, supports etc
 - to a scale of not less than 1:50
- Details of all sleeves, puddle flanges, access chambers
 - to a scale not less than 1:50
- Submit all necessary load and thrust calculations with drawings/details.

A64.720.060 STRUCTURAL STEELWORK:

- No steelwork shall be cut, drilled or welded without written approval from the CA.
- The cutting and drilling of structural steelwork shall be agreed with the CA prior to the commencement of the work and shall require application in writing with all necessary drawings/details.
- Fixings to steelwork shall be
 - the approved clamp type
- All fixings shall be of the correct size and type for the fixing load applied and the type shall be approved prior to commencement of the works.

A64.740.000 COMMISSIONING AND TESTING

A64.740.010 DEFINITIONS:

Where used in the documentation the following definitions shall apply and shall be interpreted as such:

- Commissioning: The advancement of an installation from the stage of static completion to working order to the specified requirements
- Testing: The measurement and recording of specified quantifiable characteristics of an installation or parts thereof and includes off site testing.
- Setting to work: The process of setting a static system in motion
- Regulation: The process of adjusting the rates of fluid flow in a distribution system to achieve specified values
- Environmental testing: The measurement and recording of internal environmental conditions
- System proving: the measuring, recording, evaluating and reporting on the seasonal performance of the systems against their design values
- System demonstration: Demonstrating the capability of the installation to achieve and maintain the specified performance criteria
- Fine-tuning: The adjustment of the system where usage and system proving has shown such a need and includes the re-assessment of design values and control set points to achieve the required system performance.

A64.740.020 PROGRAMME:

Prepare comprehensive programmes for the pre-commissioning checks, setting to work, testing, commissioning, system proving and environmental testing of the contract works.

Timescale:

- Within one week of contract appointment

Review and update the commissioning programme at agreed intervals and if necessary revise and amend the programme to suit the progress of the contract works.

- Due account shall be taken of any phasing requirements.

A64.740.030 COMMISSIONING SPECIALIST:

- Employ an independent company who specialises in testing and commissioning of building services to undertake the following:
 - All commissioning and testing activities associated with the contract works
- Submit with the tender details of the independent company to be employed.
- The commissioning specialist shall be a member of The Commissioning Specialists Association (CSA).

A64.740.040 COMMISSIONING AND TESTING:

When the contract works or parts thereof are ready for testing and commissioning notify the CA in writing.

All necessary facilities shall be provided to enable tests to be witnessed and inspections carried out including all necessary instruments and recorders to monitor systems during commissioning system proving and environmental testing.

Provide information where access is required into ceiling voids, service risers etc and ensure these points are not closed up until the commissioning and testing is complete.

Where commissioning, testing, balancing, adjustment, is undertaken in an area of the building taken over and occupied by the Employer, then take all necessary precautions against and be responsible for any damage caused whilst working in such areas for that purpose.

Prior to witnessing and inspection by the CA the contract works shall be fully tested, commissioned and be fully operational

Where portions of the work are required to be commissioned and tested separately, then upon final completion, demonstrate to the CA that all the several portions are capable of proper simultaneous operation in accordance with the requirements of the specification.

If testing demonstrates that the plant and equipment is not properly installed and/or not functioning correctly carry out such remedial measures and adjustments as may be necessary and repeat the commissioning and testing procedure to the satisfaction of the CA.

Complete all tests before any paint, cladding or similar materials are applied or before services are concealed.

Ensure all requirements such as cleanliness, protection from harmful external and internal elements are provided prior to commencement of commissioning

Undertake to:

- Commission, test, regulate and set to work the installations that form the contract works.
- Prepare comprehensive programmes, commissioning plans, schedules and method statements and procedures supported by risk assessments for the pre-commissioning checks, setting to work, commissioning, system proving and environmental testing of the contract works.
- Comply with the requirements of the Building Regulations (Approved Document Part L2) for the inspection and commissioning of the building services systems. Prepare all necessary submittals including commissioning plans and reports. Obtain all compliance approvals from the building control bodies.
- Provide all specialist personnel including manufacturer's representatives and coordinate their activities, together with providing any attendance required.
- Prior to commencement of the works submit to the CA for approval sample pro-forma for the various commissioning record and certification documentation.
- Provide reports detailing progress of testing and commissioning activities at intervals agreed with CA.
- Maintain a diary/log of significant commissioning and testing activities.
- Measure and reconcile noise levels at agreed locations to verify compliance with design criteria.
- Submit to the CA all certification documents prior to any system being offered for final acceptance
- Confirm in writing to the CA that each installation has been correctly tested and commissioned and that the performance requirements can be achieved.
- Ensure all certification is attained and witnessed as necessary for inclusion in the record documentation.
- Submit a report for every test, demonstration, balance or commissioning activity witnessed, together with an engineering appraisal on the performance, either on or off-site.
- Co-ordinate and liaise with the Employer's representative.

Maintain on site full records of all testing, commissioning and performance testing.

The extent and proportion of results to be witnessed by the CA will be at the discretion of the CA.

- The CA will
 - examine subsequent to setting to work and regulation of the contract works the results of the commissioning and the documentary records thereof.
 - only witness test proceedings to establish a level of confidence in the commissioning results being presented.

A64.740.050 STATIC TESTING:

Progressive static testing shall include the following tests, but other tests may be required and witnessed:

- Insulation resistance
- Earth fault loop impedance
- Earth continuity

The CA shall be given the opportunity to witness all static tests.

Advance notice of the tests shall be given to the CA of not less than five working days.

A64.740.060 PRE-COMMISSIONING CHECKS:

Ensure all pre-commissioning examinations and tests have been undertaken and that each system, including components, or item of equipment is complete and in a safe condition prior to start-up. All necessary notices shall be displayed.

A64.740.070 FUEL FOR TESTING:

Fuel for testing and operating the contract works shall be

- included within the contract price and due allowance made within the tender

A64.740.080 SYSTEM DEMONSTRATION:

- Subsequent to the completion of all testing and commissioning to the satisfaction of the CA and when directed operate the plant and demonstrate that the overall systems function correctly in accordance with the requirements of the specification.
- Fully run and operate the following systems to demonstrate correct function in accordance with the requirements of the specification:
- The period of operation shall be:
 - carried out during normal working hours.
 - allowed in the programme.
- During this period be responsible for the recording of results and the operation and maintenance of the plant.
- Provide the following:
 - An operational report of the demonstration

A64.740.090 PLANT AND EQUIPMENT PERFORMANCE TESTING:

Where stated elsewhere plant and equipment shall be tested at the works of the manufacturer or in a recognised and approved testing facility to demonstrate the performance complies with the stated and specified duties.

These tests shall be in addition to works tests as stated elsewhere.

Performance testing shall demonstrate but not limited to the following:

- Full, partial and minimum load
- Efficiency
- Noise levels

The tests shall be conducted to simulate design conditions and all ancillary plant and equipment needed to support the tests together with all instrumentation shall be provided and included in the contract cost.

Upon successful completion of the performance tests the plant and equipment shall be thoroughly cleaned and returned to its new condition and correctly packaged for delivery to site.

Test certificate records of the tests shall be issued to the CA as stated elsewhere.

A64.740.100 INSPECTIONS AND TESTS:

Submit schedules indicating those parts of the contract works for which inspections and tests are required to substantiate conformity with the specification.

Should any alternative item be proposed that does not carry appropriate certification, ensure independent testing is carried out at no expense to the contract works to confirm compliance.

Provide method statements supported by risk assessments detailing the procedures for carrying out on site tests.

Agree in advance with all parties procedures for inspections and tests including periods of notice.

Where a test indicates non-compliance with the specification submit immediately details of the non-compliance and details for corrective action.

Maintain records of all specified inspections and tests performed including third party and works testing.

Maintain all records on site for inspection.

A64.740.110 TEST CERTIFICATES AND RECORDS:

Ensure that test certificates include:

- project title
- details and date of test
- instruments used, serial numbers, calibration dates
- signature of those witnessing test

A64.740.120 WORKS TESTING:

Where required provide method statements supported by risk assessments detailing the procedures for carrying out the tests.

Notify the CA and all other parties in advance of such tests and provide for approval a programme for the visit, procedures for inspections and testing to be undertaken.

Timescale:

- one week in advance of works tests

All ancillary plant and equipment needed to support the tests together with all instrumentation shall be provided and included in the contract price.

Should the tests indicate non-compliance with the specification submit immediately details of the non-compliance and proposals for corrective action. No additional costs or extension to the programme will be allowed for re-testing or other non-compliance corrective action.

Signed certificates of tests carried out at the manufacturer's works for any items of plant shall be forwarded to the CA prior to delivery of equipment to site.

Timescale:

- within five working days of the tests

Attendance by the CA or otherwise during specified inspections or tests will not reduce the obligations or responsibilities under the contract.

Carry out all tests required by legislation.

Upon successful completion of the testing the plant and equipment shall be thoroughly cleaned and returned to new condition and correctly packaged for delivery to site.

A64.740.160 ROTATING EQUIPMENT:

Immediately prior to practical completion adjust, ease and lubricate moving parts as necessary to ensure easy and efficient operation.

Ensure that temporary electrical supplies are provided to enable rotating plant items delivered and/or installed to be run at regular intervals to avoid damage or deterioration.

If temporary electrical supplies are not available ensure that rotating plant is hand-turned.

A64.800.000 DRAWING DEFINITIONS

A64.800.010 GENERAL:

This section defines each of the main drawing types and outlines the extent and content of drawn information.

A64.800.020 THE TENDER DRAWINGS:

Drawings produced to enable those tendering to interpret the design and to submit a tender for executing all or any part of the Works as defined elsewhere.

A64.800.030 SKETCH DRAWINGS:

Line diagrams and layouts indicating basic proposals, location of main items of plant, routes of main pipes, air ducts and cable runs in such detail as to illustrate the incorporation of the engineering services within the project as a whole and with respect to any zoning.

A64.800.035 SKETCH SCHEMATICS:

Line diagrams indicating main items of plant and their interrelationship in such detail as to illustrate the incorporation of the engineering services within the project as a whole.

A64.800.040 DETAILED SCHEMATICS::

Line diagrams describing the interconnection of components in a system and showing the engineering principles. The main features of a schematic drawing are as follows

- The drawings include all the functional components that make the system work, such as ducts, pipes, cables, busbars, plant items, pumps, fans, valves, dampers, control devices, strainers, terminals, electrical switchgear and components, security and fire sensors and control equipment.
- Symbols and line conventions in accordance either with a recognised standard, such as ISO or BS, or a supplied legend.
- Drawings labelled with appropriate pipe, duct, busbar and cable sizes, pressures and flow rates.
- The drawings indicate components which have a sensing, control or measurement function.
- Identify major components on the schematic drawing for cross-referencing purposes.
- All data essential to testing and commissioning including:
 - volumetric flow rates.
 - design total pressure losses at equipment.
 - location of dampers.
 - location of valves and flow measuring stations.
 - electrical fault levels.
 - current ratings.
 - short circuit capacities and tripping times.

A64.800.050 DETAILED DESIGN DRAWING:

- The detailed design drawings are the tender drawings

A64.800.060 CO-ORDINATED WORKING DRAWINGS:

Drawings showing the inter-relationship of two or more engineering services and their relation to the structure and building fabric. The main features of co-ordinated working drawings are:

- Plan layouts to a scale of at least 1:50, accompanied by cross-sections to a scale of at least 1:20 for all congested areas.
- The drawings should make allowance for installation working space and space to facilitate commissioning and maintenance.
- The drawings should be spatially co-ordinated and there should be no physical clashes between components when installed. Critical dimensions, datum levels and invert levels should be provided.
- The spaces between pipe and duct runs down on the drawing should make allowance for the service at the widest point. Insulation, standard fittings dimensions and joint widths should therefore have been allowed for on the drawing.
- The drawing should indicate positions of main fixing points and supports where they have significance to the structural design of spatial constraints.

A64.800.070 INSTALLATION DRAWING:

A drawing based on the detailed drawing or co-ordination drawing with the primary purpose of defining that information needed by the tradesman on site to install the works. The main features of installation drawings should be as per co-ordinated working drawings plus:

- Allowances should be made for inclusion of all supports and fixings necessary to install the works.
- The drawing should make allowances for installation details provided from manufacturer's drawings.
- Allowances should be made for plant and equipment. This includes any alternatives to the designers original specified option that have been chosen.

A64.800.100 MANUFACTURER'S DRAWING:

Drawing prepared by a manufacturer, fabricator or supplier for a particular project, and which is unique to that project. Examples include drawings for ductwork, pre-fabricated pipework, sprinkler systems, control and switchgear panels and associated internal wiring, pre-fabricated plant, customised plant and equipment.

A64.800.120 RECORD DRAWING:

Drawing showing the building and services installations as installed at the date of practical completion. The main features of the record drawings should be as follows.

- The drawings should be to a scale not less than that of the installation drawings
- Locations of all mechanical, electrical and public health systems and components installed including ducts, pipes, cables, busbars, plant items, pumps, fans, valves, dampers, control devices, strainers, terminals, electrical switchgear and components, security and fire sensors and control equipment.
- The drawing should be labelled with appropriate pipe, duct and cable sizes, pressures and flow rates.
- The drawings should have marked on them positions of access points for operating and maintenance purposes.
- The drawings should not be dimensioned unless the inclusion of a dimension is considered necessary for location.

A64.800.130 BUILDER'S WORK DETAILS:

Drawing to show requirements for building works necessary to facilitate the installation of the engineering services.

Unless stated or agreed with the CA the following builder's work details can be marked out on site:

- Holes less than the threshold dimension stated elsewhere.
- Electrical socket and switch boxes.
- Openings that are best cut into blockwork and partitions.

Builder's work drawn information to be provided shall include:

- Details of all bases for plant formed in concrete, brickwork or blockwork to a scale of not less than 1:20
- Details of all attendant builders work, holes, chases, etc for conduits, cables and trunking etc and any item where access for a function of the installation is required to a scale of not less than 1:100
- Details of all purpose made brackets for supporting service or plant/equipment to a scale of not less than 1:50
- Details of all accesses into ceilings, ducts, etc at a scale of not less than 1:50
- Details of all special fixings, inserts, brackets, anchors, suspensions, supports etc at a scale of not less than 1:20

A64.800.170 PLANTROOM SCHEDULES AND SCHEMATICS:

Provide good quality plant and switch room drawings, schedules, schematics and instructions and hang in the respective plant room or any other appropriate location or where directed by the CA.

Protect surfaces of such information by

- Framing under glass or other rigid, transparent, cleanable and protective surface.

Hang using suitable fixings and provide backboards if necessary

A sample shall be submitted for approval to the CA prior to commencing production.

- Schematic drawings of circuit layouts showing:
 - Location, identification and duties of equipment.
 - Location of controls devices.
 - Circuit layout.
- Valve schedules in the form of printed sheets showing the number, type, location, application/service and symbol, and normal operating position of each valve.
- Control schematics.
- Location of mechanical and electrical plant and equipment items.
- First aid instructions for treatment of persons after electric shock.
- Location of isolating switch for electricity supply.
- Location of main incoming gas valve serving gas meter and isolation point.
- Location of main incoming water main and isolation point.
- Emergency operating procedures and telephone numbers for emergency call out service applicable to any system or item of plant and equipment.
- All other items required under Statutory or other regulations.

A64.810.000 RECORD DOCUMENTATION

A64.810.010 STANDARDS:

Provide operating and maintenance manuals, system records and full documentation in accordance with the following standards

- BS 5839 - Fire detection and alarms in buildings.
- BS 6701 - Telecommunications equipment and telecommunications cabling.
- BS 7671 - Requirements for electrical installations.(IEE Wiring regulations)

- BS EN 12170 - Heating Systems with a trained operator
- BS EN 12171 - Heating Systems not requiring a trained operator
- Building Regulations (Approved Document Part L2)
- Comply with the requirements of the CDM Regulations in providing the appropriate input to the Construction Phase Plan and health and safety file for the contract works.

A64.810.020 RECORD DOCUMENTS:

Provide:

- Record drawings and schedules.
- Plant room and switch room drawings, schedules and schematics.
- Operating and maintenance manuals.
- Ensure record documents clearly record the arrangements of the various sections of the Works as actually installed and identify and locate all component parts.
- Ensure record documents make it possible to comprehend the extent and purpose of the Works and the method of operation thereof.
- Ensure record documents set out the extent to which maintenance and servicing is required and how, in detail, it should be executed.
- Ensure record documents provide sufficient, readily accessible and proper information to enable spares and replacements to be ordered.
- Correlate record documents so that the terminology and the references used are consistent with those used in the physical identification of the component parts of the installations.
- Demonstrate as required throughout the execution of the contract works that complete and accurate records are being maintained and that the record documents are being progressively compiled as the work on site proceeds.
- Ensure that building log books contain all the information necessary to comply with the Building Regulations Approved Document Part L2.

A64.810.030 RECORD DRAWINGS AND SCHEDULES:

- Prepare record drawings and schedules based on the As Installed Drawings maintained on site during the progress of the contract works.
 - The scale of the drawings shall be not less than 1:50.
- Each record drawing shall show the following information:
 - The name of the contract and, where appropriate, the zone or floor designation.
 - Description of drawing, drawing reference and scale.
 - Name and address of the installer and the consultant.
- Endorse all such documents
 - 'Record drawings'
- Where agreed with the CA certain detailed information may be provided in schedule form.
- Where portions of the work are to be concealed, draft copies of record drawings shall be supplied to the CA before the work is concealed in order to facilitate checking and examination.
- Prepare electrical drawings in accordance with BS EN 61082-1.
- Issue at practical completion the complete approved package of record drawings in the following numbers and format:
 - CAD format on CD disk. Each CD shall be labelled and the CD jewel cases shall be labelled identifying project title, issue date and index of contents.
 - Number of sets of complete record drawings – Three number
 - 'White' prints.
 - Number of sets of complete record drawings – Three number
- Provide reduced scale copies for inclusion in the operating and maintenance manuals as stated elsewhere.

Record drawings and schedules must include, but are not limited to:

- Location, including level if buried, of utility service connections, including those provided by the appropriate Authority, indicating points of origin and termination, size and material of service, emergency shut-off isolation locations, pressure and/or other relevant information.
- Disposition and depth of all underground systems.
- Schematic drawings of each system indicating principal items of plant, equipment, zoning, means of isolation, etc. in sufficient detail to make it possible to comprehend the system operation and the inter-connections between various systems.
- Details of the principles of application of automatic controls and instrumentation.
- Diagrammatic dimensioned plans and sections of each system or service showing sizes and locations of all ancillaries, plant, equipment controls, test points, and means of isolation etc.

including any items forming an integral part of the engineering systems provided by others (such as plenum ceilings, builders' work shafts, chimneys etc.).

- Identification of all terminals/cables etc. by size/type and duty/rating as recorded from the approved commissioning results.
- Detailed wiring drawings/diagrams/schedules for all systems, including controls, showing origin, route, cable/conduit size, type, number of conductors, length, termination size and identification, and measured conductor and earth continuity resistance of each circuit. Ensure routes indicate if cable/conduit is surface mounted, concealed in wall chase, in floor screed, cast in-situ, above false ceiling etc.
- Details of co-ordination of wiring and connections with cable core identification, notation of fire alarm, security, control and instrumentation and similar systems provided as part of the Works.
- Details to show inter-connections between the Works and equipment or systems provided by others to which wiring and connections are carried out as part of the Works.
- Location and identity of each room or space housing plant, machinery or apparatus.
- Dimensioned plans and sections of plantrooms, service subways, trenches, ducts and other congested areas where in the opinion of the CA smaller scale drawings cannot provide an adequate record. Indicate the location, identity, size and details of each piece of apparatus.
 - The scale of drawings to be 1:50
- Manufacturer's drawings of equipment indicating
 - general arrangement and assembly of component parts which may require servicing.
 - internal wiring diagrams together with sufficient physical arrangement details to locate and identify component parts.
- Schedules as required to locate, reference and provide details of ratings and duty of all items incorporated into the Works together with all fixed and variable equipment settings established during commissioning.
- For each programmable control item
 - schedules indicating for each input and output point connected
 - full data in respect of that point including reference
 - type of input/output
 - connected equipment reference
 - set values of temperature or pressure etc
 - set values of start/stop/speed change times etc
 - alarm priority
 - control specification reference
 - any other such applicable parameters
 - Each spare input and output point including reference, type of input/output and space for future entry of appropriate parameters as listed above.
- Logic flow diagrams for each individual control or monitoring specification and for each building services engineering system to illustrate the logical basis of the software design.
- Schedules setting out details of all initial values of user-defined variables, text statements for alarm messages etc.

A64.810.040 PLANT ROOM AND SWITCH ROOM DRAWINGS, SCHEDULES AND SCHEMATICS:

Provide good quality plant and switch room drawings, schedules, schematics and instructions and hang in the respective plant room or any other appropriate location or where directed by the CA.

- Protect surfaces of such information by
 - Framing under glass or other rigid, transparent, cleanable and protective surface
- Hang using suitable fixings and provide backboards if necessary
- A sample shall be submitted for approval to the CA prior to commencing production.
- Schematic drawings of circuit layouts showing:
 - Location, identification and duties of equipment
 - Location of controls devices
 - Circuit layout
- Valve schedules in the form of printed sheets showing the number, type, location, application/service and symbol, and normal operating position of each valve.
- Control schematics.
- Location of mechanical and electrical plant and equipment items.
- First aid instructions for treatment of persons after electric shock.
- Location of isolating switch for electricity supply.
- Location of main incoming gas valve serving gas meter and isolation point.
- Location of main incoming water main and isolation point.

- Emergency operating procedures and telephone numbers for emergency call out service applicable to any system or item of plant and equipment.
- Location of metering facilities.
- All other items required under Statutory or other regulations.
- Prepare electrical drawings in accordance with BS EN 61082-1.

A64.810.050 OPERATING AND MAINTENANCE MANUAL SPECIALIST:

- Employ a specialist to prepare the operating and maintenance manuals.
 - The specialist shall be ELECI-TEC LTD (Tel: 07837 166938) or equal and approved.

A64.810.060 PRESENTATION OF THE OPERATING AND MAINTENANCE MANUALS:

- Agree format and contents with the CA.
- Provide the operating and maintenance manuals in the following form:
 - Encase the manuals in A4 size, plastic-covered, loose leaf, four ring binders with hard covers, each indexed, divided and appropriately cover- titled. Fold drawings larger than A4 and include in the binder so that they may be unfolded without being detached from the rings.
 - Electronic format stored on CD
- Provide copies of the operating and maintenance manual as follows:
 - Draft copies for comment – One Number
 - Final copies for Client use – Two Number
- Provide a draft copy of the operating and maintenance manual to the CA for comment
Timescale:
 - Weeks before the contract completion date – Two Number
- The draft copy of the manual shall conform to the final format required by the specification to enable all relevant comments to be made by the CA.

A64.810.070 OPERATING AND MAINTENANCE MANUALS:

The operating and maintenance manuals must include:

- A full description of each of the systems installed, written to ensure that the Employer's staff fully understand the scope and facilities provided.
- A description of the mode of operation of all systems including services capacity and restrictions.
- Diagrammatic drawings of each system indicating principal items of plant, equipment, valves etc.
- A photo-reduction of all record drawings together with an index. Reduced size of drawings to be
- Legend of all colour-coded services.
- Schedules (system by system) of plant, equipment, valves, etc., stating their locations, duties and performance figures. Each item must have a unique number cross-referenced to the record and diagrammatic drawings and schedules.
- The name, address and telephone number of the manufacturer of every item of plant and equipment together with catalogue list numbers.
- Manufacturer's technical literature for all items of plant and equipment, assembled specifically for the project, excluding irrelevant matter and including detailed drawings, electrical circuit details and operating and maintenance instructions.
- A copy of all test certificates, inspection and test Records, commissioning and performance test records including, but not limited to, electrical circuit tests, corrosion tests, type tests, start and commissioning tests, for the installations and plant, equipment, valves, etc., used in the installations.
- A copy of all manufacturer's guarantees or warranties, together with maintenance agreements offered by subcontractors and manufacturer's.
- Copies of insurance and inspecting Authority certificates and reports.
- Starting up, operating and shutting down instructions for all equipment and systems installed.
- Control sequences for all systems installed.
- Schedules of all fixed and variable equipment settings established during commissioning.
- Procedures for seasonal change-overs and/or precautions necessary for the care of apparatus subject to seasonal disuse.
- Detailed recommendations for the preventative maintenance frequency and procedures which should be adopted by the Employer to ensure the most efficient operation of the systems.
- Details of lubrication for lubricated items including schedules of lubricant type, frequency, etc.
- Details of regular tests to be carried out (e.g. water analysis for pseudomonas.)
- Details of procedures to maintain plant in safe working conditions.
- Details of the disposal requirements for all items in the works.
- A list of normal consumable items.

- A list of recommended spares to be kept in stock by the Employer, being those items subject to wear or deterioration and which may involve the Employer in extended deliveries when replacements are required at some future date.
- A list of any special tools needed for maintenance cross-referenced to the particular item for which required.
- Procedures for fault finding.
- Emergency procedures, including telephone numbers for emergency services.
- Back-up copies of any system software.
- Documentation of the procedures for updating and/or modifying software operating systems and control programmes.
- Instructions for the creation of control procedure routines and graphic diagrams.
- Details of the software revision for all programs provided.
- Two back-up copies of all software items, as commissioned.
- Copies of relevant HSE/CIBSE/IET Guidance notes etc.
- Contractual and legal information including but not limited to
 - details of local and public authority consents
 - details of design team, consultants, installation contractors and associated subcontractors
 - start date for installation, date of practical completion and expiry date for the defects liability period
 - details of warranties for plant and systems including expiry dates, addresses and telephone numbers.
- A provision for update and modification.

A64.810.080 PROVISION OF INFORMATION:

- Co-operate with the specialist firm in the compilation of the manuals and provide them with copies of the following:
 - Diagrammatic drawings of each system indicating principal items of plant, equipment, valves etc.
 - Record drawings, together with an index.
 - Plant room and switch room drawings, schedules and schematics, together with an index.
 - Legend for all colour-coded services.
 - Schedules (system by system) of plant, equipment, valves etc, stating their locations within the building, duties and performance figures.
 - All Test Certificates, Inspection and Test Records, Commissioning and Performance Test Records (including, but not limited to, electrical circuit tests, corrosion tests, type tests, start and commissioning tests) for the installations and plant, equipment, valves, etc., used in the installations.
 - All manufacturer's guarantees or warranties.
 - Copies of insurance and inspecting Authority certificates and reports.
 - Schedules of all fixed and variable equipment settings established during commissioning.
 - Back-up copies of any system software.
 - Two back-up copies of all software items, as commissioned.

A64.900.000 COMPLETION AND HANDOVER

A64.900.010 GENERAL:

This section details the requirements and procedures for completion and handover.

A64.900.020 HANDOVER REQUIREMENTS:

As a pre-requisite to Practical Completion in respect of the contract works or part thereof, demonstrate to the satisfaction of the CA that:

- All the contract works are complete.
 - With the exception of minor snags or limited defects as agreed with the CA that could be reasonably completed within an agreed programme without causing disruption to the Employer's use of the building or part thereof.
- All spares, keys, tools and other consumables as stated elsewhere have been supplied and handed over to the Employer.
- The instruction of the Employer's staff in the use and correct operation of the installation has been completed satisfactorily. In particular, safety devices and controls demonstration.
- All commissioning and testing completed
 - including the issue of a final commissioning report signed by an approved competent person

- A complete demonstration of the contract works with fully functional operational controls tested has been undertaken in the presence and to the satisfaction of the CA.
- All necessary certification by the Employer's insurers has been completed.
- All approved record documentation including record drawings, operation and maintenance manuals, etc is issued
- All information required for the health and safety file is issued to the satisfaction of the Planning Supervisor.
The information shall include:
 - A written description of plant operation.
 - Control strategy/logic diagrams recording the final version of configuration software installed at handover.
 - Details of system application software configuration.
 - A points list including hard and soft-points (all points should have a unique mnemonic).
 - A description of user adjustable points.
 - Commissioning record details.
 - Detailed data sheets for all control components and equipment.
 - Wiring circuit details including origin, route and destination of each cable.
 - Basic security access to the system.
 - Comprehensive instructions for switching on, operation, switching off, isolation, fault finding and procedures for dealing with emergency conditions.
 - Instructions for any precautionary measures necessary.
 - Instructions for the routine operation of the control system including simple day-to-day guidance for those with limited technical skill.
 - Instructions for servicing and system upkeep.
 - A provision for update and modification.
- All necessary Statutory Authority approvals have been undertaken and written confirmation established
- Completion and issue of log books in accordance with Building Regulations.
- Air permeability test certificate in accordance with Building Regulations.
- Should adequate record documentation not be available Practical Completion will not be granted.

A64.900.030 READING OF METERS:

Record readings of all water, gas, and electricity meters immediately on completion of the Works and forward to the CA.

A64.900.040 RECOMMENDED SPARE PARTS:

Before Practical Completion submit to the CA a schedule of spare parts as stated elsewhere and recommend any that should be obtained and kept in stock by the Employer for maintenance of the installations included in the Works.

State against each item the manufacturer's current price, including packaging and delivery to site. Identify those items that are additional to those specified for inclusion as stated elsewhere.

A64.900.050 INITIAL SUPPLY OF ADDITIONAL SPARE PARTS:

Submit to the CA a quotation, priced in detail, for the initial supply to the Employer of the additional spare parts identified elsewhere and including for:

- Checking that each spare part is suitable for the replacement of the corresponding part supplied with the item of plant or equipment.
- Checking receipt, marking and numbering in accordance with the schedule of spare parts.
- Referencing to the plant and equipment list in the operation and maintenance manual.
- Painting, greasing, etc. and packing to prevent deterioration during storage.

A64.900.060 RECOMMENDED TOOLS:

Prior to Practical Completion submit to the CA a schedule of tools and portable instruments as stated elsewhere and recommend any that should be obtained and kept in stock by the Employer for maintenance of the installations included in the Works.

- State against each item the manufacturer's current price, including packaging and delivery to site. Identify those items that are additional to those specified for inclusion as stated elsewhere.
- Submit to the CA a quotation, priced in detail, for the initial supply to the Employer of the additional tools identified under the clause headed 'recommended tools'.
 - Include for the following.
 - Checking that each item is suitable for the intended application.

- Checking receipt, marking and identifying.
- Referencing, where appropriate, to the plant and equipment list in the Operation and Maintenance Manual.
- Protecting, greasing, etc. and packing to prevent deterioration.
- Providing a suitable means of storing and securing same.

A64.900.070 SUPPLY OF TOOLS:

Provide all tools, keys and portable instruments as detailed elsewhere prior to practical completion and additional items if so instructed by the CA.

A64.900.080 INSPECTION BY EMPLOYER'S INSURERS:

Where indicated elsewhere installations, equipment, plant or materials are to be inspected by a representative acting for the Employer's insurers.

The installations, equipment, plant or materials shall satisfy the insurance company's requirements in all respects.

- Inform the CA when the installation or equipment is ready for examination
- Provide a programme for the inspection and certification by the Employer's insurers.
- All necessary information shall be provided to enable the insurers to approve the design before manufacture.
- Arrange for the attendance of the insurance company's representative at agreed stages of manufacturer and installation.
- All necessary attendance, access and facilities for inspecting and testing as is required shall be provided.
- Certification shall have been received from the insurers before equipment or installations subject to inspection and certification will be accepted on behalf of the Employer.
- The order with the insurance company
 - will be placed by the Employer
- All insurance company charges will be
 - paid for by the employer

A64.900.090 TRAINING OF EMPLOYER'S STAFF:

Prior to Practical Completion explain and demonstrate the purpose, function and operation of the installations including all items and procedures listed in the operation and maintenance manual

- to the Employer's maintenance staff.
- to the operational staff.

Submit to the CA for approval a detailed programme for the training of the Employer's staff.

Time scale

- Three weeks before commencement of training
- Employ the services of relevant specialists and suppliers for the purpose of training and instruction.
- Provide each person with a comprehensive set of teaching notes and diagrams.
- Provide a DVD of the training delivered for all items of plant and equipment.
- Be responsible for the correct operation and maintenance of the installation during such periods of instruction.
- All costs associated with the instruction of the Employer's personnel and required attendance following practical completion shall be included in the contract price.
- Following practical completion and occupation be available for a period as agreed with the CA to assist the Employer's personnel in the operation of the various systems together with the
 - controls specialist
 - commissioning specialist

Training

- Provide training for the operation of the controls, monitoring or BMS installations as follows.
 - Carry out initial training at the works of the controls supplier.
 - Include hands on experience of equipment and software similar to the installation.
 - Include instruction on the procedures for testing and routine inspection of sensors and actuators to enable the operator to assess the nature of faults and extent of remedial action required.
 - Provide all appropriate reference and training manuals.
 - Complete initial instruction prior to commissioning of the installed system.
 - Provide site instruction on the installed system.
 - Include for not less than indicated number of operating days for this purpose and demonstrate the safe day to day running and maintenance of all systems, plant and equipment.

A64.900.100 OPERATION OF SYSTEMS BEFORE THE PRODUCTION OF DRAWINGS AND/OR OPERATING AND MAINTENANCE MANUALS:

- Provide attendance, at no expense to the Employer, to put into service, operate 24 hours a day and maintain the systems to the Employer's requirements, including the provision of suitable competent labour, in the event that the Record Drawings and/or Maintenance Manuals are not available when the Works would, in the opinion of the CA, otherwise qualify for Practical Completion.
- In the event of the Subcontractor failing to provide this service satisfactorily the Employer shall be entitled to make his own arrangements and recover the full cost through

C10 REMOVAL OF COMPLETE SYSTEMS

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES:

To remove and dispose of time expired electrical services from the facility.

100.030 SYSTEM DESCRIPTION:

The existing redundant or life served engineering equipment and systems shall be removed and disposed of.

Existing services shall be isolated and made safe prior to removal. The Contractor shall survey the existing installation and allow to make full provision for the removal of the existing services identified.

The following services shall be removed:

Mechanical Engineering Services

All Redundant mechanical systems as identified including the existing town cold water service to the building. This shall be isolated at the meter location at the park boundary. The contractor shall be responsible for liaison with the water undertaking and the employer regarding final meter readings.

Electrical Engineering Services

The electrical contractor shall allow to remove and dispose of all redundant electrical services within the building as identified on the tender drawings and further described herein. The electrical contractor shall allow to fully inspect the existing electrical service installation in its entirety during the tender period.

Generally the electrical contractor shall allow to remove and dispose of the existing electrical installation in its entirety. The electrical contractor shall allow to remove and dispose of the following services in accordance with the tender drawings:

- LV Distribution
- Lighting
- General Small Power
- Emergency Lighting
- Security Services
- Fire Alarm and Detection
- Structured cabling

The electrical contractor shall refer to the asbestos demolition and refurbishment survey undertaken by the main contractor. The electrical contractor shall note that the cost for all asbestos removal works shall be undertaken by the main contractor prior to commencement of the works, however, the electrical contractor shall satisfy themselves that removal works have been undertaken prior to commencement of the contract.

100.060 SYSTEM DRAWINGS:

The electrical contractor shall remove and dispose of the redundant electrical services in accordance with this specification and the following electrical layout drawings:

Drawing Number	Drawing Title
6001	Electrical Services – Proposed Removals and Modifications

PART 3 SPECIFICATION CLAUSES SPECIFIC TO C10

300.000 GENERAL

Comply with

- The Control of Asbestos at Work Regulations.
- The Asbestos (Licensing) Regulations 1983.

- The Asbestos (Licensing) (Amendment) Regulations 1998.
- Health and Safety at Work Act.
- HSE L28 Work with Asbestos Insulation, Asbestos Coating and Asbestos Insulating Board.

C21 TOXIC/HAZARDOUS MATERIAL REMOVAL

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES

Removal of products injurious to safety, health and the environment to facilitate the works package.

100.030 SYSTEM DESCRIPTION

Due to the age of the pavilion, it is likely that Asbestos Containing materials (ACM's) will be present. Following strip out by the main contractor within the works package area the contractor shall liaise to ensure all relevant information available post survey is made available to inform the removal of services strip out. If during strip out of mechanical and electrical systems, the contractor identifies any areas of concern, the employer will undertake, via a specialist provider a demolition and refurbishment survey of the works area and will implement any necessary removals of Asbestos Containing materials (ACM's).

Air testing will be undertaken by an approved specialist as part of the works.

The MEP contractor is not required to allow for managing the employers appointed specialist, if required, whilst on site within the works area. This activity will be undertaken, if required, by the Principal contractor

100.060 SYSTEM DRAWINGS

Not Applicable

PART 3 SPECIFICATION CLAUSES SPECIFIC TO C21

300.000 GENERAL

300.010 ASBESTOS REMOVAL:

Specialist: Appointed directly by Employer

Comply with:

- The Control of Asbestos at Work Regulations.
- The Asbestos (Licensing) Regulations 1983.
- The Asbestos (Licensing) (Amendment) Regulations 1998.
- Health and Safety at Work Act.
- HSE L28 Work with Asbestos Insulation, Asbestos Coating and Asbestos Insulating Board.

300.020 SPECIAL MEASURES FOR DEALING WITH TOXIC OR HAZARDOUS SUBSTANCES:

Type - None identified at this stage.

Requirements – None, at this stage.

R11 FOUL DRAINAGE ABOVE GROUND

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES

The above ground drainage system shall provide efficient conveyance of waste. The drainage system shall be designed and installed to achieve the following:

- Prevent the transmission of foul air in to the building;
- Minimise the frequency of blockages and provide adequate pipe access to enable the effective clearance of any blockages;
- Minimise the risk of flooding to any part of a building, especially where the floor level is located below normal ground level;
- Pipework to be kept as short as possible, with the fewest number of bends, and installed with an adequate gradient.

100.020 DESIGN PARAMETERS

The design has been developed to BSRIA Stage 4 as defined in BSRIA “A Design Framework for Building Services. 3rd Edition”. (BG 6/2012).

The contractor will be responsible for developing and completing the design activity, preparation (for review) of fully co-ordinated design and construction drawings and for undertaking the works in a co-ordinated fashion to achieve a fully completed, operational installation.

The above ground foul and waste drainage system shall be designed and installed in accordance with the following:

- BS EN 12056 - 1, 2, 3, 4.
- Building Regulations: Approved Document H (2002) with 2010 amendments.
- Institute of Plumbing: Plumbing Engineering Services Design Guide.

Air Admittance valves shall not be used within any part of the above ground drainage installation due to the risk of odours and bacteria entering the building as a result of failure.

100.030 SYSTEM DESCRIPTION

Sanitary Drainage Systems

The new pavilion is fitted with various sinks, WHB's, WC.s and shower trays that will require discharge via above ground drainage to various floor sockets etc.

Main branch connections shall be equipped with push fit Poly vinyl-chloride (PVC) waste pipes supported in accordance with manufacturer's instructions. Above ground drainage shall comprise solvent welded ABS system complete with all relevant appliance traps

Where any branch doesn't comply with the requirements for unventilated branches, additional branch venting shall be provided. A minimum distance of 740 mm shall be provided between the invert level of the drain connection and the centre line of the lowest discharge branch connection to the stack.

New below ground drainage is detailed within the Architectural scope of works

Condensate Drainage Systems

ABS solvent welded Plastic condensate pipework shall be provided from each of the condensate drains of the indoor room comfort cooling units and Air handling Units, discharging via waterless trapped connections (HEP-VO or similar) to the high level connections as shown on drawings.

Pipework shall be routed within ceiling voids noting available space constraints to operate under gravity to the discharge point where possible. A condensate pump shall be utilised where falls are insufficient for gravity discharge.

Condensate pipework located internally shall be thermally insulated and vapour sealed to prevent condensation leaking on to ceiling tiles.

100.050 SYSTEM SCHEMATICS

Refer to Drawing and Document Register

100.060 SYSTEM DRAWINGS

Refer to Drawing and Document Register

S12 DOMESTIC WATER SERVICES

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES

Domestic Water Services include:

- Town Cold Water Services (TCWS)
- Cold Water Services (CWS)
- Hot Water Services
- Recovered Rainwater Services

The systems shall be installed to receive and convey water to all water fittings within the pavilion, without waste, misuse, undue consumption or contamination of the water supply or the cold water system.

100.020 DESIGN PARAMETERS

The design has been developed to BSRIA Stage 4 as defined in BSRIA “A Design Framework for Building Services. 3rd Edition”. (BG 6/2012)

The contractor will be responsible for developing and completing the design activity, preparation (for review) of fully co-ordinated design and construction drawings and for undertaking the works in a co-ordinated fashion to achieve a fully completed, operational installation.

External Design Temperature for Insulation:	-5°C
Hot water circulating temperature:	Minimum of 55°C
Operating conditions:	2 bar, ambient
Piping design code:	BS EN 13480 or ASME B31.3

All water systems in the building are designed in compliance with the measures outlined in the Health and Safety Executive’s “Legionnaires’ disease – The control of legionella bacteria in water systems”. Approved Code of Practice and Guidance 2000., BS EN 806-2, BS EN 806-3 and complimentary guidance in BS 8558, CIBSE Public Health Engineering Guide G, CIBSE TM 13, HSE Approved Code of Practice L8 (The Control of Legionella Bacteria in Water Systems) and the requirements of the Water Supply (Water Fittings) Regulations 1999.

Comply with appropriate WRAS guidance.

The domestic water installation shall be installed to fully comply with the edition (including amendments) of each of the following, current at the time of installation:

BS 417	Specification for galvanised low carbon steel cisterns, cistern lids, tanks and cylinders
BS EN 545	Ductile iron pipes, fittings, accessories and their joints for water pipelines – Requirements and test methods
BS EN 806-1-2-3	Specifications for installations inside buildings conveying water for human consumption. General with supplementary guidance BS8558.
BS 4213	Cisterns for domestic use - Cold water storage and combined feed and expansion (thermoplastic) cisterns up to 500litre capacity used for domestic purposes
BS 6281	Devices without moving parts for the prevention of contamination of water by backflow
BS 6282	Devices with moving parts for the prevention of contamination of water by backflow
BS 6700	Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages
BS 7181	Specification for storage cisterns up to 500L actual capacity for water supply for domestic purposes
BS 7592	Methods for sampling for Legionella organisms in water and related materials
BSRIA AG4/94	Guide to Legionellosis - temperature measurements for hot and cold water services
CIBSE TM13	Minimising the risk of Legionnaire's disease
CIBSE	Design Guides

CIBSE	CIBSE Public Health Engineering Guide G
CIBSE	Technical Memoranda
HTM 2027	Hot and cold water supply storage and mains services
IOP	Plumbing engineering services design guide
WRAS	Water Fittings and Materials Directory

Installation	
Installation Standard:	HVCA TR20 Part 5, cold water
Non-destructive Testing:	Visual examination before pressure test
Pressure Test Medium:	Water
Test Pressure:	1.5 x design
Pipe Finish:	Manufacturer's works self coloured
Insulation:	Frost protection to BS 5422
Pipe Components	
Pipe:	Copper tube to BS EN 1057, rating PN16

100.030 SYSTEM DESCRIPTION

Generally

Pipework shall be installed using Pressfit Copper or end fed capillary and soldered.

The water distribution system shall be insulated in accordance with the requirements of Building Regulations Part L2A and documents referenced within.

All systems shall be cleaned in accordance with the requirements of BSRIA BG9:2012 Pre-commission Cleaning of Pipework Systems and the procedures listed therein shall be followed during the cleaning and commissioning stages.

All pipework shall be identified in accordance with BS1710:1984.

The contractor shall include for drain cocks at system low points.

Isolation valves shall be provided on the connection to each outlet and appliance to assist with commissioning and maintenance.

All valves excluding commissioning/control and motorised control valves to be full line size unless specifically noted otherwise on the drawings or commissioning valve schedules. Any commissioning/control and motorised valves, if proposed, shall be selected by the contractor to suit the respective flow rate and in accordance with the manufacturer's recommendations.

All plant and equipment shall comply with the Water Supply (Water Fittings) Regulations 1999. All components shall be WRAS approved or constructed from WRAS approved materials where no specific approval system exists for the particular component type.

The system design shall provide a minimum hydraulic pressure of 1.25 bar (g) (subject to mains pressure) at any point in the system to prevent the ingress of air. The maximum working pressure for the HWS and CWS systems shall be 2.5 bar (g). The sizing of the cold water demand is in accordance with BS EN 806.

The hot water system is designed with plant & equipment selected in accordance with the requirements of HSE Approved Code of Practice L8, with hot water storage temperatures maintained at 60°C.

Town Cold Water Service (TCWS)

A supply of clean, wholesome water (potable water) shall be provided to the Pavilion by means of a connection to the Towns Cold Water Service (TCWS). From this connection pipework will distribute the service as potable and non-potable to the required points of use and outlets within the building.

The existing TCWS supply to the Pavilion shall be isolated and disconnected at the meter position at the Park boundary. The service is to be discontinued.

The new TCWS shall be derived from the recently installed TCWS main serving the adjacent pavilion. The contractor shall allow for all necessary liaison with the statutory water undertaking in this regard.

The incoming service shall be MDPE which shall rise through a penetration in plant room floor. The contractor shall terminate the pipe at a WRAS approved isolating valve, drain off valve, double check valve, pressure reducing valve and water meter, with a second isolating valve downstream of the meter. The isolating valves and meter shall be accessible to building users if required for routine and emergency isolation purposes.

Recovered Rainwater Service (RWS)

A rainwater harvesting system exists serving the adjacent pavilion. The employer wishes to utilise this system to provide recovered rainwater for toilet flushing only within the new pavilion.

It has been determined that adequate capacity exists within the existing system to allow a RWS service connection to the existing outlet pipe.

The incoming service shall be MDPE which shall rise through a penetration in plant room floor. The contractor shall terminate the pipe at a WRAS approved isolating valve, drain off valve, double check valve, and water meter, with a second isolating valve downstream of the meter. The isolating valves and meter shall be accessible to building users if required for routine and emergency isolation purposes.

The existing system will automatically fill with TCWS water in the event of having insufficient level for pumping out due to low rainfall. No connection to the TCWS is required within this works package.

Cold Water Service (CWS)

All points of use shall be provided with isolation valves or, where outlets are provided in close proximity, by a common isolation valve. All pipework shall be laid to falls to minimise the number of high points, and allow easy venting and commissioning of the system.

No CWS storage shall be provided.

Hot Water Service (HWS)

The HWS system shall be circulating return system to ensure quick supply of HWS to all relevant outlets.

All points of use shall be provided with isolation valves or, where outlets are provided in close proximity, by a common isolation valve. All pipework shall be laid to falls to minimise the number of high points, and allow easy venting and commissioning of the system.

HWS is generated independently for two systems:

System 1 comprises an unvented HWS vessel heated via the VRF system heat exchanger. This provides HWS to all outlets within the Office/Club Room areas of the building. Refer to the Heating and Cooling section of the specification for details. This system is intended to be available at all times due to the use of the rooms.

System 2 is an unvented large capacity (1100l) electrically heated storage calorifier providing HWS for whb's and showers within the changing areas. This system will be brought into service when required.

The system design is based on the Heatrae Sadia Megaflo commercial range using a 1250l unvented cylinder and direct electric immersions.

The upper element shall be limited to 30kW, the lower element shall be 45kW to achieve a system recovery time of 90 minutes.

The calorifier shall be complete with an unvented kit, destratification pump and safety temperature and pressure relief valves.

The system shall be fitted with a WRAS approved secondary circulation pump

For each system:

The system shall be fitted with a WRAS approved secondary circulation pump

Thermostatic regulating valves complete with temperature dials shall be provided throughout the return circuit to allow commissioning and to maintain the secondary return temperature of 55°C. Maximum 'dead leg' lengths on all hot water pipework shall comply with the requirements of HSE ACOP "Control of legionella Bacteria in Water Systems" and BS 6700.

Thermostatic blending valves shall be provided to all hot water outlets except the club room sink either serving individual points of use, or ranges, to limit the maximum water temperature to 43°C. The thermostatic mixing valve shall conform to BS EN 1111's and BS 1287 to achieve a TMV type 2 scheme.. Thermostatic valves where exposed shall be tamperproof.

HWS vessels shall be equipped with unvented kits to accommodate system expansion

Over pressure and temperature safety relief valves shall discharge to a tundish prior to being piped to a local waste connection or floor gully.

Insulation

All pipework required for the domestic cold and hot water systems shall be provided with insulation. The mechanical contractor shall ensure all pipework relating to the system is insulated in accordance with the following sections.

The mechanical contractor shall appoint an insulation specialist and shall include for the supply, delivery and installation of materials necessary for the thermal insulation of systems described.

The insulation work shall be carried out by a Member of the Thermal Insulation Contractors Association. The thermal insulation specialist shall make themselves fully acquainted with all the site conditions and programme of works and shall execute their works within such confines and programme. Reference should be made to BS 5970 as appropriate. The thermal insulation shall not be applied until the pipework installation has been tested.

Insulation materials and finishes shall be inherently proof against rotting, mould and fungal growth and attack by vermin, be non-hygroscopic and in all respects be suitable for continuous use throughout the range of operating temperatures and within the environment indicated. All insulation materials and finishes shall be installed in accordance with the manufacturer's recommendations.

No insulation material containing CFC or HCFC components shall be accepted. Hot water services shall be insulated to suit temperatures stated (max 60oC) Cold water services shall be insulated and vapour sealed to avoid condensation.

Insulation shall comprise minimum 35kg/m3 minimum density CFC/HCFC free, rigid phenolic insulation sections with zero Ozone Depletion Potential (ODP), with a factory applied fully bonded reinforced aluminium foil vapour barrier jacket.

The aged thermal conductivity of the insulant shall not exceed 0.025 W/m.K at 10°C temperature.

The insulation shall be Class 0 / Low Risk rated to the Building Regulations / Approved Document B. The bore face of sections shall be de-dusted and coated with a non-odorous passivating solution after manufacture.

Insulation thickness is to be determined in accordance with the TIMSA Guide and BS 5422: 2009, from the tables given below:

Hot Water Service		Thickness for Pipe Diameter(NB)		
Insulation	Type	15mm – 32mm	40mm – 80mm	80mm – 108mm
Phenolic		20mm	25mm	30mm

Cold Water Service			
Insulation	Thickness for Pipe Diameter(NB)		
Type	15mm – 32mm	40mm – 80mm	80mm – 108mm
Phenolic	20mm	25mm	30mm

All pipe support inserts on pipework operating below 80°C shall be rigid phenolic insulation, complete with insulated pipe support inserts designed in accordance with the selected manufacturer's instructions.

Testing and Commissioning

The contractor shall test and commission the complete system in accordance with the requirements and recommendations set out in BS EN 806 and BS 8558:2015. All testing shall be carried out to the satisfaction of, and in the presence of the Employer or his appointed Engineer.

The contractor shall carry out all testing as required by and in accordance with Section 6 of BS EN 806-4:2010. This shall include, but not be limited to:

- Carry out a pressure test of the system to 1.1 x system maximum design pressure (MDP), where the MDP is taken to be 1.5 x the system maximum working pressure (MWP).
 - 1) Ensure that a suitable test plan is set out and agreed, highlighting the potential risks involved with pressure testing.
 - 2) Arrange for the system to be vented
 - 3) Fill the system with water, ensuring that all air is removed and seal all air vents and outlet valves.
 - 4) Apply the selected test pressure, as specified above, for a minimum period of 10 minutes.
 - 5) Observe that the test pressure remains constant for the observation period (10 minutes). If there is pressure loss, the system shall be maintained at the test pressure until the leaks within the system are identified.
 - 6) The contractor shall rectify any leaks and retest the system until the test period is achieved without pressure drop.
- Carry out any specific tests as per the equipment manufacturer's requirements.
- Clean, flush, and disinfect the system before hand over.

All systems shall be cleaned in accordance with the requirements of BSRIA BG9:2012 Pre-commission Cleaning of Pipework Systems and the procedures listed therein shall be followed during the cleaning and commissioning stages.

The above outline is intended to be a minimum and shall not absolve the contractor of their responsibility to ensure that the system is suitably tested and commissioned.

100.040 CONTROL REQUIREMENTS

All Hot water outlets to be temperature controlled by TMV's. The thermostatic mixing valve shall conform to BS EN 1111's and BS 1287 to achieve a TMV type 2 scheme.

Refer to Controls Section.

100.050 SYSTEM SCHEMATICS

Refer to Drawing and Document Register

100.060 SYSTEM DRAWINGS

Refer to Drawing and Document Register

T32 LOW TEMPERATURE HOT WATER (LTHW) HEATING

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES

To provide the distribution system to allow Low Temperature Hot Water (LTHW) to all heat emitters and any other heating appliance.

100.020 DESIGN PARAMETERS

The design has been developed to BSRIA Stage 4 as defined in BSRIA “A Design Framework for Building Services. 3rd Edition”. (BG 6/2012)

The contractor will be responsible for developing and completing the design activity, preparation (for review) of fully co-ordinated design and construction drawings and for undertaking the works in a co-ordinated fashion to achieve a fully completed, operational installation.

HVCA TR20 - Installation and Testing of Piping Systems - Part One – Low Temperature Hot Water Heating

CIBSE Guide C(Pipe sizing)

Room design temperatures = CIBSE Guide A Table A1.5

Thermal zoning in accordance with the building use patterns

LTHW Flow Temperature = 60°C

LTHW Return Temperature = 40°C

External Design Temperature:

Design Condition	Dry Bulb Temp. (°C)	Wet Bulb Temp (°C)
For the selection of air handling plant heating coils, assuming a winter external ambient temperatures of:	-4	-4

The design shall ensure that the minimum hydraulic pressure of 1.0 bar(g) is achieved at any point in the system to prevent the ingress of air.

Index run specific pressure drops shall not exceed 200 Pa/m.

All flow measurement devices will be sized to give a signal of between 1kPa and 5kPa.

100.030 SYSTEM DESCRIPTION

Generally

LTHW pipework shall be Copper using pressfit or end feed capillary soldered joints.

Adequate drain cocks shall be provided at low points and air vents at high points so that LTHW water systems are capable of complete draining and venting. Configure the pipework arrangements to avoid airlocks and provide all necessary drain and vent points.

Provide sufficient flow regulation devices and test point tappings to properly commission the system and facilitate full post completion operation and maintenance.

The LTHW heating distribution systems shall be insulated in accordance with the requirements of Building Regulations Part L2A and documents referenced therein including BS5422, 'Method for specifying thermal insulating materials operating within the temperature range –40 °C to +700 °C'.

All systems shall be provided with flushing, drain and bypass valves in accordance with the requirements of BSRIA BG9:2012 Pre-commission Cleaning of Pipework Systems and the procedures listed therein shall be followed during the cleaning and commissioning stages.

All valves excluding commissioning/control and motorised control valves to be full line size unless specifically noted otherwise on the drawings or commissioning valve schedules. Any

commissioning/control and motorised valves, if proposed, shall be selected by the contractor to suit the respective flow rate and in accordance with the manufacturer's recommendations.

All pipework shall be identified in accordance with BS1710:1984.

The contractor shall include for automatic air vents and drain cocks at system high and low points to allow the main distribution to self vent. Manual air vents shall be provided at heat emitter.

The contractor shall comply with CIBSE Commissioning Code and BSRIA Application Guide, Flushing and Cleaning of Water Systems. By-pass all control valves during flushing.

The contractor shall ensure the arrangement complies with local water authority requirements and Water Regulations 1999.

All pipework associated with LTHW systems shall be enclosed to a minimum height of 2.0m to avoid contact and consequent burns risk. All heat emitters shall be low surface temperature radiators or perimeter systems designed to avoid case temperatures exceeding 43°C

System 1

Provide a new LTHW system with the heat source as the VRF system heating unit specified for the Offices area of the building.

This systems comprises radiator heating utilising LST radiators with integral lock shield valve and TRV control contained within the LST casing. The design is based on Stelrad LSTi radiators. The LTHW system shall operate at flow temperature of 60°C, return temperature of 40°C.with a Δt to the space of 30°C. Radiator sizes are based on these criteria.

System 2

Provide a new LTHW system with the heat source as the VRF system heating unit specified for the Changing Rooms area of the building.

This systems comprises radiator heating utilising LST radiators with integral lock shield valve and TRV control contained within the LST casing. The design is based on Stelrad LSTi radiators. The LTHW system shall operate at flow temperature of 60°C, return temperature of 40°C.with a Δt to the space of 30°C. Radiator sizes are based on these criteria.

Changing room heat emitters (under changing benches) shall be a perimeter system comprising finned tube and steel casing with aluminium grilles as Dunham-Bush Finvector range. A twin battery is required in each casing. Casings shall be sized to fit below the specified changing benches and to maintain 50mm clearance from the floor. The LTHW system shall operate at flow temperature of 60°C, return temperature of 40°C.with a Δt to the space of 30°C. The perimeter heating shall achieve an aoutput based on the above criteria of 400W/m

Perimeter systems shall be TRV controlled at the vertical pipe drop to the system.

Testing and Commissioning

The contractor shall test and commission the complete system in accordance with the requirements and recommendations set out in BS EN 806 and BS 8558:2015. All testing shall be carried out to the satisfaction of, and in the presence of the Employer or his appointed Engineer.

The contractor shall carry out all testing as required by and in accordance with Section 6 of BS EN 806-4:2010. This shall include, but not be limited to:

- Carry out a pressure test of the system to 1.1 x system maximum design pressure (MDP), where the MDP is taken to be 1.5 x the system maximum working pressure (MWP).
 - 1) Ensure that a suitable test plan is set out and agreed, highlighting the potential risks involved with pressure testing.
 - 2) Arrange for the system to be vented
 - 3) Fill the system with water, ensuring that all air is removed and seal all air vents and outlet valves.
 - 4) Apply the selected test pressure, as specified above, for a minimum period of 10 minutes.

- 5) Observe that the test pressure remains constant for the observation period (10 minutes). If there is pressure loss, the system shall be maintained at the test pressure until the leaks within the system are identified.
 - 6) The contractor shall rectify any leaks and retest the system until the test period is achieved without pressure drop.
- Carry out any specific tests as per the equipment manufacturer's requirements.
 - Clean, flush, and disinfect the system before hand over.

All systems shall be cleaned in accordance with the requirements of BSRIA BG9:2012 Pre-commission Cleaning of Pipework Systems and the procedures listed therein shall be followed during the cleaning and commissioning stages.

The above outline is intended to be a minimum and shall not absolve the contractor of their responsibility to ensure that the system is suitably tested and commissioned.

100.040 CONTROL REQUIREMENTS

Refer to Controls Section

100.050 SYSTEM SCHEMATICS

Refer to Drawing and Document Register

100.060 SYSTEM DRAWINGS

Refer to Drawing and Document Register

T62 VRF SYSTEMS

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES

Provision of :

- Air to Water Heating Source for LTHW and DHW, and,
- Air to Air Cooling Systems for Office and Club Room

100.020 DESIGN PARAMETERS

The design has been developed to BSRIA Stage 4 as defined in BSRIA “A Design Framework for Building Services. 3rd Edition”. (BG 6/2012)

The contractor will be responsible for developing and completing the design activity, preparation (for review) of fully co-ordinated design and construction drawings and for undertaking the works in a co-ordinated fashion to achieve a fully completed, operational installation.

HVCA RAC/70 – Guide to Good Practice Commercial and Light Industrial Refrigeration

HVCA RAC/80 – Design Specification for DX Packaged Air Conditioning Equipment in Buildings

BS EN 378 Parts 1 - 4. Refrigerating systems and heat pumps - Safety and environmental requirements. Institute of Refrigeration Code of Practice for Refrigerating Systems utilising Group A1 and A2 refrigerants

FGAS Regulations

Room design temperatures = CIBSE Guide Table A1.5

The contractor shall appoint a refrigeration specialist who shall be an appointed agent of the system manufacturer.

The design is based on Daiken Systems equipment (Altherma and Sky). The refrigeration specialist shall be selected from:

*SK Heating & Cooling Ltd
229 Bristol Road
Gloucester
GL1 5TL
Tel: 01452 410500*

*Neptune Building Services Ltd
Meadow House
12 Sabre Close, Green Farm
Quedgeley
Gloucester
GL2 4NZ
Tel: 01452 429820*

100.030 SYSTEM DESCRIPTION

Generally

All systems covered within this specification shall be proprietary systems. The system diagrams provided are for indication of design intent only and to ensure that sufficient installation space has made available within the final detailed design of the building. The current design is intended to allow for the installation of any common refrigerant based heating and cooling system. The contractor shall ensure that the final design meets the performance requirements stated in this specification. The Contractor shall ensure that the manufacturer's requirements are met in all cases of design, supply, installation, commissioning, testing and setting to work.

The contractor shall be responsible for the installation of all equipment and supporting tray work required for the fully functioning and commissioned system.

The system design is based on two independent systems:

Copper tubing of oxygen free quality and to be suitable for the refrigerant and the oil used. All copper piping shall be adequately protected against mechanical damage. Soft annealed copper tubing should not normally be used in sizes larger than 18mm (3/4 inch) o/d. Use of flared fittings shall be minimised and restricted to locations where the joints are to be opened for visual inspection. Pipe bends should be substantially circular in section and smooth in bore. Formed bends are preferred to fittings providing adequate stress levels and sufficient wall thickness are maintained. All pipelines shall be installed with the minimum number of joints. Brazing or silver soldering should be adopted wherever practicable for joining pipelines of all sizes.

External refrigeration pipework to be insulated using Armaflex Class 'O' insulation complete with Armaflex UV resistant protective outer covering.. All internal pipework to be insulated using Armaflex Class 'O'. Insulation thicknesses to comply with the requirements of Building Regulations Part L2A and BS5422.

System 1

System 1 comprises a single outdoor unit serving 2 No high temperature heat exchange units. One heat exchange unit serves heating only for the changing room area of the building. The second heat exchange unit serves heating and DHW for the office areas of the building. Each unit is rated at 16kW nominal to the LTHW systems with a flow temperature of 60°C, return temperature of 40°C.

The entire system shall be supplied, installed, tested and commissioned by a suitably qualified refrigeration specialist.

System 2

System 2 is a split system serving cooling only fan coil units within the club room and office. The system nominal rating is 9kW and serves 3 No 600 x 600mm recessed ceiling cooling units operating at medium speed to achieve a nominal cooling duty of 3kW each.

The entire system shall be supplied, installed, tested and commissioned by a suitably qualified refrigeration specialist.

100.040 CONTROL REQUIREMENTS

Refer to Controls Section.

100.050 SYSTEM SCHEMATICS

Refer to Drawing and Document Register

100.060 SYSTEM DRAWINGS

Refer to Drawing and Document Register

U10 GENERAL VENTILATION

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES

The ventilation principles used in the building shall utilise a mixture of natural and mechanical ventilation, to maintain indoor air quality, remove moisture and odours and to assist with heating and cooling the pavilion.

The ventilation systems shall provide independent systems for the Offices area and the Changing rooms area.

Each system has been developed to provide fresh air for occupants and remove odours as a minimum requirement, throughout the year.

100.020 DESIGN PARAMETERS

The design has been developed to BSRIA Stage 4 as defined in BSRIA “A Design Framework for Building Services. 3rd Edition”. (BG 6/2012)

The contractor will be responsible for developing and completing the design activity, preparation (for review) of fully co-ordinated design and construction drawings and for undertaking the works in a co-ordinated fashion to achieve a fully completed, operational installation.

	The Building Regulations
BS 5925	Code of Practice for ventilation principles and designing for natural ventilation
BS EN 13465	Ventilation for buildings. Calculation methods for the determination of air flow rates in dwellings
GPG 257	‘Energy – Efficient Mechanical Ventilation’
GSA	CIBSE Guide A – Environmental Design
GSB 02	CIBSE Guide B2 – Ventilation and Air Conditioning
GSB 03	CIBSE Guide B3 – Ductwork
GSB 05	CIBSE Guide B5 – Noise and Vibration Control
GVC	CIBSE Guide C4 – Flow of fluids in pipes and ducts
TM 21	CIBSE – ‘Minimising pollution at air intakes’
DW 144	HVCA guide ductwork installation
CIBSE Concise Handbook Table A1.5 Recommended comfort criteria for specific applications	

Building Regulations Approved Document F : 2010 Means of Ventilation

HVCA DW143 ‘Ductwork Leakage Testing’

HVCA DW144 ‘Specification for sheet metal ductwork’

Non Domestic Building Services Compliance Guide : 2010

Design Ventilation Rates

Design Condition	Litres / per Second / Person	ACH
All	10	Variable

Internal Design Temperatures

Design Condition	Dry Bulb Temp. (°C)
Classroom	Min 19-21 winter Min 21-23 summer

Internal Design Conditions

Room design conditions, fresh air ventilation rates, extract rates, and general requirements shall be based on Approved Document F requirements.

Mechanical Filtration Requirements

The following table highlights the requirements for filtration and filter type.

Application	Requirement	Type
Main filter on fresh air supply units	G4 (EU3) Arrestance 90%	Panel filter

Ductwork Design Requirements

The ductwork shall be designed with low loss lines in accordance with DW 144 & 171 for low pressure systems. The following fittings shall not be used:

- Square bends, unless specifically identified;
- Radius bends with square throats;
- Square / abrupt enlargers & reducers;
- Square branch take-offs;
- Where noise control is required the ductwork system shall be sized and installed to ensure the air velocity is below the following values to avoid regenerated noise.

Area	NR 25	NR 30	NR 35	NR 40
Primary distribution ducts	5.0 m/s	6.5 m/s	7.5 m/s	9.0 m/s
Branch ducts	4.5m/s	5.5 m/s	6.0 m/s	7.0 m/s
Final connection to grilles and diffusers	<2.5 m/s	3.0 m/s	3.5 m/s	4.5 m/s

All attenuators shall have aerodynamic fairings at both ends.

100.030 SYSTEM DESCRIPTION

Generally

Generally distribution ductwork shall be spiral wound galvanised mild steel and fabricated to DW/144.

All sizes for the main distribution ducts and branches are provided on the Ventilation System

Air Handling Units are selected based on Nu-Aire Heat recovery units from the XBoxer XBC Range. Model XBC 45 Horizontaal Range operating at 75% Fan Speed

All AHU's shall be equipped with attenuators to the supply and discharge side. The AHU serving the offices area shall also be equipped with attenuators to the room side (supply and extract)

Fresh air heater batteries are 6kW rated to maintain an off coil delivery temperature of 20°C allowing for heat recovery efficiency of 90%

Dedicated changing room extract fans are based on Vent-Axia Wall fans, "T" Series range, size 9" achieving a minimum of 100l/s at high speed. The fans shall be complete with 3 speed and off controllers.

Ductwork insulation shall be provided on intake and exhaust duct sections in accordance with the recommendations of the Thermal Insulation Manufacturers & Suppliers Association for installing thermal insulation to the outer surface of H&V ductwork (Ref. [7]). Reference should be made to the relevant sections of BS 5970.

Insulation shall have a thermal conductivity of less than 0.025 W/mK for the design conditions.

100.040 CONTROL REQUIREMENTS

Refer to Controls Section

100.050 SYSTEM SCHEMATICS

Refer to Drawing and Document Register

100.060 SYSTEM DRAWINGS

Refer to Drawing and Document Register

V12 LV SUPPLY/PUBLIC UTILITY SUPPLY

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES:

To provide a permanent mains power supply to the facility.

100.020 DESIGN PARAMETERS:

The electrical contractor shall comply with the statutory obligations and Code of Practice as applicable.

British Standards and Guidance

Document Number	Document Title
S.I. No. 635	Electricity at Work Regulations 1989
BS 7671	Requirements for Electrical Installations (Amendment 3)

If there is any conflict in interpretation the contractor shall obtain clarification from the PM.

100.030 SYSTEM DESCRIPTION:

The electrical contractor shall modify the existing LV utility supply to rugby pavilion as identified on the tender drawings and further described herein. If there are any elements of doubt or any or any ancillary components are required the electrical contractor shall include and allow for all such items at the time of tender. The proposed modifications will require the excavation within the vicinity of the facility switch room. The electrical contractor shall therefore undertake a CAT scan to identify existing buried services within the area prior to commencing any excavation works.

The electrical contractor shall liaise with Wester Power Distribution (WPD) to arrange for the removal of the existing incoming electrical power supply to the football pavilion and shall also arrange for the modification of the existing incoming electrical power supply capacity to the existing rugby club. The existing rugby club is currently provided with a 115 kVA electrical supply. The electrical contractor shall submit an application to increase the maximum demand of the supply to 160 kVA. The electrical contractor shall note that this aspect of work shall be covered by a £4,500 provisional sum, however, the electrical contractor shall allow for all external excavation, coordination and liaison necessary as part of their tender submission.

Upon completion of the works the electrical contractor shall test the modified installation in accordance with the requirements of BS7671 (AMD3) and shall provide signed and dated electrical test certification in good time for handover. Upon completion of the works the electrical contractor shall provide an Operating and Maintenance Manual (O&M) in accordance with the requirements of A64.520.050. The electrical contractor shall note that handover shall not be considered prior to receipt of this information.

100.040 CONTROL REQUIREMENTS:

Automatic disconnection of supplies in the event of a fault condition.

100.050 SYSTEM SCHEMATICS:

The electrical contractor shall modify the Public Utility Supply in accordance with this specification and the following electrical schematic drawings:

Drawing Number	Drawing Title
6100	Electrical Services – Proposed Electrical Distribution Schematic

100.060 SYSTEM DRAWINGS:

The electrical contractor shall modify the public utility supply in accordance with this specification and the following electrical layout drawings:

Drawing Number	Drawing Title
6101	Electrical Services – Proposed Containment Layout

PART 2 SELECTION SCHEDULES FOR REFERENCE SPECIFICATIONS

261.000 HV/LV CABLES AND WIRING

261.010 GENERAL:

- Comply with work section general clauses reference Y61.1010, Y61.1020, Y61.1030 and those detailed below.
- Supply LV cables and wiring as identified on the tender drawings

261.230 CABLE DUCTS:

- Reference Y61.3110A

261.250 CABLE COVERS AND MARKERS:

- Reference Y61.3130A

261.260 WORKMANSHIP

- Cable installation - general - reference Y61.4010
- Cable installation in low temperatures - reference Y61.4020
- Installation of LSF cable - reference Y61.4030
- Cable installation in trenches - reference Y61.4060

280.000 EARTHING AND BONDING COMPONENTS

280.010 GENERAL:

- Supply earthing and bonding components as specified in section W51

281.000 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES:

281.010 GENERAL:

- Comply with work section general clauses reference Y81.1000 and those detailed below.

281.020 TESTING AND COMMISSIONING:

- Incorporated equipment characteristics
 - Reference Y81.2010A
- Prospective short circuit current (IP)
 - Reference Y81.2020A
- Initial verification
 - Reference Y81.2030A
- Test equipment and consumables
 - Reference Y81.2040A
- Testing
 - Reference Y81.2050A
- Continuity of protective conductors
- Earth fault loop impedance (ZS)
 - Reference Y81.2070A
- Settings and adjustments - reference Y81.2080
- Calibration - reference Y81.2130
- Certification and reporting
 - Reference Y81.2140A
- Completion certificates
 - Reference Y81.2150A
- Records - reference Y81.2160

281.030 WORKMANSHIP:

- Conductive parts - reference Y81.3010
- Cables
 - LV buried cables - reference Y81.3040A

V20 LV DISTRIBUTION

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES:

To provide safe and effective electrical power supplies to all items of plant and equipment throughout the facility.

100.020 DESIGN PARAMETERS:

The electrical contractor shall comply with the statutory obligations and Code of Practice as applicable. The electrical contractor shall comply with the latest revision of the following standards and codes of practice:

British Standards and Guidance

Document Number	Document Title
BS 7671	Requirements for Electrical Installations (Amendment 3)
BS EN 60439	Specification for low-voltage switchgear and control gear assemblies
BS EN 60947	Specification for low-voltage switchgear and control gear
BS EN 60898	Specification for circuit breakers for over current protection for household and similar installations
BS 7430	Code of practice for earthing.

If there is any conflict in interpretation the contractor shall obtain clarification from the PM.

100.030 SYSTEM DESCRIPTION:

The electrical contractor shall supply, install, test and commission the complete electrical LV distribution system as identified on the tender drawings and further described herein. If there are any areas of doubt or any further ancillary works are required then it shall be the responsibility of the contractor to identify these items at the time of tender.

The electrical contractor shall allow to undertake a visual inspection of the facility during the tender period to determine the location, nature and condition of existing services. If there are any areas of doubt or any further ancillary works are required then it shall be the responsibility of the contractor to identify these items at the time of tender.

Removals and Modifications

The electrical contractor shall allow to remove and dispose of the complete LV distribution installation within the building as identified on tender drawings. The electrical contractor shall fully liaise with Western Power Distribution (WPD) and the current energy supplier to arrange for the isolation disconnection and removal of the existing incoming electrical supply to the building. The electrical contractor shall allow sufficient time within their program to undertake these works and shall include for all costs necessary associated with the removal of the existing incoming electrical supply.

Within the building itself the electrical contractor shall survey the existing installation and shall allow to remove and dispose of the redundant electrical distribution system in its entirety including all local electrical distribution boards, isolators, containment, supports and associated circuit wiring. The electrical contractor shall remove and dispose of all equipment in accordance with the requirements of the WEEE directive.

Modifications to Existing MCCB Panelboard within Rugby Club

The electrical contractor shall allow to modify the existing MCCB panelboard within the rugby club as identified on the tender drawings. The existing MCCB panelboard is as manufactured by Schneider Electric I-Line Range (400A Assembly). The electrical contractor shall allow to supply and install a new 160A MCCB to match the existing panel assembly.

From the new MCCB the electrical contractor shall allow to supply and install a new 1 x 4 Core 70mm² XLPE/SWA/LSZH cable. The new supply cable shall be routed within the existing rugby club electrical switch room on new galvanised steel cable tray which the electrical contractor shall allow to install. The supply cable shall then be routed through a new 100mm diameter duct within the rugby club switch room and installed direct in the ground in accordance with the requirements of the NJUG before terminating at the new MCCB panel board MDB within the new football pavilion. The electrical contractor shall allow for all builders works and ductwork provisions both within the existing rugby and proposed new football pavilion.

New Facility Panelboard

The electrical contractor shall allow to supply, install, test and commission a new facility MCCB panelboard as identified on the tender drawings. The electrical contractor shall procure the new facility panelboard from an approved supplier such as Eaton/MEM or equal and approved. The new panelboard shall comprise of a wall mounted MCCB assembly manufactured to BS EN 61439-2 which shall meet or exceed the following requirements:

- Rated Voltage & Frequency 400V / 50 Hz
- Short Circuit Capacity 35kA (1 Second)
- Bus bar Rating 250A (For Phase Conductors, Neutral & Earth)
- Form of Separation Form 3B Type 2
- Protective Devices MCCB Circuit Protection
- Degree of Protection IP4X
- Incoming Supply Cables Top & Bottom Entry
- Outgoing Supply Cables Top & Bottom Exit
- Access Front Access Only
- Surge Protection Coarse Not Required

The new facility switchboards shall be provided with digital kWh meters as identified on the drawings. The electrical contractor shall allow to provide all meter compartments, cableways and extension boxes necessary to provide a fully functional system. The electrical contractor shall ensure that all digital meters provide as a minimum the following features:

- Date and Time (MD and Rates)
- Energy consumption instantaneous kW
- Energy consumption accumulative kWh
- Apparent power instantaneous kVA
- Apparent power accumulative kVAh
- Reactive power accumulative kVARh
- Maximum demand kW and kVA
- RS 485 or RS 232 Port for future connection to BMS

The electrical contractor shall fully liaise with the panelboard manufacturer and shall review all details and check all dimensions prior to placing the order and shall ensure that the panelboard complies with all aspects of the tender drawings. The electrical contractor shall be responsible for the final spatial coordination associated with the installation of the new panelboard and associated distribution equipment and shall prepare and submit working installation drawings prior to installation. Works undertaken prior to receipt of this information shall be done so at the contractor's risk.

Proposed Electrical Distribution Boards

The electrical contractor shall allow to supply, install, test and commission new electrical distribution boards as identified on the drawings and further described herein. The new electrical distribution boards shall comprise of:

Reference	Location	Function	Description
DBA	Store Room	General Lighting and Small Power Office Areas	14 Way TP&N – Split Metered (6+8)
DBB	Plant Room	General Lighting and Small Power Changing Room Areas	10 Way TP&N – Split Metered (4+6)

The new distribution boards shall comprise of a TP&N distribution board with a short circuit current rating of 25 kA for 1 second. The electrical contractor shall ensure that the distribution boards provides an environmental protection of IP4X.

The electrical contractor shall supply and install an integral switch disconnecter to the distribution board complete with a distributed neutral kit to enable the isolation of all live and neutral conductors. All new electrical distribution boards shall be manufactured by Eaton / MEM or equal and approved.

The electrical contractor shall allow to supply and install outgoing protective devices of the sizes and types identified on the tender drawings.

Outgoing protective devices shall comprise BS EN 60947 type protective devices specifically 10kA Type C MCB's for all lighting circuits and shall comprise of 10kA Type B MCB's for all general small power circuits unless denoted elsewhere. All protective devices shall be the same manufacturer as the distribution board pan assembly. The current ratings of all MCB's shall be as identified on the tender drawings.

Sub-Main Distribution

The electrical contractor shall allow to supply and install new sub-main distribution cables in accordance with the requirements of BS7671 and as identified on the electrical tender drawings.

Internally sub-main distribution cables shall generally comprise of multi-core XLPE/SWA/LSZH cables installed onto new medium duty galvanised steel cable tray supplemented with a number of XLPE/LSZH single core cables drawn into a conduit and trunking installation. The electrical contractor shall ensure that single core cables circuits are not split between runs of conduits or trunking and each circuit is provided with its own circuit protective conductor. Sub-main distribution cables installed externally shall comprise of XLPE/SWA/LSZH cables installed direct into the ground with cable entries to and from buildings installed into new 100mm diameter ducts. The electrical contractor shall ensure that all external supply cables are installed to the depths identified by the NJUG.

The electrical contractor shall ensure that all new wiring is BASEC certified. The Contractor shall be responsible for the detailing and fixing arrangement of all containment systems in accordance with the requirements of BS7671.

Cable Management System

The new cable management system shall comprise of, galvanised steel cable tray, trunking and conduit which the electrical contractor shall allow to supply and install in accordance with the requirements of the following sections.

The electrical contractor shall allow to supply and install a new primary containment systems as identified on the tender drawings. The electrical contractor shall note that these drawings highlight the primary containment routes only; therefore the electrical contractor shall allow to supply and install all necessary supports, brackets and secondary containment necessary to provide a fully functional system and shall include all associated costs as part of the tender.

Trunking

The electrical contractor shall allow to supply and install new galvanised steel trunking in accordance with the requirements of BS 7671 and as detailed on the tender drawings.

All new trunking shall be sourced from a single manufacturer as Legrand Salamandre range (or equal and approved) complete with proprietary bends and tees.

The electrical contractor shall ensure that all trunking is neat in appearance, parallel with other service runs and lines of building construction. The contractor shall cut all trunking clean and square with axis, prepare ends and remove burrs and sharp edges and ensure that the inside of the trunking is free from anything liable to damage cables either during installation or after covers are fitted.

The electrical contractor shall arrange the trunking to allow easy access for the circuit wiring and shall only install cables through the trunking when it has been completely erected throughout its length. The

electrical contractor shall ensure that all trunking provides a degree of protection to IP4X along its entire length and shall ensure that all trunking covers can only be removed by means of a tool or deliberate action in accordance with the requirements of BS7671.

The electrical contractor shall locate covers on top or sides of trunking and arrange access so the covers are on a continuous face and cables can be laid in throughout the length of the trunking.

When trunking is held in a vice, the Contractor is to ensure surfaces remain undamaged and components are not warped. Avoid tool marking or damage to trunking system components. The Contractor shall repair and paint minor damages to the finish of the trunking with two coats zinc rich paint immediately after erection or after damage occurs. The use of self-tapping screws shall not be accepted. The contractor shall use round head screws except where provision is made for the use of counter-sunk heads.

The electrical contractor shall adequately support all trunking via independent fixings to the building fabric in accordance with the manufacturer's requirements and/or Guidance Note 1 Selection and Erection published by the IET.

Conduit

The electrical contractor shall allow to supply and install galvanised steel conduit in accordance with the requirements of BS7671 and as detailed on the tender drawings and further described herein.

All conduit shall be heavy duty class 4 threaded steel galvanised conduits with a minimum of 25mm diameter to BS 4568:2011 or BS EN 61386. The electrical contractor shall ensure that steel conduit systems are solid drawn or longitudinally welded and have threaded connections to couplings and fittings from the same manufacturer.

The electrical contractor shall ensure that the length of thread on conduit matches that of the conduit couplers and that fittings and / or equipment shall have no thread exposed after erection except at running couplers. The electrical contractor shall ensure that conduits butt inside couplers and shall use lubricant when cutting threads.

The electrical contractor shall site form 90° bends in conduit wherever practical or use circular or adaptable boxes. The contractor shall construct bends and sets cold with a bending machine and shall not apply heat when forming sets or bends. The contractor shall cut conduit clean and square with the axis, removing any burrs prior to erection.

The electrical contractor shall use bending tools complying with British Standards appropriate to conduit material and shall ensure no indentation or reduction in cross sectional area occurs during installation. Use correct tools to assemble conduit.

The minimum number of running couplings shall be used. For running couplings in Class 4 conduit, three piece conduit unions shall be used. Paint joints of conduit and minor damages to finish of conduit and trunking with two coats zinc rich paint immediately after erection.

Conduits should be run in horizontal or vertical planes, the only exception shall be where a conduit is required to follow the line of a structural feature. Conduits are to be laid in straight or symmetrical lines with easy sets or bends.

Metal conduits and their associated fittings should be tightly screwed and installed in a manner consistent with maintaining earth continuity throughout the installation. Conduit shall not be used as a circuit protective conductor, this function is to be carried out by means of a separate conductor installed in the conduit installation as described elsewhere.

Where a conduit terminates into a sheet steel case, i.e. junction box, distribution board, cabinet or trunking, a flanged coupler and washer shall be used. A hexagonal smooth bore brass bush should be screwed into the coupler from the inside and a suitable washer fitted between the shoulder and the box.

Flexible Conduit

The electrical contractor shall allow to supply and install flexible conduit to connect final equipment. Lengths shall be kept to the minimum and the conduit suitably routed and secured to provide a neat and compliant installation.

All flexible conduits shall be supplied by 'Kopex International' and installed in accordance with the manufacturer's instructions.

Cable Tray

The electrical contractor shall allow to supply and install new medium duty perforated galvanised steel cable tray with return flange in accordance with BS EN 10346, the tender drawings and as further described herein. The new galvanised steel cable tray shall be used to support sub-main distribution and earthing cables.

Sizes of the new cable trays shall be as identified on the tender drawings. The electrical contractor shall keep cutting of cable trays to a minimum. Where cutting is required this shall be cut along the line of un-perforated metal. The electrical contractor shall make good all cut finishes with zinc rich paint.

The electrical contractor shall use flat bends, equal tees, unequal tees and crosses with corners gusseted as identified on the tender drawings. The electrical contractor shall supply and install factory made fittings of the same material, type, pattern, finish and thickness as the cable tray. The electrical contractor shall use reducers, inside angles and outside angles as required in accordance with the manufacturer's standard.

The electrical contractor shall join lengths of cable tray and associated fittings using manufacturer's standard shouldered ends, fish plates, or couplers, with galvanized or zinc plated slotted domed head 'roofing' bolts, nuts, washers and shake proof washers. Where required the electrical contractor shall cut holes into the cable tray for passage of cables with grommets, bushes or other lining. Install all bolts, fixings and hangers with threaded portion away from cables. Cable routes to cross at right angles or spacing to BS EN 50374.

For cables on horizontal and vertical tray the electrical contractor shall use cleats bolted to tray for paper, plastic or elastomeric insulated cables and saddles or clips for mineral insulated cables. Ensure that all cleats are sized to grip cables firmly without undue pressure or strain on cable, but preventing slipping. The electrical contractor shall ensure that cables are installed in accordance with the requirements of Appendix G of Guidance Notes 'Selection & Erection' published by the IET.

The electrical contractor shall provide adequate fixings and support to the cable tray. The new galvanised steel cable tray shall be fixed from building fabric with minimum clearance 20mm behind tray work. The electrical contractor shall install fixings at regular intervals to prevent visible sagging when loaded, with maximum spacing 1.2m and 230mm from fittings.

Testing

Upon completion of the works the electrical contractor shall test the modified installation in accordance with the requirements of BS7671 (AMD3) and shall provide signed and dated electrical test certification in good time for handover. Upon completion of the works the electrical contractor shall provide an Operating and Maintenance Manual (O&M) in accordance with the requirements of A64.520.050. The electrical contractor shall note that handover shall not be considered prior to receipt of this information.

100.040 CONTROL REQUIREMENTS:

Automatic disconnection of supplies under fault conditions.

100.050 SYSTEM SCHEMATICS:

The electrical contractor shall modify the LV distribution system in accordance with this specification and the following electrical schematic drawings:

Drawing Number	Drawing Title
6100	Electrical Services – Proposed Electrical Distribution Schematic

100.060 SYSTEM DRAWINGS:

The electrical contractor shall modify the LV distribution system in accordance with this specification and the following electrical layout drawings:

Drawing Number	Drawing Title
6001	Electrical Services – Proposed Removals and Modifications
6101	Electrical Services – Proposed Containment Layout
6103	Electrical Services – Proposed Small Power Layout

PART 2 SELECTION SCHEDULES FOR REFERENCE SPECIFICATIONS

260.000 CONDUIT AND TRUNKING

260.010 GENERAL:

- Comply with work section general clauses reference Y60.1000 and those detailed below.
- Any conduit or trunking must support the function of the cabling system and provide protection, adequate separation distance and presentation as required by the cabling and EMC design.
- Fire stopping
 - Install all fire stopping systems in accordance with the manufacturer's written instructions.

260.020 CONDUIT SYSTEMS:

- Type: Galvanised Steel Conduit
- Application: General
- Metal
 - Rigid
 - Class 4 - reference Y60.2010B
 - Fittings - Reference Y60.2020A
- Fittings - reference Y60.2050A
- Support and fixing - reference Y60.2170

260.030 METAL TRUNKING:

- Type: IP4X Galvanised Steel Trunking
- Application: General
- Manufacturer and reference: Legrand Salamandre
 - Or approved equivalent.
- Cable trunking and fittings
 - Reference Y60.2080A
- Trunking Type
 - Standard cable trunking.
- Installation
 - Flush.
- Separate or multi-compartment trunking
 - Reference Y60.2150A
- Support and fixing - reference Y60.2170

260.050 GENERAL WORKMANSHIP:

- General
 - Reference Y60.3010A
- Layout - reference Y60.3020
- Spacing - reference Y60.3030
- Condensation prevention - reference Y60.3040
- Protection and repair of steel components
 - Reference Y60.3050A
- Equipment connections - reference Y60.3060
- Cleaning before wiring - reference Y60.3070
- Wiring
 - Reference Y60.3080A
- Builderswork - reference Y60.3090

260.070 WORKMANSHIP FOR CONDUIT:

- Draw-in boxes - reference Y60.4010
- Installation of cast in or buried conduit - reference Y60.4020
- Conduit boxes - reference Y60.4030
- Fixing conduit - reference Y60.4040
- Flexible and pliable conduit - reference Y60.4050
 - Screwed steel conduit - reference Y60.4060

260.080 WORKMANSHIP FOR TRUNKING:

- Access - reference Y60.5020
- Fixing trunking
 - Reference Y60.5030A
- Steel trunking
 - Reference Y60.5040A

261.000 HV/LV CABLES AND WIRING

261.010 GENERAL:

- Comply with work section general clauses reference Y61.1010, Y61.1020, Y61.1030 and those detailed below.
- Supply HV/LV cables and wiring as identified on the tender drawing and as described in this specification.
- Fire stopping
 - Install all fire stopping systems in accordance with the manufacturer's written instructions.

261.050 STANDARD WIRING AND POWER CABLES:

- Type: XLPE/SWA/LSZH
- Application: Sub-Main electrical distribution
- Manufacturer and reference: Draka, AEI, Prysmain Cables
- Or approved equivalent.
- Standard power supply cables
 - Thermosetting insulation and copper conductors
 - Sheathed and armoured - reference Y61.2020B
 - LSF sheathed and armoured - reference Y61.2020E
 - Standard power supply cables, LSF insulation, sheathed - reference Y61.2020K
 - Standard cables with definite fire performance - reference Y61.2020M
- Standard cables where penetration by sharp objects is a high risk - reference Y61.2020N

261.130 CABLE GLANDS:

- Unarmoured cables, indoors - reference Y61.3010A
- Armoured cables, indoors - reference Y61.3010D
- Armoured cables, outdoors - reference Y61.3010E

261.230 CABLE DUCTS:

- Reference Y61.3110A

261.240 CABLE SLEEVES:

- Reference Y61.3120A

261.250 CABLE COVERS AND MARKERS:

- Reference Y61.3130A

261.260 WORKMANSHIP

- Cable installation - general - reference Y61.4010
- Cable installation in low temperatures - reference Y61.4020
- Installation of LSF cable - reference Y61.4030
- Cable installation in trenches - reference Y61.4060
- Cable embedded installation.
 - Reference Y61.4120A
- Cable jointing and terminating generally.

- Reference Y61.4150A

263.000 SUPPORT COMPONENTS - CABLES

263.010 GENERAL:

- Comply with work section general clauses reference Y63.1000 and those detailed below.
- Supply support components as necessary to provide a fully functional system
- Fire stopping
 - Install all fire stopping systems in accordance with the manufacturer's written instructions.

263.020 CABLE SUPPORT AND FINISHES:

- Cable supports and finishes
 - Reference Y63.2010A

263.030 CABLE SUPPORT SYSTEM:

- Type: Medium duty galvanised steel cable tray with return flange
- Application: Installation of armoured sub-main cables
- Manufacturer and reference: Legrand Swift Range
 - Or approved equivalent.
- Perforated tray - reference Y63.2020A
- Proprietary cable ties - reference Y63.2025A

263.040 WORKMANSHIP

- Cable tray installation - reference Y63.3010
- Cable cleats, ties, saddles and clips installation
 - Reference Y63.3020A

271.000 LV SWITCHGEAR AND DISTRIBUTION BOARDS

271.010 GENERAL:

- Comply with work section general clauses reference Y71.1000 and those detailed below.
- Supply switchboards and distribution boards as identified on the tender drawings

271.030 SWITCHBOARDS:

- Type: MCCB Panelboard
- Application: Facility Main Switchgear
- Manufacturer and reference: Eaton / Mem
 - Or approved equivalent.
- Electrical supply
- LV switchgear and controlgear assembly
 - Details of equipment
 - As shown on drawing/schedules
- Assembly construction
 - Wall mounted - reference Y71.2020B
 - Access for cabling - Front, top, bottom or rear
- Enclosures finish
 - Reference Y71.2030A
- Site built assemblies - reference Y71.2060
- Site modification - reference Y71.2070

271.050 CIRCUIT BREAKERS, TRANSFER SWITCHES AND CONTROL AND PROTECTIVE SWITCHES:

- Type: MCCB
- Application: General
- Manufacturer and reference: Eaton / MEM
 - Or approved equivalent.
- Air circuit breaker
 - Utilisation B, MCCB - reference Y71.2090D
- Characteristics of circuit breakers, transfer switches and control and protective switches:
 - As shown on the tender drawings

271.100 CURRENT TRANSFORMERS:

- Reference Y71.2140

271.112 INSTRUMENTS AND METERS (NEW BUILD):

- Reference Y71.2150A
- Details as shown on drawings/schedules

271.130 INDICATOR LIGHTS:

- Reference Y71.2170A

271.150 FRAMEWORK:

- Reference Y71.2190A

271.160 FUSES:

- Reference Y71.2200A

271.170 DISTRIBUTION BOARDS:

- Application: Distribution for final circuit equipment – Minimum IP Rating of IP4X
- Manufacturer and reference: Eaton / MEM
 - Or approved equivalent.
- Reference Y71.2210A
- Provide spare ways
- As shown on drawings/schedules

271.190 MINIATURE CIRCUIT BREAKERS:

- Application: To provide automatic protection of circuits under fault conditions
- Manufacturer and reference: To match distribution board pan assembly
 - Or approved equivalent.
- Reference Y71.2230A
- As shown on drawings/schedules

271.200 RESIDUAL CURRENT DEVICE:

- Type: RCBO
- Application: To provide additional protection to circuits
- Manufacturer and reference: To match distribution board pan assembly
 - Or approved equivalent.
- RCBO's - reference Y71.2245

271.210 CABLE TERMINATIONS:

- Reference Y71.2250

271.270 WORKMANSHIP

- Fixing - reference Y71.3010
- Mounting height - reference Y71.3020
- Access - reference Y71.3030
- Marking and drawing
 - Reference Y71.3040A
- Cable terminations - reference Y71.3050
- Installation and commissioning
 - Reference Y71.3060A

280.000 EARTHING AND BONDING COMPONENTS

280.010 GENERAL:

- Comply with work section general clauses reference Y80.1000 and those detailed below.
- Supply earthing and bonding components as specified in section W51

281.000 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES:

281.010 GENERAL:

- Comply with work section general clauses reference Y81.1000 and those detailed below.

281.020 TESTING AND COMMISSIONING:

- Incorporated equipment characteristics
 - Reference Y81.2010A
- Prospective short circuit current (IP)
 - Reference Y81.2020A
- Initial verification
 - Reference Y81.2030A
- Test equipment and consumables
 - Reference Y81.2040A
- Testing
 - Reference Y81.2050A
 - Continuity of protective conductors
- Earth fault loop impedance (ZS)
 - Reference Y81.2070A
- Settings and adjustments - reference Y81.2080
- HV and LV switchgear
 - Reference Y81.2100A
- Calibration - reference Y81.2130
- Certification and reporting
 - Reference Y81.2140A
- Completion certificates
 - Reference Y81.2150A
- Records - reference Y81.2160

281.030 WORKMANSHIP:

- Conductive parts - reference Y81.3010
- Cables
 - LV buried cables - reference Y81.3040A

282.000 IDENTIFICATION - ELECTRICAL

282.010 GENERAL:

- Comply with work section general clauses reference Y82.1000 and those detailed below.

282.020 LABELS AND NOTICES:

- Reference Y82.2010A

282.030 LABELS AND NOTICES MATERIALS:

- Material
 - Reference Y82.2020A
- Fixing
 - Reference Y82.2030A
- Arrangement
 - Reference Y82.2040A
- Lettering and size of labels and notices
 - Reference Y82.2050A

282.040 CONDUCTOR ARRANGEMENT:

- Reference Y82.2060A

282.050 EQUIPMENT SIGNS AND LABELS:

- Safety signs
 - Reference Y82.2070A
- Plant and equipment labels
 - Reference Y82.2080A

- Maintenance notices - reference Y82.2090
 - Equipment
- Switchgear
 - Reference Y82.2130A
- Distribution boards - reference Y82.2140

282.060 SCHEMATIC DIAGRAMS:

- Reference Y82.2150A

282.100 CABLE IDENTIFICATION:

- Cable identification
 - Reference Y82.2190A
- Terminal marking and conductor identification
 - Reference Y82.2200A
- Underground cable identification
 - Reference Y82.2210A
- Cable conductor colour coding
 - Reference Y82.2220A
- Cable jointing and termination - reference Y82.2230

290.000 FIXING TO BUILDING FABRIC

290.010 GENERAL:

- Comply with work section general clauses reference Y90.1000 and those detailed below.

290.020 FIXINGS:

- Standards - reference Y90.2010
- Plugs - reference Y90.2020
- Screws - reference Y90.2030
- Non-penetrative support systems - reference Y90.2080

290.030 WORKMANSHIP:

- Drilling - reference Y90.3010
- Fixing to timber rails - reference Y90.3050
- Fixing to hollow stud/tile/block wall
 - Reference Y90.3060A
- Fixing to concrete, brickwork or blockwork
 - Reference Y90.3070A
- Fixing to metalwork
 - Reference Y90.3080A
- Fixing to structural steelwork and concrete structures
 - Reference Y90.3090A
- Non-penetrative support systems for roof mounted equipment - reference Y90.3100#

PART 3 SPECIFICATION CLAUSES SPECIFIC TO V20.

300.000 PRODUCTS/MATERIALS

300.012 METERING (NEW BUILD):

- Make provision for check metering of electricity for potential individual tenancy areas. Provide submetering of consumption of total electricity use for lettable area
- Make provision for check metering to comply with Building Regulations AD L2A - L2B as appropriate.

V21 GENERAL LIGHTING

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES:

To provide effective and energy efficient illumination throughout the facility to provide adequate illumination for the safe movement of personnel and plant.

100.020 DESIGN PARAMETERS:

The electrical contractor shall comply with the statutory obligations and Code of Practice as applicable. The electrical contractor shall comply with the latest revision of the following standards and codes of practice:

British Standards and Guidance

Document Number	Document Title
BS 7671	IET Wiring Regulations 17th Edition (Amendment 3)
BS 5266-1:2016	Emergency lighting – Part 1: Code of practice for the emergency escape lighting of premises

The electrical contractor shall ensure that all systems supplied and installed are in accordance with the above standards. Other guidance, used for design, is obtained from the following:

- CIBSE SLL Code for Lighting 2012
- CIBSE LG7 Guide for Office Lighting
- BS EN 12464-1:2002 Light and lighting - Lighting of work places.

100.030 SYSTEM DESCRIPTION:

The electrical contractor shall supply, install, test and commission the complete lighting installation as identified on the tender drawings and further described herein. If there are any areas of doubt or any ancillary items are required the electrical contractor shall allow for all such items at the time of tender.

Removals and Disposals

The electrical contractor shall allow to remove and dispose of the complete lighting installation within the building as identified on tender drawings. The electrical contractor shall survey the existing installation and shall allow to remove and dispose of the redundant lighting installation in its entirety including all general luminaires, emergency luminaires, external luminaires and all associated containment, supports and circuit wiring in its entirety. The electrical contractor shall remove and dispose of all equipment in accordance with the requirements of the WEEE directive.

Proposed Lighting Installation

The electrical contractor shall allow to supply, install test and commission the complete general lighting installation as identified on the drawings and as identified in the schedule of luminaires. New luminaires shall be manufactured by Thorlux Lighting (Contact Chris Morley 07767 273006 or equal and approved).

The lighting installation throughout the facility shall comprise of new LED luminaires which shall generally be fixed to or supported from the building fabric using manufacturer's proprietary clips and supports. The lighting installation within the office areas of the building shall be installed into a suspended ceiling grid. For luminaires recessed into suspended ceilings, the electrical contractor shall ensure that the mounting details are compatibility with the ceiling type leaving a close fit with the grid.

The electrical contractor shall ensure that the colour rendering of all luminaires is be good (CIE group 1B or better). The electrical contractor shall ensure that the colour temperature of luminaires is consistent throughout the installation (4000 K) and shall allow discuss and liaise with the manufacturer to ensure that all LED products meet the specified colour temperature.

The electrical contractor shall allow to supply and install new containment to all luminaires which shall comprise primarily of a new galvanised steel trunking and conduit installation. The electrical contractor shall allow to supply and install all containment necessary to provide a fully functional system. Where required, drops to switches and other control elements will be in flush galvanised steel conduit. Surface mounted conduit will not be permitted other than within plantroom areas of the building.

The electrical contractor shall allow to supply and install new final circuit wiring from the localised electrical distribution boards to the new luminaires. New circuit wiring shall be supplied and installed as BASEC approved single core copper XLPE/LSZH cables drawn into a conduit and trunking installation of the sizes identified on the tender drawings. The electrical contractor shall ensure that all trunking and conduit shall provide a minimum protection against the ingress of solids of at least IP4X along its entire length.

Upon completion of the works the electrical contractor shall test the modified installation in accordance with the requirements of BS7671 (AMD3) and shall provide signed and dated electrical test certification in good time for handover. Upon completion of the works the electrical contractor shall provide an Operating and Maintenance Manual (O&M) in accordance with the requirements of A64.520.050. The electrical contractor shall note that handover shall not be considered prior to receipt of this information.

100.040 CONTROL REQUIREMENTS

Lighting controls within the occupied areas of the building shall generally be provided with automatic presence and absence detection with manual switching typically limited to plant room and storage areas of the building.

Lighting control within the office areas of the building shall be achieved using thorlux lighting smart controls (or equal and approved). Within areas where presence detection is provided luminaires shall automatically turn on upon detection of movement and shall automatically turn off after a period of 10 minutes (adjustable) if no further movement has been detected. In areas where absence detection is provided luminaires in these spaces shall be turned on by pressing the top half of the retractive grid switch when entering the room. When leaving the room the controller shall automatically turn off luminaires after 10 minutes if no movement is detected or manual turned off. Dimming shall be achieved by pressing the dim up and dim down functions on the controller. Areas where natural day light is available shall also be subject to automatic day light dimming.

Lighting controls within the changing room areas provided via direct hard wired lighting controllers as manufactured by Danlers (or equal and approved). The electrical contractor shall ensure that lighting controls within the changing room areas are water resistant and positioned to prevent water ingress and condensation.

100.050 SYSTEM SCHEMATICS:

The electrical contractor shall modify the lighting installation in accordance with this specification and the following electrical schematic drawings:

Drawing Number	Drawing Title
6100	Electrical Services – Proposed Electrical Distribution Schematic

100.060 SYSTEM DRAWINGS:

The electrical contractor shall modify the lighting installation in accordance with this specification and the following electrical layout drawings:

Drawing Number	Drawing Title
6001	Electrical Services – Proposed Removals and Modifications
6102	Electrical Services – Proposed Lighting Layout

PART 2 SELECTION SCHEDULES FOR REFERENCE SPECIFICATIONS

260.000 CONDUIT AND TRUNKING

260.010 GENERAL:

- Supply conduit and cable trunking as specified in section V20

261.000 HV/LV CABLES AND WIRING

261.010 GENERAL:

- Comply with work section general clauses reference Y61.1010, Y61.1020, Y61.1030 and those detailed below.
- Supply LV cables in accordance with the tender drawings
- Fire stopping
 - Install all fire stopping systems in accordance with the manufacturer's written instructions.

261.020 STANDARD FLEXIBLE CORDS AND INDUSTRIAL CABLES:

- Type: XLPE/LSZH
- Application: General
- Manufacturer and reference: Draka, AEI, Prysmain
 - Or approved equivalent.
- Standard ordinary flexible cords - multi copper cores - reference Y61.2010D

261.050 STANDARD WIRING AND POWER CABLES:

- Type: XLPE/LSZH
- Application: General
- Manufacturer and reference: Draka, AEI, Prysmian
 - Or approved equivalent.
- Standard power supply cables
 - Thermosetting insulation and copper conductors
 - Sheathed - reference Y61.2020A
 - Standard wires for conduit and trunking
 - LSF insulated, with copper conductors - reference Y61.2020G
 - LSF insulated, sheathed - reference Y61.2020J
 - Standard power supply cables, LSF insulation, sheathed - reference Y61.2020K
- Standard cables where penetration by sharp objects is a high risk - reference Y61.2020N

261.060 CONTROL AND AUXILIARY CABLES:

- Paired, screened control cables with or without metallic protection - reference Y61.2050B
- Multi-core unarmoured LSF sheathed auxiliary cables - reference Y61.2050G

261.130 CABLE GLANDS:

- Unarmoured cables, indoors - reference Y61.3010A

261.260 WORKMANSHIP

- Cable installation - general - reference Y61.4010
- Cable installation in low temperatures - reference Y61.4020
- Installation of LSF cable - reference Y61.4030
- Installation of unarmoured cables - reference Y61.4040
- Cable installation in conduit and trunking.
 - Reference Y61.4090A
- Cable embedded installation.
 - Reference Y61.4120A
- Cable installation - flexible cords - reference Y61.4140
- Cable jointing and terminating generally.
 - Reference Y61.4150A

263.000 SUPPORT COMPONENTS - CABLES

263.010 GENERAL:

- Supply support components as specified in section V20

273.000 LUMINAIRES AND LAMPS

273.010 GENERAL:

- Comply with work section general clauses reference Y73.1000 and those detailed below.
- Supply luminaires and lamps as identified on the tender drawings and schedule of luminaires

273.020 LUMINAIRES:

- Lamp efficacy - reference Y73.2005
- General purposes - reference Y73.2010A
- Special applications - reference Y73.2010C
 - Emergency lighting
 - Reference Y73.2020A

273.030 LAMPHOLDERS:

- General
 - Reference Y73.2060A
- Mounting
 - Reference Y73.2080A

273.040 CONTROL GEAR AND COMPONENTS:

- Type: LED
- Application: General
- Compatibility
 - Reference Y73.2090A
- Circuit losses - reference Y73.2095
- Capacitors
 - Reference Y73.2120A
- Supply terminals - reference Y73.2130
- Fuse - reference Y73.2140
- Remote gear - reference Y73.2160

273.050 LAMPS:

- Type: LED – 4000K
- Types of high efficiency lamp for non-daylight areas
 - Reference Y73.2165
- LED lamps - reference Y73.2215A

273.060 SUPPORT SYSTEM:

- Application: General
- Conduit
 - Steel - reference Y73.2240A
 - Installation
 - Connections to luminaires - reference Y73.4220
 - Direct to conduit
 - Terminal box - reference Y73.4230A
- Flexible cord
 - Reference Y73.2270A
 - Installation
 - Suspension - reference Y73.4160
- Wall brackets
 - Reference Y73.2280A

273.090 LUMINAIRES AND LAMPS WORKMANSHIP - GENERAL:

- Material of supporting surface - reference Y73.4060
- Support - reference Y73.4110
- Support by direct fixing
 - Reference Y73.4140A
 - Support in suspended ceiling

273.100 LUMINAIRES AND LAMPS WORKMANSHIP - RECESSED FITTINGS:

- Connections to luminaires - reference Y73.4220
 - Recessed fittings
 - Plug and socket - reference Y73.4260A

273.110 LUMINAIRES AND LAMPS WORKMANSHIP -

- Support - reference Y73.4110

- Connections to luminaires - reference Y73.4220
 - At luminaire - reference Y73.4240B

274.000 ACCESSORIES FOR ELECTRICAL SERVICES

274.010 GENERAL:

- Comply with work section general clauses reference Y74.1000 and those detailed below.

274.030 ACCESSORIES COMMON REQUIREMENTS:

- Manufacturer and reference: MK Electric – Grid Plus Range
 - Or approved equivalent.
- Plastic plates, flush installation - reference Y74.2010A
- Accessories details
 - As shown on drawings
 - Switch rocker bar colour: White
- Plastic coverplate colour: Graphite

274.040 INTERIOR LIGHTING SWITCHES:

- Manufacturer and reference: MK Electric – Grid Plus Range
 - Or approved equivalent.
- General purpose moulded plastic - reference Y74.2020A
- Grid moulded plastic - reference Y74.2020B
- General purpose secret key - reference Y74.2020D
- Grid secret key - reference Y74.2020F
- Switch details
 - As indicated on drawings
 - Gangs
- Pole characteristics: Double Pole

274.070 LUMINAIRE CONNECTORS:

- General and emergency lighting - reference Y74.2050A
- General lighting - reference Y74.2050B

274.080 LAMPHOLDERS:

- BC type - reference Y74.2060A
- ES type - reference Y74.2060B

274.240 WORKMANSHIP:

- Earthing - reference Y74.3010
- Protection - reference Y74.3020
- Fixing - reference Y74.3030
- Measuring mounting heights - reference Y74.3040
- Accessories mounting heights
 - Standard - reference Y74.3050
- For the disabled - reference Y74.3070

280.000 EARTHING AND BONDING COMPONENTS

280.010 GENERAL:

- Supply earthing and bonding components as specified in section W51

281.000 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES:

281.010 GENERAL:

- Comply with work section general clauses reference Y81.1000 and those detailed below.

281.020 TESTING AND COMMISSIONING:

- Incorporated equipment characteristics
 - Reference Y81.2010A
- Prospective short circuit current (IP)
 - Reference Y81.2020A

- Initial verification
 - Reference Y81.2030A
- Test equipment and consumables
 - Reference Y81.2040A
- Testing
 - Reference Y81.2050A
 - Continuity of protective conductors
- Earth fault loop impedance (ZS)
 - Reference Y81.2070A
- Settings and adjustments - reference Y81.2080
- Specialist installations
 - Emergency lighting installations
 - Reference Y81.2120E
- Calibration - reference Y81.2130
- Certification and reporting
 - Reference Y81.2140A
- Completion certificates
 - Reference Y81.2150A
- Records - reference Y81.2160

281.030 WORKMANSHIP:

- Conductive parts - reference Y81.3010
- Cables
 - LV buried cables - reference Y81.3040A

282.000 IDENTIFICATION - ELECTRICAL

282.010 GENERAL:

- Supply identification - electrical as specified in section V20

290.000 FIXING TO BUILDING FABRIC

290.010 GENERAL:

- Carry out fixing to building fabric as specified in work section V20

PART 3 SPECIFICATION CLAUSES SPECIFIC TO V21

300.000 GENERAL

300.010 SYSTEM REQUIREMENTS:

- Select lighting control equipment suitable to meet system objectives requirements.

300.020 INSTALLER SELECTION:

- Engage lighting control equipment specialist to develop the design, supply, install, commission and set to work the lighting control system.
 - Specialist: Thorlux Lighting and Danlers

300.030 ELECTROMAGNETIC COMPATIBILITY:

- Ensure all equipment and systems are installed to provide electromagnetic compatibility within the systems and with any other systems installed in the same location.

300.060 LIGHTING EQUIPMENT SCHEDULES:

- Supply lighting equipment in accordance with the tender drawings and schedule of luminaires

310.000 PRODUCTS/MATERIALS

310.020 SENSORS FOR LIGHTING CONTROL:

- Manufacturer and reference: Thorlux Lighting "Smart" Controls and Danlers
 - Or approved equivalent
- Connection to controller

- Integral
- Remote
- Passive infra red movement detector
 - Beam coverage
 - 360o
- Infra red receiver
 - Programming
- Time lapse
 - Interval: 10min
 - Switch type
 - Retractive
- Protection to BS EN 60529

320.000 WORKMANSHIP

320.010 WORK ON-SITE:

- Ensure that all building works are completed and service connections are provided to provide a fully functional system.

320.020 INSTALLATION:

- Install, commission and set to work lighting control equipment in accordance with manufacturer's recommendations and BS 7671. Install infra-red transmission systems and co-ordinate the installation of infra-red systems in the same area in accordance with BS 7693.

320.030 QUALITY CONTROL:

- Handle, store and install equipment and components of the lighting control system in accordance with the manufacturer's recommendations.
- Obtain all equipment and components from a single source.
- Inspect all equipment and components on delivery, before fixing and after installation, and reject and replace any that are defective.
- Record all commissioning, measurements and tests.

V22 GENERAL LV POWER

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES:

To provide electrical power and a suitable means of isolation to all items of plant and equipment in the building.

100.020 DESIGN PARAMETERS:

The electrical contractor shall comply with the statutory obligations and Code of Practice as applicable. The electrical contractor shall comply with the latest revision of the following standards and codes of practice:

British Standards and Guidance

Document Number	Document Title
BS 7671	Requirements for Electrical Installations (Amendment 3)
BS 7430	Code of practice for earthing.

If there is any conflict in interpretation the contractor shall obtain clarification from the PM.

100.030 SYSTEM DESCRIPTION:

The electrical contractor shall allow to supply, install, test and commission the complete small power installation as identified on the tender drawings and further described herein. If there are any areas of doubt or any ancillary items are required the electrical contractor shall allow for all such items at the time of tender.

Removal Works

The electrical contractor shall allow to remove and dispose of the complete general small power installation within the building as identified on tender drawings. The electrical contractor shall survey the existing installation and shall allow to remove and dispose of the redundant small power installation in its entirety including all electrical accessories and all associated containment, supports and circuit wiring in its entirety. The electrical contractor shall remove and dispose of all equipment in accordance with the requirements of the WEEE directive.

Proposed Installation Works

The electrical contractor shall allow to supply, install, test and commission the complete small power installation as identified on the tender drawings. The electrical contractor shall allow to supply and install two new split metered electrical distribution boards DBA and DBB as identified on the drawings and equipment schedules and further described in Section V20 of this specification.

From the new distribution board the electrical contractor shall allow to supply and install new containment in the form of galvanised steel trunking of the sizes identified on the tender drawing. The electrical contractor shall note that the containment shown is primary containment only, the electrical contractor shall allow to supply and install all secondary containment necessary to provide a fully functional system. All trunking and conduit shall provide a minimum protection against the ingress of solids of at least IP4X along its entire length.

Within the office and hall areas of the building electrical accessories shall generally still be installed into new dado trunking which the electrical contractor shall supply and install. New dado trunking shall be as manufactured by MK Electric Prestige 3D uPVC range or equal and approved.

New circuit wiring shall generally comprise of XLPE/LSZH single core copper cables drawn into the conduit and trunking installation. Final connections from electrical isolators to fixed items of plant and equipment shall be via a combination of rigid and flexible galvanised steel conduit. The electrical contractor shall note that all containment shall be recessed within the fabric of the building, surface mounted conduit shall not be permitted in any areas other than the plant room.

Final circuits shall generally be protected by type B MCB's for small power circuits and type C MCB's for lighting circuits. General socket outlets shall be protected with 30mA Residual Circuit Breakers with Overcurrent (RCBO's).

Small Power electrical accessories shall be as manufactured by MK Electric Logic Plus range within office areas, metal clad accessories within plantrooms and Master Seal Outlets within changing areas of the building. Final electrical accessories shall be as identified on the tender drawings and equipment schedules.

Electrical accessories within public areas of the building shall be compliant with Part M of the building regulations and shall consist of graphite coloured faceplates with white rocker bars. Electrical accessories within plant room and store room areas of the building shall metal clad.

All accessories, including socket outlets shall be labelled with their appropriate circuit references and all fused connection units and other local isolation devices shall be labelled to indicate the item they are serving along with their relevant circuit reference.

Upon completion of the works the electrical contractor shall test the modified installation in accordance with the requirements of BS7671 (AMD3) and shall provide signed and dated electrical test certification in good time for handover. Upon completion of the works the electrical contractor shall provide an Operating and Maintenance Manual (O&M) in accordance with the requirements of A64.520.050. The electrical contractor shall note that handover shall not be considered prior to receipt of this information.

100.040 CONTROL REQUIREMENTS:

Automatic operation of protective devices under fault conditions

100.050 SYSTEM SCHEMATICS:

The electrical contractor shall modify the general small power installation in accordance with this specification and the following electrical schematic drawings:

Drawing Number	Drawing Title
6100	Electrical Services – Proposed Electrical Distribution Schematic

100.060 SYSTEM DRAWINGS:

The electrical contractor shall modify the general small power installation in accordance with this specification and the following electrical layout drawings:

Drawing Number	Drawing Title
6001	Electrical Services – Proposed Removals and Modifications
6101	Electrical Services – Proposed Containment Layout
6103	Electrical Services – Proposed Small Power Layout

PART 2 SELECTION SCHEDULES FOR REFERENCE SPECIFICATIONS

260.000 CONDUIT AND TRUNKING

260.010 GENERAL:

- Supply conduit and cable trunking as specified in section V20

260.040 TRUNKING OF INSULATING MATERIAL:

- Type: Dado
- Manufacturer and reference: MK Electric
 - Or approved equivalent.
- Cable trunking and fittings
 - Reference Y60.2080A
- Trunking type
 - Standard cable trunking.
 - Wall/dado trunking.
- Surface trunking

- PVC general purpose - reference Y60.2130A
- Service outlet boxes
 - Reference Y60.2110A
- Separate or multi-compartment trunking
 - Reference Y60.2150A
- Wall/Dado Trunking
 - PVC - reference Y60.2130C
- Support and fixing - reference Y60.2170

261.000 HV/LV CABLES AND WIRING

261.010 GENERAL:

- Supply HV/LV cables and wiring as work sections V20 & V21

263.000 SUPPORT COMPONENTS - CABLES

263.010 GENERAL:

- Supply support components as specified in section V20

271.000 LV SWITCHGEAR AND DISTRIBUTION BOARDS

271.010 GENERAL:

- Supply switchboards and distribution boards as work section V20

274.000 ACCESSORIES FOR ELECTRICAL SERVICES

274.010 GENERAL:

- Comply with work section general clauses reference Y74.1000 and those detailed below.

274.020 SAMPLES:

- Provide samples as requested by the Employer

274.030 ACCESSORIES COMMON REQUIREMENTS:

- Application: General
- Manufacturer and reference: MK Electric
 - Or approved equivalent.
- White plastic plates, flush installation - reference Y74.2010A
- Metal clad plates, surface steel conduit installation - reference Y74.2010D
- Surface, plastic, weatherproof installation - reference Y74.2010F
- Accessories details
 - Switch rocker bar colour: White
- Plastic coverplate colour: Graphite

274.090 ISOLATING SWITCHES:

- Reference Y74.2070A
- Reference Y74.2070B
- Pole configuration: Double Pole

274.100 FUSE CONNECTION UNITS:

- Application: General
- Manufacturer and reference: MK Electric – Logic Plus Range
 - Or approved equivalent.
- Switched - reference Y74.2080A
- Unswitched - reference Y74.2080B
- Details
 - As indicated on drawings/schedules

274.110 SOCKET-OUTLETS:

- Application: General
- Manufacturer and reference: MK Electric – Logic Plus Range
 - Or approved equivalent.

- Double, switched - reference Y74.2090C

274.150 TELEPHONE AND DATA OUTLET SOCKETS:

- Manufacturer and reference: MK Electric – Logic Plus Range
 - Or approved equivalent.
- General purpose - reference Y74.2130A

274.220 INDICATOR LAMPS:

- Application: General
- Manufacturer and reference: MK Electric
 - Or approved equivalent.
- General purpose neon - reference Y74.2200A

274.240 WORKMANSHIP:

- Earthing - reference Y74.3010
- Protection - reference Y74.3020
- Fixing - reference Y74.3030
- Measuring mounting heights - reference Y74.3040
- Accessories mounting heights
 - Standard - reference Y74.3050
- For the disabled - reference Y74.3070

280.000 EARTHING AND BONDING COMPONENTS

280.010 GENERAL:

- Supply earthing and bonding components as specified in section W51

281.000 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES:

281.010 GENERAL:

- Carry out testing and commissioning of electrical services as section V20

282.000 IDENTIFICATION - ELECTRICAL

282.010 GENERAL:

- Supply identification - electrical as specified in section V20

290.000 FIXING TO BUILDING FABRIC

290.010 GENERAL:

- Carry out fixing to building fabric as specified in work section V20

V40 EMERGENCY LIGHTING

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES:

To provide a safe and effective emergency lighting system meeting or exceeding the minimum luminance levels for all areas including escape routes and the areas of external plant within 0.5 seconds of failure of the local lighting circuit.

100.020 DESIGN PARAMETERS:

The electrical contractor shall comply with the statutory obligations and Code of Practice as applicable. The electrical contractor shall comply with the latest revision of the following standards and codes of practice:

British Standards and Guidance

Document Number	Document Title
BS 7671	Requirements for Electrical Installations (Amendment 3)
BS 5266-1:2016	Emergency Lighting – Part 1: Code of Practice for the emergency escape lighting of premises
BS EN 1838	Lighting Applications: Emergency Lighting

The electrical contractor shall undertake the supply, installation, testing and commissioning of the complete emergency lighting installation. All emergency and escape lighting shall be in accordance with BS 5266:1 2016 and BS EN 1838:2013 and shall be suitable for three hour duration.

100.030 SYSTEM DESCRIPTION:

The electrical contractor shall supply, install, test and commission the complete emergency lighting installation as identified on the tender drawings and as described herein. If there are any areas of doubt or any ancillary items are required the electrical contractor shall allow for all such items at the time of tender.

Removal Works

The electrical contractor shall allow to remove and dispose of the complete emergency lighting installation within the building as identified on tender drawings. The electrical contractor shall survey the existing installation and shall allow to remove and dispose of the redundant emergency lighting installation in its entirety including all general luminaires, emergency luminaires, external luminaires and all associated containment, supports and circuit wiring in its entirety. The electrical contractor shall remove and dispose of all equipment in accordance with the requirements of the WEEE directive.

Proposed Installation Works

The electrical contractor shall supply, install, test and commission the new emergency lighting installation as identified on the tender drawings and schedule of luminaires. All new emergency lighting shall be provided via emergency conversions of the general luminaires and be complete with integral batteries which are capable of supporting the lamp output for a minimum of three hours. These shall be supplemented by dedicated emergency bulkhead luminaires complete with running man legends adjacent to final exits.

The electrical contractor shall ensure that all emergency luminaires are readily accessible for maintenance purposes and shall ensure that all self-contained emergency exit luminaires are installed in the positions identified on the tender drawings.

The electrical contractor shall allow to supply and install new permanent live cables to all emergency luminaires as identified on the tender drawings. All new circuit wiring shall comprise of XLPE/LSF cables drawn into a conduit and trunking installation which the electrical contractor shall supply and install.

Upon completion of the works the electrical contractor shall undertake a full discharge test of the emergency lighting installation in accordance with the requirements of BS 5266 and shall provide signed and dated electrical test certification. The electrical contractor shall test the modified installation in accordance with the requirements of BS7671 (AMD3) and shall provide signed and dated electrical test certification in good time for handover. Upon completion of the works the electrical contractor shall provide an Operating and Maintenance Manual (O&M) in accordance with the requirements of A64.520.050. The electrical contractor shall note that handover shall not be considered prior to receipt of this information.

100.040 CONTROL REQUIREMENTS:

The emergency lighting installation shall operate within 0.5 seconds of local circuit failure and it shall not be capable of being switching off manually in the event of circuit power failure.

100.050 SYSTEM SCHEMATICS:

The electrical contractor shall modify the emergency lighting installation in accordance with this specification and the following electrical schematic drawings:

Drawing Number	Drawing Title
6100	Electrical Services – Proposed Electrical Distribution Schematic

100.060 SYSTEM DRAWINGS:

The electrical contractor shall modify the emergency lighting installation in accordance with this specification and the following electrical layout drawings:

Drawing Number	Drawing Title
6001	Electrical Services – Proposed Removals and Modifications
6102	Electrical Services – Proposed Lighting Layout

PART 2 SELECTION SCHEDULES FOR REFERENCE SPECIFICATIONS

260.000 CONDUIT AND TRUNKING

260.010 GENERAL:

- Supply conduit and cable trunking as specified in section V20

261.000 HV/LV CABLES AND WIRING

261.010 GENERAL:

- Supply HV/LV cables and wiring as work section V20 & V21

263.000 SUPPORT COMPONENTS - CABLES

263.010 GENERAL:

- Supply support components as specified in section V20

273.000 LUMINAIRES AND LAMPS

273.010 GENERAL:

- Supply luminaires and lamps as luminaire schedule and work section V21

274.000 ACCESSORIES FOR ELECTRICAL SERVICES

274.010 GENERAL:

- Supply accessories for electrical services as section V21

280.000 EARTHING AND BONDING COMPONENTS

280.010 GENERAL:

- Supply earthing and bonding components as specified in section W51

281.000 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES:

281.010 GENERAL:

- Carry out testing and commissioning of electrical services as section V21

282.000 IDENTIFICATION - ELECTRICAL

282.010 GENERAL:

- Supply identification - electrical as specified in section V20

290.000 FIXING TO BUILDING FABRIC

290.010 GENERAL:

- Carry out fixing to building fabric as specified in work section V20

PART 3 SPECIFICATION CLAUSES SPECIFIC TO V40.

300.000 GENERAL

300.010 EMERGENCY LIGHTING SYSTEM:

- Type of system
 - Escape route lighting.
 - Open area (anti-panic) lighting.
- Category of operation
 - Type
 - X - self contained.
- Duration
 - 180 - 3 hour duration.
- Power source
 - Self contained emergency luminaires.
- Mode of operation
 - 0 - non-maintained
- Type of premises
 - Non-residential public.

300.020 ILLUMINATION OF SIGNS:

- Illuminate exit, emergency exit and escape route signs so that they are legible at all times, by
 - luminaires external to sign.
 - lamps contained within sign.

310.000 PRODUCTS/MATERIALS

310.010 LAMPS FOR EMERGENCY LIGHTING:

- Lamp
 - LED.

310.020 SELF-CONTAINED EMERGENCY LIGHTING LUMINAIRE SYSTEM AND EQUIPMENT:

Standard - BS EN 60598-2-22.

- Categories
 - Non-maintained.
- Batteries for self-contained luminaires
 - Sealed nickel-cadmium cells.
- Type
 - Self-contained luminaire.
 - Self-contained illuminated sign.
- Ancillaries
 - Red LED luminaire healthy indicator.

310.040 BATTERY CHARGERS:

- Standard - BS EN 60335-2-29, BS EN 60146, BS EN 50372-2 and ICEL 1009:2000

310.060 ANCILLARIES:

- Provide ancillaries in accordance with the appropriate standards and regulatory authority requirements.
- Accessible test switch.
 - For luminaire groups

310.070 EMERGENCY LIGHTING EQUIPMENT SCHEDULES:

- Supply lighting equipment in accordance with
 - Schedule of luminaires and tender drawings

320.000 WORKMANSHIP

320.010 INSTALLATION:

- Install, test and commission emergency lighting system in accordance with BS EN 50172.

320.020 SELF-CONTAINED LUMINAIRES:

- Ensure self-contained luminaires are not installed where temperatures are likely to exceed manufacturers recommended maximum.

320.030 EQUIPMENT:

- Install equipment in accordance with manufacturer's recommendations.

V41 STREET/AREA/FLOOD LIGHTING

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES:

To provide safe and effective amenity and emergency lighting to enable the safe navigation around the building perimeter.

100.020 DESIGN PARAMETERS:

The electrical contractor shall comply with the statutory obligations and Code of Practice as applicable. The electrical contractor shall comply with the latest revision of the following standards and codes of practice:

British Standards and Guidance

Document Number	Document Title
BS 7671	Requirements for Electrical Installations (Amendment 3)
BS 5266-1:2016	Emergency Lighting – Part 1: Code of Practice for the emergency escape lighting of premises
BS EN 1838	Lighting Applications: Emergency Lighting

100.030 SYSTEM DESCRIPTION:

The electrical contractor shall allow to modify, test and commission the external lighting installation as described herein and as identified on the tender drawings: If there are any areas of doubt or any ancillary items are required the electrical contractor shall allow for all such items at the time of tender.

Removals and Modification Works

The electrical contractor shall allow to remove and dispose of the complete external lighting installation within the building as identified on tender drawings. The electrical contractor shall survey the existing installation and shall allow to remove and dispose of the redundant external lighting installation in its entirety including all general luminaires, emergency luminaires, external luminaires and all associated containment, supports and circuit wiring in its entirety. The electrical contractor shall remove and dispose of all equipment in accordance with the requirements of the WEEE directive.

The electrical contractor shall allow to identify the origin of the existing external street lighting circuit as identified on the tender drawings. The electrical contractor shall identify and record the existing time clock settings to enable the system to be recommissioned. The electrical contractor shall remove the existing supply cable to enable the existing supply cable to be point at which it is to be jointed to the new XLPE/SWA/LSZH supply cable. The electrical contractor shall note that the location of the cable joint shown is indicative only. The electrical contractor shall be responsible for determining its final location and all costs associated with the excavation and re-instatement to suit the new

Proposed Installation

The electrical contractor shall allow to supply and install a new external IP65 luminaires complete with integral photocell and provided with time clock control as identified on the schedule of luminaires and tender drawings. New luminaires shall be as manufactured by Thorlux lighting (or equal and approved) and shall be fixed direct to the building façade using the manufacturer's proprietary fixings.

The electrical contractor shall allow to supply and install new circuit wiring as identified on the tender drawings. New circuit wiring shall comprise of single core XLPE/LSZH copper cables drawn into a new galvanised steel conduit installation. The electrical contractor shall ensure that containment systems are contained within the building fabric wherever possible. Where containment cannot be concealed within the fabric of the building the electrical contractor shall liaise with the architect and confirm the desired location for installation.

The electrical contractor shall allow to supply and install new circuit protective conductors to ensure the safe automatic disconnection of supplied (ADS) in the event of circuit failure or fault in accordance with

the requirements of BS 7671 (Amendment 3). Earthing for armoured cables shall be provided by use of a dedicated Circuit Protective Conductor (CPC) as a separate XLPE/LSZH (Green/Yellow) single core cable.

No reliance shall be made for conduit / tray / trunking system to act as a circuit protective conductor, though these systems shall be earthed and complete with earth links at joins of trunking and tray, conduit junction boxes etc.

Upon completion of the works the electrical contractor shall test the modified installation in accordance with the requirements of BS7671 (AMD3) and shall provide signed and dated electrical test certification in good time for handover. Upon completion of the works the electrical contractor shall provide an Operating and Maintenance Manual (O&M) in accordance with the requirements of A64.520.050. The electrical contractor shall note that handover shall not be considered prior to receipt of this information.

100.040 CONTROL REQUIREMENTS:

The lighting controls for building mounted luminaires shall comprise of integral photocells supplemented with time clock control which provides two on and two off settings (The electrical contractor shall liaise with the council to confirm settings prior to commissioning).

The electrical contractor shall allow to provide new lighting controls for the external street lighting to match the existing. Controls shall comprise of time clock control only which provides two on and two off settings (times to match that of existing configuration).

100.050 SYSTEM SCHEMATICS:

The electrical contractor shall modify the external lighting installation in accordance with this specification and the following electrical schematic drawings:

Drawing Number	Drawing Title
6100	Electrical Services – Proposed Electrical Distribution Schematic

100.060 SYSTEM DRAWINGS:

The electrical contractor shall modify the external lighting installation in accordance with this specification and the following electrical layout drawings:

Drawing Number	Drawing Title
6102	Electrical Services – Proposed Lighting Layout

PART 2 SELECTION SCHEDULES FOR REFERENCE SPECIFICATIONS

260.000 CONDUIT AND TRUNKING

260.010 GENERAL:

- Supply conduit and cable trunking as specified in section V20

261.000 HV/LV CABLES AND WIRING

261.010 GENERAL:

- Supply HV/LV cables and wiring as work section V20 & V21

263.000 SUPPORT COMPONENTS - CABLES

263.010 GENERAL:

- Supply support components as specified in section V20

273.000 LUMINAIRES AND LAMPS

273.010 GENERAL:

- Supply luminaires and lamps as identified on the tender drawings and schedule of luminaires.

274.000 ACCESSORIES FOR ELECTRICAL SERVICES

274.010 GENERAL:

- Comply with work section general clauses reference Y74.1000 and those detailed below.
- Supply accessories for electrical services as section V21

274.060 TIME SWITCHES:

- Application: External Lighting Time Clock Control
- Manufacturer and reference: Sangamo S250 Range
 - Or approved equivalent.
- 7 day - reference Y74.2040B

280.000 EARTHING AND BONDING COMPONENTS

280.010 GENERAL:

- Supply earthing and bonding components as specified in section W51

281.000 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES:

281.010 GENERAL:

- Carry out testing and commissioning of electrical services as section V21

282.000 IDENTIFICATION - ELECTRICAL

282.010 GENERAL:

- Supply identification - electrical as specified in section V20

290.000 FIXING TO BUILDING FABRIC

290.010 GENERAL:

- Carry out fixing to building fabric as specified in work section V20

PART 3 SPECIFICATION CLAUSES SPECIFIC TO V41.

300.000 PRODUCTS/MATERIALS

300.030 LIGHTING CONTROL EQUIPMENT:

- Street lighting
 - Contactor and solar time switch control for groups of luminaires.
- Area/flood lighting

310.000 WORKMANSHIP

310.010 INSTALLATION:

- Install equipment for street, area or flood lighting in accordance with manufacturer's instructions.
- Information technology. Cabling installation. Part 1 Specification and quality assurance

W15 FACILITIES FOR THE DISABLED

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES:

To provide facilities for use by less able persons within accessible WC's principally by means of a localised alarm for use in situations of distress.

100.020 DESIGN PARAMETERS:

Part M

100.030 SYSTEM DESCRIPTION:

The electrical contractor shall complete the installation of facilities for the disabled as described herein. If there are any areas of doubt, or, if any other equipment or ancillary works are required to provide a complete working system it is the responsibility of the contractor to identify the works, equipment and components required and to allow for all such items within the prices provided at the time of tender.

The electrical contractor shall supply and install a new call for assistance alarm system to the accessible WC with local and remote indication of the call. The electrical contractor shall allow for all power, control wiring and containment necessary to complete the works.

Within the accessible toilet a ceiling mounted pull cord operated switch shall be installed complete with integral reassurance lamp and red/orange pull cord with 2 no large acorn handles - one set at approximately 1000 mm above finished floor level and the other at 100mm above finished floor level. A strain break link shall be provided in the pull cord. The final locations of all ceiling mounted pull cord switches shall be adjacent the hand washbasin on the side nearest the toilet pan (as per figure 55 of BS8300).

Resetting the call system shall only be possible at the point of origin of the call by means of a flush wall mounted reset unit, located within the toilet adjacent to the entrance door. Indication of a call shall be provided both locally, external above the door utilising a combined indicator lamp/buzzer unit and remotely within the office via a repeater unit.

The system shall be wired via colour coded LSZH insulated single core cables in accordance with the manufacturer's requirements. Wiring shall be installed in dedicated conduit and the extra low voltage compartment of the cable trunking. The power supply units for each system shall be wall mounted within the assisted toilet at high level served via a switched fuse connection unit.

The components of the system shall be obtained from a single manufacturer who specialises in this field. This shall be CTEC or approved equivalent.

Upon completion of the works the electrical contractor shall test the modified installation in accordance with the requirements of BS7671 (AMD3) and shall provide signed and dated electrical test certification in good time for handover. Upon completion of the works the electrical contractor shall provide an Operating and Maintenance Manual (O&M) in accordance with the requirements of A64.520.050. The electrical contractor shall note that handover shall not be considered prior to receipt of this information.

100.040 CONTROL REQUIREMENTS:

Local and Remote Visual and Audible indication of an alarm condition

100.060 SYSTEM DRAWINGS:

The electrical contractor shall supply facilities for the disabled in accordance with this specification and the following electrical layout drawings:

Drawing Number	Drawing Title
6105	Electrical Services - Proposed Security Detection and Alarm Systems

PART 2 SELECTION SCHEDULES FOR REFERENCE SPECIFICATIONS:

260.000 CONDUIT AND TRUNKING

260.010 GENERAL:

- Supply conduit and cable trunking as specified in section V20

261.000 HV/LV CABLES AND WIRING

261.010 GENERAL:

- Supply HV/LV cables and wiring as work section V20 & V21

261.060 CONTROL AND AUXILIARY CABLES:

- Paired, screened control cables with or without metallic protection - reference Y61.2050B
- Multi-core unarmoured LSF sheathed auxiliary cables - reference Y61.2050G

263.000 SUPPORT COMPONENTS - CABLES

263.010 GENERAL:

- Supply support components as specified in section V20

274.000 ACCESSORIES FOR ELECTRICAL SERVICES

274.010 GENERAL:

- Supply accessories for electrical services as section V22

280.000 EARTHING AND BONDING COMPONENTS

280.010 GENERAL:

- Supply earthing and bonding components as specified in section W51

281.000 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES:

281.010 GENERAL:

- Carry out testing and commissioning of electrical services as section V20 & V22

282.000 IDENTIFICATION - ELECTRICAL

282.010 GENERAL:

- Supply identification - electrical as specified in section V20

290.000 FIXING TO BUILDING FABRIC

290.010 GENERAL:

- Carry out fixing to building fabric as specified in work section V20

PART 3 SPECIFICATION CLAUSES SPECIFIC TO W15

300.000 GENERAL:

300.010 ELECTROMAGNETIC COMPATIBILITY:

- Ensure all equipment and systems are installed to provide electromagnetic compatibility within the systems and with any other systems installed in the same location.

300.020 DISABLED ALARM SPECIALIST:

- Engage a specialist to develop the design, supply, install, commission and set to work the disabled alarm systems.
- Specialist: CTEC (Or Equal and Approved)

310.000 PRODUCTS/MATERIALS:

310.010 DISABLED ALARM CONTROL:

- Manufacturer and reference: CTEC

- Or approved equivalent
- Method of displaying calls
 - Individual lamp for each call point.
 - Type of lamps
 - LED
- Audible warning of calls

310.030 CALL AND RESET UNIT:

- Manufacturer and reference: CTEC
 - Or approved equivalent.
- Mounting
 - Ceiling mounted pull cord, bangles as AD M 4.30e.
 - Wall mounted
 - Flush.
- Facilities
 - Call push
 - Push button
 - LED amber or red lens.
- Reset
 - Integral with unit.

310.040 SLAVE INDICATION UNITS:

- Manufacturer and reference: CTEC
 - Or approved equivalent.
- Mounting
 - Wall mounting
 - Flush.
- Facilities
- Indication of calls

310.050 OVER DOOR/CORRIDOR LAMP AND LOCAL SOUNDER UNIT:

- Manufacturer and reference: CTEC
 - Or approved equivalent.
- Mounting
 - Wall

320.000 WORKMANSHIP:

320.010 WORK ON-SITE:

- Ensure that all building works are completed and service connections are proved as part of the contract.

320.020 INSTALLATION:

- Install, commission and set to work facilities for the disabled in accordance with the manufacturer's recommendations and the appropriate standard.

320.030 QUALITY CONTROL:

- Handle, store and install equipment and components of the facilities for the disabled in accordance with the manufacturer's recommendations.
- Obtain all equipment and components from a single source unless otherwise instructed.
- Inspect all equipment and components on delivery, before fixing and after installation and reject and replace any which are defective.
- Record all commissioning measurements and tests.

W40 ACCESS CONTROL

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES:

To provide a roller protective roller shutter mechanism to all external doors and windows.

To provide an access control system to the main entrance to restrict access to authorised persons.

100.030 SYSTEM DESCRIPTION:

The electrical contractor shall employ a specialist to supply and install an access control system as identified on the tender drawings and further described herein. If there are any areas of doubt or any further ancillary components are required then the electrical contractor shall allow for all such items at the time of tender.

The access control system shall be limited to the main entrance doors which shall be provided with electronic access control equipment which shall comprise of:

- A wall mounted proximity fob reader complete with integral dual communication intercom.
- An overhead electromagnetic lock (nominal holding force 600lb (272kg))
- A mushroom headed “push to exit” egress button mounted adjacent to the door with a remote release located within the general office.
- Manual break-glass emergency release unit, coloured green.
- Secret key operate override switch to enable the lock to be isolated if required.

The equipment shall be connected to and controlled by a common access control system to enable the addition or removal of doors as necessary. No battery backup is required as the door shall “fail safe”. The access controls to the entrance door shall be power assisted so that they automatic open once a valid token is presented or the push to exit button is pressed. Until either of these events occur (or the fire alarm is activated) the powered door shall remain de-energised and secure.

The electrical contractor shall allow to supply 20 number proximity fobs programmed into the system and provided to the client at handover complete with a typed schedule to enable the user to record fob issue to staff (To be included within the O&M manual, a MS Word Version shall also be provided).

The electrical contractor shall all to supply and install and power, containment and control wiring necessary to provide a fully functional system. The electrical contractor shall adequately support all wiring within conduit / trunking system. Individual runs to components shall be concealed in flush galvanised steel conduit which provided a minimum IP4X degree of protection. The electrical contractor shall install flexible interconnections across all moving joints such as hinges etc.

The electrical contractor shall employ a specialist to supply and install the controls associated with the roller shutter doors and windows, and shall note that the roller shutters themselves are to be provided as part of the main contractor's works package. The electrical contractor shall allow for all small power, containment, controls and associated controls wiring to provide a fully functional system.

The electrical contractor shall supply and install components for the roller shutters from a single supplier as manufactured by Intergr8 (Tel: 0845 050 8707). The roller shutters shall be controlled in groups of four via a dedicate controller as indicated on the tender drawings. Operation of the roller shutters shall be via externally mounted vandal resist key switches. The electrical contractor shall liaise with the specialist supplier to confirm the location of all components prior to installation.

The electrical contractor shall allow to supply and install fire alarm interfaces adjacent to all final exit doors to ensure that egress from the building is not denied during a fire condition. The electrical contractor shall allow to supply and install all components necessary to provide a fully functional system.

Upon completion of the works the electrical contractor shall functionally test the system and provided signed and dated electrical test and commissioning certification for the works in conjunction with the control specialists. Upon completion of the works the electrical contractor shall provide an Operating and Maintenance Manual (O&M) in accordance with the requirements of A64.520.050. The electrical contractor shall note that handover shall not be considered prior to receipt of this information.

100.060 SYSTEM DRAWINGS:

Drawing Number	Drawing Title
6105	Electrical Services - Proposed Security Detection and Alarm Systems

PART 2 SELECTION SCHEDULES FOR REFERENCE SPECIFICATIONS

260.000 CONDUIT AND TRUNKING

260.010 GENERAL:

- Supply conduit and cable trunking as specified in section V20

261.000 HV/LV CABLES AND WIRING

261.010 GENERAL:

- Supply HV/LV cables and wiring as work section V22

263.000 SUPPORT COMPONENTS - CABLES

263.010 GENERAL:

- Supply support components as specified in section V20

274.000 ACCESSORIES FOR ELECTRICAL SERVICES

274.010 GENERAL:

- Supply accessories for electrical services as section V22

280.000 EARTHING AND BONDING COMPONENTS

280.010 GENERAL:

- Supply earthing and bonding components as specified in section W51

281.000 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES:

281.010 GENERAL:

- Carry out testing and commissioning of electrical services as section V20

282.000 IDENTIFICATION - ELECTRICAL

282.010 GENERAL:

- Supply identification - electrical as specified in section V20

290.000 FIXING TO BUILDING FABRIC

290.010 GENERAL:

- Carry out fixing to building fabric as specified in work section V20

PART 3 SPECIFICATION CLAUSES SPECIFIC TO W40

300.000 GENERAL

300.010 SYSTEM REQUIREMENTS:

- Select security detection components and equipment, suitable to meet system objectives requirements.

300.020 ACCESS CONTROL SPECIALIST:

- Use an access control specialist for design development, supply, installation and testing and commissioning of complete access control installation in accordance with BS EN 60839-11-1.
- Access Control Specialist: Integr8 (Tel: 0845 050 8705)

300.030 RECOGNISED FIRM:

- Engage a firm recognised by the National Security Inspectorate to carry out the work on the access control system to NSI approval.

300.040 ELECTROMAGNETIC COMPATIBILITY:

- Ensure all equipment and systems are installed to provide electromagnetic compatibility within the system and with any other systems installed in the same location.

320.000 WORKMANSHIP

320.010 WORK ON-SITE:

- Ensure that all building works are completed and service connections are provided as part of the contract.

320.020 INSTALLATION:

- Install, commission and set to work equipment in accordance with manufacturer's recommendations.

320.030 QUALITY CONTROL:

- Handle, store and install equipment and components of the access control systems in accordance with the manufacturer's recommendations.
- Obtain all equipment and components from a single source.
- Inspect all equipment and components on delivery, before fixing and after installation and reject and replace any which are defective.
- Record all commissioning measurements and tests.

W41 SECURITY DETECTION AND ALARM

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES:

To provide an Intruder Detection System to protect the building during unoccupied hours.

100.020 DESIGN PARAMETERS:

Building Bulletin 69 BSEN 50131-1
PD6662 (Grade 2)

100.030 SYSTEM DESCRIPTION:

The electrical contractor shall employ a specialist to supply, install test and commission the Intruder Alarm detection system in accordance with the tender drawings and specification. If there are any areas of doubt or any other ancillary items are required the contractor shall allow for all such items at the time of tender.

The systems and all components shall be to Grade 2, comprising of:

- A zoned intruder alarm system with a Blind Control Panel, complete with integral battery backup.
- Remote keypad & display unit
- Dual Technology detectors in all spaces (with anti-masking).
- External self-actuating sounder & strobe unit with integral batteries
- Auto dialing unit with DigiComm communication, together with the connection of the system to a remote monitoring station. Note: Final connection to the remote monitoring center shall be arranged direct by the employer.

The specialist contractor shall provide control and indicating equipment to monitor the security circuits for cabling integrity and for the detection of intruders, to process the information and to indicate the alarm condition and also to provide means for operating the intruder alarm system. The main system control components shall be housed within a blank enclosure (with an externally visible "power on" LED), with all control functions being carried out via remote operation keypad. The building shall be provided with dedicated operating keypads and shall be zoned to enable setting and unsetting of all zones independently and shall allow for global setting and unsetting. The system shall be zoned as identified on the tender drawings:

- Zone 1 – Office Areas
- Zone 2 – Changing Room Area

An alarm condition or message shall be displayed on the keypad/display unit in the event of detection of intruders, detection of tampering with the system or faults. Provide internal and external audible warning devices set to sound when an alarm condition is received, when tested and when a tamper detector operates.

The specialist contractor shall ensure that the system has facility to expand and accommodate the devices required, together with an additional 25% of devices for the future creep.

Each detector and alarm point shall be wired as a separate independent zone to provide clear identification of the alarm condition. The specialist contractor shall ensure that all detection devices are placed out of reach to prevent them from being tampered with and shall ensure that all detectors are suitable for their intended environment and application.

Protection shall be provided to specific areas with an external door or window access. The specialist contractor shall provide devices and controls to detect and counter, but not limited to, the following intruder risks:

- Direct opening of all external doors
- Breaking through of doors and windows.
- Movement in Secure Areas

- Substitution of devices
- Tampering with circuits
- Removal of devices

The specialist contractor shall provide wall or ceiling mounted movement detectors as identified on the tender drawings, which incorporate two different types of sensor within the same head, either infra-red/ultrasonic or infra-red/microwave. Ensure that each area has two methods of detecting unlawful entry so that a double knock facility is provided and hence false alarms are eliminated.

The external housings shall be suitable to withstand the environmental conditions to which it shall be exposed (min. IP42). The housings shall be manufactured from 1.2mm mild steel, 1mm thick stainless steel, or 3mm thick polycarbonate. Position shall be as identified on the tender drawings, however, the contractor shall note that the colour finish shall be agreed with the contract administrator. Limit the operation of the external audible warning device in accordance with national, or local regulations, whichever is the shortest period.

The electrical contractor shall allow for all containment and power supplies as required by the Specialist as part of their tender submission. Adequately support all wiring within conduit/trunking systems or on cable tray/basket (the alarm systems cabling shall share the common ELV cable baskets/trunking). Individual runs to contacts/detectors etc. shall be concealed in flush mounted high-impact resistant plastic conduit where walls are plastered and within surface mounted galvanised steel conduit elsewhere. Ensure that wiring within unprotected or unsecured areas is installed within a concealed mechanically protected containment system, inaccessible to intruders. Install flexible interconnections across moving joints such as hinges etc.

Carry out, on completion of the works, together with the selected specialist security system contractor, the complete testing, commissioning and demonstration of the system operation prior to demonstration of the system to the users and train authorised staff and maintenance personnel. The specialist security system contractor shall allow to provide a minimum of 1No. half a day's instruction of the complete system for the Employer's representative before the contract completion date.

Upon completion of the works the electrical contractor shall functionally test the system and provided signed and dated electrical test and commissioning certification for the works in conjunction with the control specialists. Upon completion of the works the electrical contractor shall provide an Operating and Maintenance Manual (O&M) in accordance with the requirements of A64.520.050. The electrical contractor shall note that handover shall not be considered prior to receipt of this information.

100.040 CONTROL REQUIREMENTS:

Automatic Detection of unauthorised entry into the facility.

100.050 SYSTEM SCHEMATICS:

Not Applicable

100.060 SYSTEM DRAWINGS:

The electrical contractor shall provide a security detection and alarm system in accordance with this specification and the following electrical layout drawings:

Drawing Number	Drawing Title
6105	Electrical Services - Proposed Security Detection and Alarm Systems

PART 2 SELECTION SCHEDULES FOR REFERENCE SPECIFICATIONS

260.000 CONDUIT AND TRUNKING

260.010 GENERAL:

- Supply conduit and cable trunking as specified in section V20

261.000 HV/LV CABLES AND WIRING

261.010 GENERAL:

- Supply HV/LV cables and wiring as work section V20 & V21

263.000 SUPPORT COMPONENTS - CABLES

263.010 GENERAL:

- Supply support components as specified in section V20

280.000 EARTHING AND BONDING COMPONENTS

280.010 GENERAL:

- Supply earthing and bonding components as specified in section W51

281.000 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES:

281.010 GENERAL:

- Carry out testing and commissioning of electrical services as section V20

282.000 IDENTIFICATION - ELECTRICAL

282.010 GENERAL:

- Supply identification - electrical as specified in section V20

290.000 FIXING TO BUILDING FABRIC

290.010 GENERAL:

- Carry out fixing to building fabric as specified in work section V20

PART 3 SPECIFICATION CLAUSES SPECIFIC TO W41

300.000 GENERAL

300.010 SYSTEM REQUIREMENTS:

- Select security detection components and equipment, suitable to meet system objectives requirements.

300.020 INTRUDER ALARM SPECIALIST:

- Use a security detection specialist for design development, supply, installation and testing and commissioning of complete security installation.
- Security detection specialist: Stroud Alarms (Or Equal and Approved)

300.060 INTRUDER ALARM GRADING CLASSIFICATION:

- Ensure the intruder alarm system complies with the requirements of BS EN 50131-1
- Security grade
 - Low-to-medium risk, grade 2.
 - ATS option,
 - Component Environmental classification
 - Indoor, class I,
 - Indoor - general, class II,

300.065 INTRUSION ALARM:

- Use DD CLC/TS 50131-7 to assist in planning the drafting of requirements, design, supply, installation, testing, commissioning, operation and maintenance of the intrusion alarm system. Report to C.A. where DD CLC/TS 50131-7 cannot be applied.

300.070 INTRUDER ALARM TRANSMISSION SYSTEM PERFORMANCE:

- Ensure the intruder alarm system transmission system performance complies with the requirements of BS EN 50131-1 Annex B

300.090 ELECTROMAGNETIC COMPATIBILITY:

- Ensure all equipment and systems are installed to provide electromagnetic compatibility within the system and with any other systems installed in the same location, in accordance with BS EN 50130-4.

310.000 PRODUCTS/MATERIALS

310.010 VISIBLE AND AUDIBLE WARNING DEVICES:

- BS EN 50131-1.
- Use
 - Principal.
- Lamp
 - Flashing.
 - Wall mounting.
 - Weatherproof.
 - Colour of lens: Blue
- Sounders
 - Siren.
- Colour
 - Manufacturer's standard.
- Finish
 - Weatherproof.
 - Internal.
- Power supply
 - Integral.

310.020 POWER SUPPLIES:

- Standard
 - BS EN 50131-6.
- Provide
 - Mains supply with rechargeable battery standby.
 - Integral with control equipment.

310.055 COMBINED PASSIVE INFRA RED AND MICROWAVE DETECTORS:

- Standard
 - BS EN 50131-2-4.

310.060 COMBINED PASSIVE INFRA RED AND ULTRASONIC DETECTORS:

- Standard
 - BS EN 50131-2-5.

310.310 REMOTE CONTROL CENTRES:

- Make provision to send a signal to a remote monitoring centre. The arrangement of the line shall be arranged directly by the employer.

320.000 WORKMANSHIP

320.010 INSTALLATION:

- Install, commission and set to work equipment in accordance with manufacturer's recommendations

320.020 WORK ON-SITE:

- Ensure that all building works are completed and service connections are proved as part of the contract works.

320.030 QUALITY CONTROL:

- Handle, store and install equipment and components of the security detection and alarm systems in accordance with the manufacturer's recommendations. Obtain all equipment and components from a single source unless otherwise instructed.
- Inspect all equipment and components on delivery, before fixing and after installation and reject and replace any which are defective.
- Record all commissioning measurements and tests.

320.050 MAINTENANCE:

- Prepare maintenance agreement and
- Submit for user acceptance.
- Implement for defects liability period.

320.060 CABLE INSTALLATION:

- Install cables as required. Protect cables from mechanical damage.
- Standard
 - BS EN 50131-1.
- Jointing - no joints permitted.
- Support intermediate wiring in,
 - Conduit.

W50 FIRE DETECTION AND ALARM

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES:

To provide a fire detection and alarm system to protect building occupants to provide L1 grade protection.

100.020 DESIGN PARAMETERS:

The electrical contractor shall comply with the statutory obligations and Code of Practice as applicable. The electrical contractor shall comply with the latest revision of the following standards and codes of practice:

British Standards and Guidance

Document Number	Document Title
BS 7671	Requirements for Electrical Installations (Amendment 3)
BS 5839-1	Fire Detection and Fire Alarm Systems for Buildings

If there is any conflict in interpretation the contractor shall obtain clarification from the PM.

100.030 SYSTEM DESCRIPTION:

The electrical contractor shall allow to supply and install a new fire alarm control and indication panel adjacent to the main entrance of the building which shall incorporate all back up power batteries capable of supporting the system for 72 hours in the event of mains power failure.

The fire alarm control and indication is to incorporate the following features as a minimum:

1. The main fire alarm control panel to be installed is to be OPEN PROTOCOL and shall be fully addressable.
2. Liquid crystal display, back-lit, providing up to 80 characters per alarm condition, to enable all alarm and fault conditions to be reported. All information is to be stored in the display memory to enable messages to be scrolled and reviewed prior to system re-setting. Display messages to be in English.
3. Integral keypad for interrogation, programming, device labelling and device/zone isolation including facilities to display index, display log and review/scroll. Where indicated, a standard computer keyboard and interconnection facility is also to be provided.
4. All necessary control cards for the number of loops required, including a minimum spare capacity of a single loop.
5. Lamp/LED test key switches for fire, fire zone and zone fault/isolated.
6. The panel shall be provided with all necessary controls and indication to monitor, silence, test and reset the system with key operated restrictions. The panel shall also incorporate facilities to enable automatic class change facilities. The electrical contractor shall fully liaise with the school to confirm the required time settings.
7. Zone identification
8. Single stage alarm upon activation of a single automatic fire alarm detector / manual break glass unit.
9. Fault monitoring for all detection circuits, to cover open, short circuit and earth fault conditions, with a separate alarm output provided for each of these conditions.
10. Supervisory buzzer.

11. Integral battery/charger power supply unit in accordance with BS 3116: Part 4 and BS 5839: Part 1
12. An integral dot matrix printer to provide a hard copy of all information shown on the display, and stored information to provide history, full or selective, of system events.
13. Real time clock.
14. All necessary operating relay/switch devices and auxiliary devices to control remote ancillary devices.
15. Facilities for automatic remote dialling to a registered alarm centre network. (The contractor shall note that final connection to the remote monitoring centre shall be covered as part of a provisional sum within the contract).
16. Sufficient quantity of terminals to receive all incoming and outgoing circuit wiring, including provision for future spare capacity of at least 1 spare loop.
17. Alarm sounder circuits, of sufficient number as outlined elsewhere, complete with continuous circuit fault monitoring facilities.
18. Instructions for user operation to be included within the operation and maintenance manuals.
19. A specially prepared fire alarm zone chart shall be provided by the electrical contractor in a glass fronted hardwood frame, identifying the building rooms and fire alarm zones adjacent to the panel. The electrical contractor shall note that room names are not to be provided on the zone chart.
20. An output port to allow communication with a suitable computer, using either RS - 232 or RS - 485 data interchange system.
21. All necessary volt free contacts to achieve operation of ancillary systems
22. All components used, and all sub panels shall be fully addressable open protocol and fully compatible with the main panel.

FIELD DEVICES

GENERAL

Detectors are to be kept free of any contamination due to works taking place after installation and commissioning by bagging etc, and any heads contaminated are to be replaced by the Installer at no extra cost.

All manual call points, automatic fire detectors, fire alarm devices and ancillary devices are to be labelled in a manner approved by the Engineer.

MOUNTING HEIGHTS

Equipment shall be mounted at the following heights unless indicated elsewhere on the tender drawings. All items of equipment are to be measured from the centre of the device to finished floor level.

- 1 Manual Call Points - 1100 mm
- 2 Sounders in offices and other low ceiling rooms – 2250 mm above finished floor level
- 3 Main control Panel 1500mm.
- 4 Visual Alarms – 2250 min – 200mm below ceiling level.

Detectors & Warning Devices

All smoke detectors shall be of an optical type and all heat detectors shall be of the dual sensing type combining a rate of rise response with a fixed high temperature response. All smoke and heat detectors shall be of the type that can plug into a standard base.

The electrical contractor shall supply and install manual break glass call points of the resettable type i.e. the “glass” is displaced upon activation rather than broken

Warning devices shall be provided within the building by variable volume electronic sounders both as standalone units and within combined sounder / detector bases. Strobe units shall be installed throughout the installation to meet the requirements of the DDA, BS8300 and Part M of the Building Regulations. The strobe units shall be red in colour and shall be synchronized where more than one strobe is visible at any time.

WIRING TYPE AND ARRANGEMENT

The electrical contractor shall ensure the fire alarm system installation is provided with a totally independent, separated and segregated wiring system in accordance with BS 5839-1 and BS 7671 (AMD 3). The fire alarm cabling may share cable baskets with IT and other ELV cables where appropriate / available. Where parallel cable runs do not exceed two cables the cables may be clipped direct and concealed within the fabric of the building. The electrical contractor shall allow for all containment necessary to provide a fully functional system.

The system shall be wired in multicore CWZ rated pliable fire resistant cable with red low smoke fume halogen outer sheath (e.g. FP200 Gold / firetuff or equivalent). No cables smaller than 1.5 mm² cross section shall be used for detection circuits and 2.5 mm² for sounder circuits. The system shall use the same cable type throughout, sourced from a single manufacturer. The cable manufacturer is to be BASEC approved.

Where cabling is concealed in walls these routes shall be protected with flush mounted conduit having flush boxes at the device position and with bushed ends within the ceiling void above.

TESTING AND COMMISSIONING

The completed fire alarm system shall be tested and commissioned by the system manufacturer, including fire alarm audibility tests. Upon completion of the works the electrical contractor shall provide an Operating and Maintenance Manual (O&M) in accordance with the requirements of A64.520.050. The electrical contractor shall note that handover shall not be considered prior to receipt of this information.

MAINTENANCE

The contractor shall allow within his tender for the servicing of the complete fire alarm system for the first 12 months following practical completion of the installation.

100.040 CONTROL REQUIREMENTS:

The fire detection and alarm system shall form part of the site wide system and shall be fully integrated with existing controls.

100.060 SYSTEM DRAWINGS:

The electrical contractor shall modify the fire detection and alarm installation in accordance with this specification and the following electrical layout drawings:

Drawing Number	Drawing Title
6104	Electrical Services – Proposed Fire Alarm Layout

PART 2 SELECTION SCHEDULES FOR REFERENCE SPECIFICATIONS

260.000 CONDUIT AND TRUNKING

260.010 GENERAL:

- Supply conduit and cable trunking as specified in section V20

261.000 HV/LV CABLES AND WIRING

261.050 STANDARD WIRING AND POWER CABLES:

- Standard flat cables 2-core or 3-core, with copper conductors; with or without CPC
- Standard cables with definite fire performance - reference Y61.2020M

261.260 WORKMANSHIP

- Cable installation - general - reference Y61.4010

263.000 SUPPORT COMPONENTS - CABLES

263.010 GENERAL:

- Supply support components as specified in section V20

280.000 EARTHING AND BONDING COMPONENTS

280.010 GENERAL:

- Supply earthing and bonding components as specified in section W51

281.000 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES:

281.010 GENERAL:

- Comply with work section general clauses reference Y81.1000 and those detailed below.

281.020 TESTING AND COMMISSIONING:

- Incorporated equipment characteristics
 - Reference Y81.2010A
- Prospective short circuit current (IP)
 - Reference Y81.2020A
- Initial verification
 - Reference Y81.2030A
- Test equipment and consumables
 - Reference Y81.2040A
- Testing
 - Reference Y81.2050A
 - Continuity of protective conductors
- Earth fault loop impedance (ZS)
 - Reference Y81.2070A
- Settings and adjustments - reference Y81.2080
- Specialist installations
 - Fire detection and alarm systems. -Reference Y81.2120A
- Calibration - reference Y81.2130
- Certification and reporting
 - Reference Y81.2140A
- Completion certificates
 - Reference Y81.2150A
- Records - reference Y81.2160

282.000 IDENTIFICATION - ELECTRICAL

282.010 GENERAL:

- Supply identification - electrical as specified in section V20

290.000 FIXING TO BUILDING FABRIC

290.010 GENERAL:

- Carry out fixing to building fabric as specified in work section V20

PART 3 SPECIFICATION CLAUSES SPECIFIC TO W50.

300.000 GENERAL

300.010 TYPE OF SYSTEM:

- Standard
 - BS 5839-1.
 - Category L - Protection of life.
 - L1: systems installed throughout the protected building.

300.020 CONNECTION TO LOCAL AUTHORITY FIRE BRIGADE:

- The electrical contractor shall make provision to send a signal to a remote monitoring centre. The connection of the line to the remote centre shall be arranged direct by the employer.

300.030 DETECTION ZONES:

- Standard - BS 5839-1.
- Show the location of zones by:-
 - specially prepared plan of building, permanently mounted adjacent to the indicator panel.
- Zone testing

300.040 CONTROL SYSTEM:

- Standard
 - BS 5839-6 Annex B.
- Analogue addressable.

300.060 MONITORING:

- Provide all end of line and other circuit elements to ensure the system is fully monitored to comply with BS 5839.

300.080 REMOVAL OF TRIGGER DEVICE:

- Provide precautions against removal of trigger devices.
- Use trigger devices that are removed only by a special tool.
- Use trigger devices with bases that provide circuit continuity with trigger device removed.
- Ensure that, where alarm sounders use same wiring as trigger device, removal of trigger device does not affect operation of alarm sounder.

300.100 REMOTE CENTRE:

- The electrical contractor shall make provision to send a signal to a remote monitoring centre. The connection of the line to the remote centre shall be arranged direct by the employer.

300.110 FIRE ALARM SPECIALIST:

- Engage a specialist to develop the design, supply, install, commission and set to work the fire alarm system.

310.000 PRODUCTS/MATERIALS

310.010 MANUAL CALL POINTS:

- Manufacturer and reference: Hotchiki
 - Or approved equivalent
- Mounting
 - Flush.
- Switch contact
 - Make.
- Environmental Category
 - Degree of Protection to BS EN 60529
- Operation
 - MCP activation response within
 - 1 second.
 - Field programmable to trigger alert or evacuate alarms.
 - Test key
 - Addressable.

- Monitored.
- Integral activation indicator
- Manual operation
 - Keyswitch.
 - Break glass.
 - Anti-fragmentation film.
 - Thumb pressure.
- Capable of monitoring slave mcp
- End of line device mounted in mcp

310.020 AUTOMATIC DETECTORS

- Provide automatic fire detectors from the same manufacturers and with common facilities.
- Plug in bases.
- Common base for all detector types.
- Addressable detector base.
- Mechanical device to accept only
 - Optical smoke detectors.
 - Heat detectors.
 - Multisensor fire detectors.
- Communicate detector status & address
 - Monitoring of sensing elements
- Address code setting
 - Automatic.
- Visible activation indicator.
- Visible remote indication for detectors concealed.
- Visible indication
 - Fault.
- Label detector and bases with address number.
- Colour of devices: White
- End of line device mounted in sensor
- Position all detectors taking into account any possible air movement.

310.030 HEAT DETECTORS:

- Manufacturer and reference: Hotchiki
 - Or approved equivalent
- Point type
 - Standard
 - BS 5446-2.
- Line type
- Heat-sensitive element
 - Rate-of-rise of temperature and fixed temperature element.
- Types
 - Analogue addressable.
 - Combined sounder/sensor
 - Separate addresses.
 - Removal of sensor not to inhibit sounder.
- On site adjustment of response
 - By CIE software.
- Accessories
 - Fit line monitor device.

310.040 SMOKE DETECTORS:

- Manufacturer and reference: Hotchiki
 - Or approved equivalent
- Detector type
 - Optical.
 - Point type.
 - Analogue addressable.
 - Sensitivity
 - Sensitivity set by CIE software.

- Combined sensor/sounder
 - Separate addresses.
 - Removal of sensor not to inhibit sounder.
- Environmental conditions
- Accessories
 - Line monitor device.

310.070 SOUNDERS:

- Manufacturer and reference: Hotchiki
 - Or approved equivalent
- Sounder types
 - First coincidence
 - Electronic sounder.
 - Addressable.
 - Combined sensor/sounder
 - Separate addresses.
- Colour
 - Fire red.
- Finish
 - Weather proof.
 - Internal.

310.080 FIRE ALARM CONTROL AND INDICATING EQUIPMENT:

- Type: Analogue addressable fire alarm control panel, complete with integral printer and programmable for class change facilities
- Application: Main Building
- Manufacturer and reference: Kentec Electronics – Syncro AS Range (2 Loop)
 - Or approved equivalent

310.115 INPUT/OUTPUT DEVICES:

- Manufacturer: Hotchiki
 - Or approved equivalent.
- Standard
 - BS EN 54-18

310.140 LINE ISOLATOR MODULE

- Manufacturer: Hotchiki
 - Or approved equivalent
- Standard
 - BS EN 54-2.
 - BS EN 50130-4.
- Derive power from addressable loop.
- Visible LED indicator that module has tripped.
- Maximum of 15 devices per short circuit device.

310.145 SHORT CIRCUIT ISOLATORS:

- Manufacturer: Hotchiki
 - Or approved equivalent.
- Standard
 - BS EN 54-17
- Visual indicator.

310.150 VISIBLE ALARMS:

- Manufacturer and reference: Hotchiki
 - Or approved equivalent
- Flashing.
- High power LED.
- Loop powered
 - Analogue addressable.

310.160 ZONE MONITORING UNIT:

- Manufacturer and reference: Hotchiki
 - Or approved equivalent
- Characteristics
 - Addressable.
 - Reports faults and alarms to CIE.
- Facilities
 - Detectors
 - MCP
 - Remote indication units
 - Remote test facility
 - Power for detectors
 - Line isolator
 - Zener barrier
 - Monitor relays
 - Address setting by rotary switch
- Power supply
 - Integral

320.000 WORKMANSHIP

320.010 QUALITY CONTROL:

- Handle, store and install equipment and components of the fire detection and alarm system in accordance with BS 5839 and the manufacturer's recommendations.
- Obtain all equipment and components from a single source.
- Inspect all equipment and components on delivery, before fixing and after installation and reject and replace any which are defective.
- Record all commissioning tests and provide the certification required by BS 5839-1.
- Provide manufacturer's certificates of equipment design to an approved quality management system and CIE component selection.

320.020 SMOKE DETECTOR INDICATORS:

Fit smoke detector indicators external to doors, where zone is divided into rooms.

320.030 MANUAL CALL POINTS:

- Where manual call points are sited in zones.
 - Wire into detector circuit for fire zone.

320.040 RECORD DRAWINGS AND OPERATING INSTRUCTIONS:

Provide instructions on use of installation to person responsible for use of premises. Supply the user with a logbook and certificate of installation and commissioning, in accordance with BS 5839-1, Appendix F and G.

Provide record drawings to user for maintenance and record purposes.

Show position of various items of equipment, junction boxes, etc. and sizes and routes of cables and wires. Include wiring diagrams of junction boxes and distribution cases.

Provide circuit diagrams of fire alarm system and its components.

320.050 CABLE INSTALLATION:

Plan and install all fire detection and alarm system cables in accordance with BS 5839-1 and the cable manufacturer's recommendations.

- Run cables point to point without tees or spurs.
- Design loop load to not exceed 80% of cable capacity.
- Mark terminals

W51 LV EARTHING AND BONDING

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES:

To provide a protective conductor network for all equipment to meet the requirements of BS7671 for safety and Automatic Disconnection of Supplies (ADS).

To provide equipotential bonding to metalwork and services to reduce touch voltage on extraneous metalwork in the event of a fault.

100.020 DESIGN PARAMETERS:

The electrical contractor shall comply with statutory obligations and Code of Practice as applicable. The electrical contractor shall comply with the latest revision of the following standards and codes of practice:

British Standards and Guidance

Document Number	Document Title
BS 7671	Requirements for Electrical Installations (Amendment 3)
BS 74300	Code of Practice for Earthing

If there is any conflict in interpretation the contractor shall obtain clarification from the PM.

100.030 SYSTEM DESCRIPTION:

The electrical contractor shall allow to supply, install, test and commission the earthing installation as identified on the tender drawings as and described herein. If there are any areas of doubt or any further ancillary works are required then it shall be the responsibility of the contractor to identify all such items at the time of tender.

The electrical contractor shall allow to remove and dispose of the existing redundant circuit wiring as identified on the tender drawings. Where existing electrical service items are identified for removal, the electrical contractor shall isolate, remove and dispose of the existing service in accordance with the WEEE directive.

The electrical contractor shall supply, install and test earthing and bonding throughout the works area in accordance with BS 7671, the electrical tender drawings and as further described herein. If there are any areas of doubt or any other ancillary items are required the contractor shall allow for all such items at the time of tender.

All new circuits shall be complete with a separate CPC (either as a core of a multi-core cable or as a separate cable for single core cabling). New CPC's shall be of the sizes and types identified on the electrical tender drawings.

No reliance is permitted for the conduit/tray/trunking system to act as a circuit protective conductor, though these systems shall be earthed with earthing bonding at junctures of trunking and tray, conduit junction boxes etc. This does not preclude the metallic sheaths, trunking, tray etc which may be utilised as part of the supplementary bonding required in special locations.

The electrical contractor shall allow to supply and install a new Earth Bar adjacent to the main facility electrical intake. The new earth bar shall be of 6 way stud construction with single test link from which the electrical contractor shall provide equipotential bonding to the mechanical services including, domestic hot and cold water services, LTHW pipework and Ductwork. The new earth bar shall be as manufactured by Furse or equal and approved.

New equipotential bonding cables shall be XLPE/LSF coloured yellow green and terminated using suitable lugs / tags.

Upon completion of the works the electrical contractor shall test the modified installation in accordance with the requirements of BS7671 (AMD3) and shall provide signed and dated electrical test certification

in good time for handover. Upon completion of the works the electrical contractor shall provide an Operating and Maintenance Manual (O&M) in accordance with the requirements of A64.520.050. The electrical contractor shall note that handover shall not be considered prior to receipt of this information.

100.040 CONTROL REQUIREMENTS:

Automatic disconnection of supplies under fault conditions.

100.050 SYSTEM SCHEMATICS:

The electrical contractor shall supply earthing and bonding in accordance with this specification and the following electrical schematic drawings:

Drawing Number	Drawing Title
6100	Electrical Services – Proposed Electrical Distribution Schematic

100.060 SYSTEM DRAWINGS:

The electrical contractor shall supply and install earthing and bonding in accordance with this specification and the following electrical layout drawings:

Drawing Number	Drawing Title
6001	Electrical Services – Proposed Removals and Modifications
6101	Electrical Services – Proposed Containment Layout
6103	Electrical Services – Proposed Small Power Layout

PART 2 SELECTION SCHEDULES FOR REFERENCE SPECIFICATIONS:

280.000 EARTHING AND BONDING COMPONENTS

280.010 GENERAL:

- Comply with work section general clauses reference Y80.1000 and those detailed below.

280.020 CONDUCTORS:

- Type: XLPE/LSF
- Application: General
- Manufacturer: Draka
 - Or equal and approved
- Conductors for earthing systems
- Reference Y80.2010C
- Conductor joints
 - Earthing systems - reference Y80.2020B

280.040 EQUIPOTENTIAL BONDS:

- Type: XLPE/LSF (Yellow /Green)
- Main equipotential bonds
 - Reference Y80.2090A
- Supplementary equipotential bonds
 - Reference Y80.2100A

280.050 EARTHING:

- Circuit protective conductors
 - Reference Y80.2110A
- Earthing clamps - reference Y80.2120
- Earth busbars - reference Y80.2130A
- Test links - reference Y80.2140
- Lugs/tags - reference Y80.2150
- Protective cable terminations - reference Y80.2160
- Protective conductor warning notices/labels - Reference Y80.2170
- Main earth conductor - reference Y80.2180
- Earth bar label - reference Y80.2190

280.060 WORKMANSHIP:

- Clean earth distribution - reference Y80.3010
- Dissimilar metals - reference Y80.3020
- Stranded conductor joints - reference Y80.3040
- Protective cable terminations
 - Reference Y80.3050A

281.000 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES:

281.010 GENERAL:

- Carry out testing and commissioning of electrical services as section V20

282.000 IDENTIFICATION - ELECTRICAL

282.010 GENERAL:

- Supply identification - electrical as specified in section V20

290.000 FIXING TO BUILDING FABRIC

290.010 GENERAL:

- Carry out fixing to building fabric as specified in work section V20

PART 3 SPECIFICATION CLAUSES SPECIFIC TO W51

300.000 GENERAL

300.010 STANDARDS:

- Carry out electrical system earthing work in accordance with BS 7671 (IEE wiring regulations), BS 7430, Electricity, Safety, Quality and Continuity Regulations and Local Electricity Supply Authority Requirements.
- Comply with the requirements of BS EN 50174 and BS EN 50310.

300.020 EARTHING AND BONDING SCHEDULE:

- Carry out earthing and bonding as identified on the electrical tender drawings and in accordance with the requirements of BS7671.

300.032 COMMON BONDING NETWORK:

Form a Common Bonding Network for information technology equipment by equipotential bonding of metalwork throughout the building. Carry out work to the Common Bonding Network in accordance with BS 7671, BS EN 50174 and BS EN 50310. Include in the CBN

- Ceiling grids.
- Services
 - Water services.
 - Gas services.
- Power cable containment

300.034 USE OF BUILDING ELEMENTS:

Ensure that building and structural elements used as items in or bonded to the Common Bonding Network are designed and erected in accordance with BS EN 50174 and BS EN 50310 as well as their appropriate constructional specification or code of practice. Ensure that all connections to building and structural elements are waterproof and corrosion protected to a degree appropriate to their exposure.

300.060 RISE IN POTENTIAL IN TELECOMMUNICATIONS

Ensure the potential rise in telecommunications circuits due to power system earth faults is limited, as BS 6701

300.070 EXCHANGE OF INFORMATION:

Consult with the electricity supply company regarding the earthing arrangements of the installation. Construct the earthing system to the requirements of electricity supply company. Ensure any part of the earth fault current path provided by the electricity supply company or others is suitable for the

operation of the earth fault protection to be installed. Obtain the agreement and permission of undertakings providing services which are to be bonded to the earthing system.

310.000 PRODUCTS/MATERIALS

310.010 CLEAN EARTH DISTRIBUTION:

Install clean earth distribution in double insulated cables from earth electrodes to equipment points. Mount all busbars with insulators and separately from other earthing systems.

310.020 MAIN EARTH TERMINAL:

Provide earth bar at incoming electrical service position.

- Bond earth terminals and metallic structure of switch and control gear and plant.
- Connect each earth terminal to all other earth terminals by a ring conductor sized as BS 7671.
- Location
 - Adjacent to main LV fuse board
- Mounting
 - Mount earth bar on insulated supports located at 300mm centres for 25mm bar and 450mm centres for 50mm bar, giving 30mm clearance at rear of bar.
- Drill clearance holes, one for each cable plus 30% spare holes (two minimum) at 50mm minimum centres through bar for connection of cable lugs. Ensure clearance holes are minimum necessary size to maintain adequate lug/bar contact.

310.030 MAIN EARTH TERMINAL CONNECTIONS:

Connect main earth conductors and main equipotential bonding conductors to main earth terminals. Terminate circuit protective conductors on switchboard earthing bar.

Terminate conductors with

- Compression type lugs suitable for bolting direct to bar.
- Extend protective conductor from incoming main cable gland direct to main earth terminal.
- Bond all main equipment and plant to an earth terminal, connected to the bonding ring conductor.
- Connect telecommunications and data equipment in accordance with BS 6701.

310.130 CEILING SUPPORTS:

- Application: Bond main supports to non-current metallic parts of Electrical Installation.
- Conductor
 - Use LSF insulated copper cable, sized in accordance with the requirements of BS7671

310.140 SAFETY EARTHING:

Provide safety earthing in accordance with BS 6626.

310.150 TELECOMMUNICATIONS FUNCTIONAL EARTH:

Provide functional earth in accordance with BS 7430.

320.000 WORKMANSHIP

320.010 INSTALLATION OF EARTHING SYSTEM:

Carry out installation of earthing system in accordance with BS 7430.

320.020 WORK ON SITE:

Ensure that all building works are completed and service connections are provided as part of the contract works.

320.030 QUALITY CONTROL:

- Handle, store and install all equipment and components of the lightning protection system in accordance with the manufacturer's recommendations, BS 7430 and BS 7671.
- Inspect all equipment and components on delivery, before fixing and after installation and reject and replace any which are defective.
- Test and commission the system in accordance with BS 7671 and as specified.
- Record all test measurements.

320.040 MAIN AND SUPPLEMENTARY EQUIPOTENTIAL BONDING:

Bond to main earth terminal all extraneous conductive parts of the installation in accordance with

- Ensure the following services are bonded

- Metallic ceiling grids
- Main water pipes.
- Main gas pipes.
- Heating pipework.
- Exposed metallic parts of building structure.

Bond with supplementary equipotential bonds to protective conductor system, all simultaneous accessible conductive.

- Ensure the following areas are bonded to BS 7671, Section 601.
 - Bathrooms and shower rooms.
 - Boiler houses.
 - Kitchens and laundries.
- Bond to non-current carrying parts of Electrical Installation in associated spaces to BS 7430.
- Use clamps to BS 951 for bonding of pipes.

320.060 LOW VOLTAGE SHEATHS AND ARMOUR:

Bond the sheaths and armour of low voltage cables solidly to earth,

- 3 core cables, at both ends.
- Single core cables
 - At both ends.

320.080 IDENTIFICATION:

- Use numbered and/or lettered plastic cable sleeves to indicate circuit numbers and phases of corresponding phase conductors.
- Ensure conductors are connected to earth bar in same sequence as phase and neutral conductors.
- Identify at substation, switchboard and building earth bars each protective, bonding and earthing conductor. Provide labels on bars adjacent to each conductor.

320.180 OVERHEAD LINE EARTHING:

Earth overhead line plant in accordance with BS 7430 and the Electricity, Safety, Quality and Continuity Regulations. Do not earth or bond insulator steelwork unless so directed.

W60 BUILDING MANAGEMENT & CONTROLS

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES:

The provision of simple controls to allow easy operation of the pavilion by the client.

Controls shall be reflective of the zoning of the pavilion where the shower and changing area operates independently of the remaining areas of the building.

It shall be possible to operate each zone of the building independently whilst maintaining low temperature protection to zones not in use.

The contractor shall appoint a controls specialist to develop the design requirements into a fully operational system.

100.020 DESIGN PARAMETERS:

The contractor will be responsible for developing and completing the design activity, preparation (for review) of fully co-ordinated design and construction drawings and for undertaking the works in a co-ordinated fashion to achieve a fully completed, operational installation.

The design has been developed to BSRIA Stage 4 as defined in BSRIA "A Design Framework for Building Services. 3rd Edition". (BG 6/2012)

All equipment shall comply with the following EC directives,

- Low Voltage Directive 73/23/EEC and amendment 93/68/EEC
- Construction Products Directive 89/106/EEC
- General Product Safety Directive 92/59/EEC
- Electromagnetic Compatibility (EMC) Directive 89/336/EEC
- BS EN 61000-6.3:2001 in terms of EMC environment.

100.030 CONTROL SYSTEM DESCRIPTIONS:

The basis of the control system shall be a simple HVAC control panel with integral intelligent controller to monitor and operate all building functions in a simple and logical fashion for ease of use of the building operators.

- HVAC control panels shall be provided with the following as a minimum:-
- Mains 'live' lamp and control circuit 'live' lamp.
- Hand / Off / Auto switches and Off / Auto switches fascia mounted to suit the plant item. 'Run' and 'trip/fail' lamps for pump and fans.
- For each alarm shown, a red indication lamp shall be provided.
- Each plant item with 'on' or 'operating' indication lamp (green) to suit plant.
- Fan/pump 'fail' signal/indication lamp generated from differential pressure switch/sensor or thermal overload trip or flow switch.
- A lamp test facility shall be provided to test all control panel lamps simultaneously.
- Integral 2 channel timer unit and simple HMI for settings

The control panel shall be situated in the plantroom. A remote operating control button shall be provided in the office area lobby that enables a forced "on" condition for the office zone heating, HWS, ventilation and cooling where occupancy is required outside of scheduled hours. The system shall reset following the next scheduled "off" command.

It is anticipated that each Air Handling Unit, VRF system and HWS system will be complete with independent standalone controllers and the HVAC control system shall marshal these to provide an operating system for use by the building users.

The control requirements for each system are highlighted below:

Generally

The systems shall operate under timed control. The control panel shall contain a 24 hour 7 day timer complete with day omit function. The timer shall be capable of providing a minimum of two independently controlled time zones to reflect the building usage.

An external sensor shall be provided to report external air temperature to the control system.

An internal sensor in each zone shall be provided for building protection purposes.

Generally, it shall not be possible to operate cooling systems when external air ambient temperatures are less than 18°C.

Heating Control

The heat pumps shall be equipped with standalone controllers. The control system shall provide on and off signals under the dictates of the timeclock scheduling (and the manual input/override controls)

The zone controller temperature sensors shall limit heating in each zone to nominally 21°C - all radiators being equipped with TRV's.

Building protection shall be provided by the heating system when the building is unoccupied.

When the external sensor is reporting an external temperature of 4°C and internal sensors are reporting 8°C the HWS pumps shall run. If the internal temperature continues to fall to 4°C the heating shall be enabled and operate until the internal temperature reaches at least 8°C

LTHW pumps shall be incorporated within the heat pump units.

The control system shall receive any common fault indication from the Heat Pumps.

Cooling Control

The cooling system shall be equipped with the manufacturers control panel. Cooling shall not be enabled unless external ambient conditions exceed 18°C

Each room shall contain the manufacturers cooling unit controller to allow temperature control.

When the office zone is not scheduled for occupancy, cooling shall be inhibited.

The control system shall receive any common fault signal from the cooling condenser and indoor units.

HWS Control

Hot water generation for the office area shall operate under the dictates of the scheduled time controls for the zone. The control shall also operate the HWS recirculation pump.

The control system shall ensure that the HWS system operates at least on a weekly for a minimum period of 1 hour after the HWS storage temperature is recorded at 60°C and return temperature at 55°C

HWS Generation for the changing area (ie the bulk HWS generator upper and lower elements and HWS circulation pump) shall be controlled from a fascia mounted switch situated on the control panel.

The control system shall receive any common fault indication from each of the HWS generators

Ventilation Control

Air handling Units shall be equipped with basic controllers that manage each air handling unit (eg starting extract fans and supply fans, proving of airflow in relation to the heater battery etc).

The control system shall provide, when required, an enable signal that allows the air handling units to operate (along with the respective heater batteries). The office area AHU shall operate under the dictates of the time scheduling for the zone.

The control system shall receive any common fault signal from each air handling unit.

The extract fans located within the changing rooms shall be under manual control. Speed controllers for each fan shall be fitted within the changing area lobbies.

The control panel shall be equipped with a fascia mounted switch to enable operation of these fans.

The control panel shall be equipped with a fascia mounted switch to provide manual control of the changing area AHU.

Control Wiring

The contractor shall allow to design, supply, install, test and commission all interconnecting control wiring and associated power necessary to provide a fully functional system. The contractor shall allow to provide all containment and supports necessary to provide a fully functional system. The contractor shall allow to provide all contactors and associated enclosures located adjacent to ventilation fans, fan coil units etc. as necessary to achieve the specified control philosophy. The contractor shall allow for all items necessary as part of the tender.

W70 STRUCTURED CABLING SYSTEM

PART 1 SYSTEM OBJECTIVES

100.010 PERFORMANCE OBJECTIVES:

To provide a structured cabling system within the building.

100.020 DESIGN PARAMETERS:

EIA/TIA-568B

100.030 SYSTEM DESCRIPTION:

The electrical contractor shall allow to supply and install a new structured cabling installation as identified on the tender drawings and further described herein. If there are any areas of doubt or any ancillary items of works are required it shall be the responsibility of the contractor to identify all works at the time of tender.

The Structured Cabling Installation shall be carried out by a Specialist whom the Contractor shall employ. The contractor shall ensure that the modified structured cabling system complies with EIA/TIA-568B using category 5e cabling. All data wiring systems shall be installed by specialists fully qualified and competent in this field.

Cabinet

The electrical contractor shall allow to supply and install a new wall mounted patch cabinet within the office as identified on the tender drawings which shall house all active and passive equipment. Within the cabinet the electrical contractor shall allow to supply and install a new voice host patch panel.

The electrical contractor shall ensure that all data outlets which are provided are dual outlets one of which shall be patched for telephones and the other for data transmissions.

The electrical contractor shall note that the arrangement of the incoming telephone lines and broadband connection shall be arranged direct with the council, however, the electrical contractor shall allow for all attendance necessary and shall allow for all tie wrap cables from point of entry to the patch panel as necessary to provide a fully functional system.

Radial Wiring

Wiring between junction boxes or patch panels and each outlet shall be carried out on a radial basis and each cable shall have four unshielded twisted pairs (UTP) and shall meet or exceed the requirements of the EIA/TIA-568 TSB-36 CAT5e standards.

Cable sheath must be of low smoke zero halogen (LSOH) type.

Twists in pairs must be left intact up to the point of termination. Slack cable shall be left at termination points to allow for any need to re-terminate.

The maximum length of cable run shall be 90m. All cables shall be continuous with no joints. Any cable run that is found to be longer than 90m shall be discussed with the ICT service provider before installation proceeds.

Cables shall be protected throughout their entire length by trunking, conduit, cable basket or other approved method. All containment shall be sized with at least 30% spare capacity for future cables.

Installation

Data wiring shall be entirely segregated from mains cables throughout. Data cabling may share the same tray, trunking, basket and/or conduit system as other extra low voltage wiring such as

telecommunications, building management systems etc.

Generally all new wiring shall be installed into multi-compartment trunking systems which the electrical contractor shall ensure are fully accessible for the future installation of additional wiring.

Cable routes to take into account EIA/TIA 569.

Data cables shall not be run in parallel with any power cabling and must not be installed within 300mm of any power equipment or cables or be run in areas, which are vulnerable to Electromagnetic interference (EMI) or radio frequency interference (RFI).

Cable stress limits given in EIA/TIA TSB40A must be adhered to, in particular tie wraps must be hand tightened without tools to tightness sufficient to hold cables snugly without over clinching.

Care shall be taken during pulling of cables into a location to minimise cable tension and to avoid cable impairment or breakage. Particular care should be taken when using conduit or ducting where a maximum pull length of 30 metres with no more than two 90 degree bends should be applied.

Cables must be handled in a careful manner during installation, to ensure that they are not damaged with a consequent degradation in performance. The following criteria apply:

- Unnecessary bends should be avoided. The Contractor should avoid more than three bends of 900 (observing minimum bend radii). Bends of greater than 900 are not permitted.
- Normally the bend radius of the cable shall be no greater than eight times a cable's diameter. This should be adhered to wherever possible however radii down to four times a cable's diameter may be permissible if dependent upon cable section.
- Tearing, cutting or wearing through of a cable jacket, by abrasion or sharp edges, must be avoided.
- Scoring of a cable's outer jacket for the purpose of exposing the inner twisted pairs for making terminations must not cut through the inner cores' insulation thereby exposing the copper conductors.
- If it is necessary to strip off a cable's outer jacket to expose the twisted pairs for termination, then the unjacketed pair(s) must be pulled tightly round all bends, to force the conductors to set and remain in place. The tension should be sufficient to maintain the undistorted twisting of the pairs but not so tight as to damage the insulation or the copper conductors.

Any damaged cables shall be replaced at the contractor's expense. Splices, joints or repairs to cables are not permitted.

Testing and Commissioning

Testing shall cover all pairs and combinations of pairs in each circuit.

All testing shall be performed using a proprietary tester suitable for testing to the full EIA/TIA-568 Cat5e specification. The tester shall compare each test result against the Cat5e requirements to give a clear indication of PASS or FAIL for each requirement and the overall test sequence for each circuit. The tester shall be capable of storing the full test results for subsequent output to either a storage device or a printer. All testing shall be carried out in full accordance with the manufacturer's instructions. A full print out of the test results shall be provided as part of the system documentation and included within the Operating and Maintenance Manuals. The printed test results shall have those components of the results due to the test patch cords removed from the overall results.

The key parameters to be tested to verify Cat5e compliance are:

- Mutual capacitance
- Characteristic impedance

- Attenuation Near-end crosstalk (NEXT), (measured from both ends of the circuit).
- Connectivity pin to pin, end to end
- In addition there shall be no short circuits, miswires, splits, reversed or crossed pairs

All the above items shall be tested and recorded.

The Contractor shall provide all necessary instruments for testing purposes together with valid calibration certificates. Test sheets shall be issued to the employer prior to handover. A copy of the test results shall be kept, by the contractor, for a minimum period of one year after handover.

Terminations

To maintain reliability cables should not be untwisted more than 13mm. Pin number designations:

PIN	COLOUR
1	White / Orange
2	Orange
3	White / Green
4	Blue
5	White/Blue
6	Green
7	White / Brown
8	Brown

All patch panels supplied and installed must be Cat5e compliant and wired to 258A specification with RJ45 sockets on the front and IDC connection blocks on the rear.

Patch panels used shall be 1U 24 port or 2U 48 port, all positions to be fully loaded to allow additional circuits to be added later.

Patch cables shall be cat5e and shall have integral strain relief and no boots.

The Specialist shall provide 1No. patch cable (1m long) PER outlet installed - with 50% coloured grey and 50% coloured blue, plus 3No. spare of each colour. In addition they shall provide 3No. 3m patch cables (grey). Each patch cable shall be uniquely labelled at each end to assist patching. Final patching shall be undertaken by the end user, however, the contractor shall allow a days attendance at handover to assist in the connection of equipment.

All user outlet faceplates shall meet or exceed cat5e standard. All outlets shall be provided with a shutter that automatically closes when the device lead is removed.

Each data outlet shall be a shuttered RJ45, 8 poles, unkeyed with IDC block.

Labelling

A numbering system shall be implemented to ensure that each circuit from the wiring centre to the user outlet is unique. All outlets, cables, junction boxes, patch panels and components shall be suitably labelled using permanent, printed labels. All cables shall have identification sleeves fitted at their terminals.

100.060 SYSTEM DRAWINGS:

The electrical contractor shall supply and install telephones and data in accordance with this specification and the following electrical layout drawings:

Drawing Number	Drawing Title
6001	Electrical Services – Proposed Removals and Modifications
6101	Electrical Services – Proposed Containment Layout
6103	Electrical Services – Proposed Small Power Layout

PART 2 SELECTION SCHEDULES FOR REFERENCE SPECIFICATIONS

260.000 CONDUIT AND TRUNKING

260.010 GENERAL:

- Supply conduit and cable trunking as specified in section V20

261.000 HV/LV CABLES AND WIRING

261.010 GENERAL:

- Comply with work section general clauses reference Y61.1010, Y61.1020, Y61.1030 and those detailed below.

261.110 INFORMATION TECHNOLOGY CABLES:

- Structured wiring - reference Y61.2100A

263.000 SUPPORT COMPONENTS - CABLES

263.010 GENERAL:

- Supply support components as specified in section V20

280.000 EARTHING AND BONDING COMPONENTS

280.010 GENERAL:

- Supply earthing and bonding components as specified in section W51

282.000 IDENTIFICATION - ELECTRICAL

282.010 GENERAL:

- Supply identification - electrical as specified in section V20

290.000 FIXING TO BUILDING FABRIC

290.010 GENERAL:

- Carry out fixing to building fabric as specified in work section V20

PART 3 SPECIFICATION CLAUSES SPECIFIC TO W70

300.010 AMENDMENTS AND REVISIONS:

- Comply with any published amendments and revisions to standards, requirements and recommendations issued up to and including start on-site (and subsequently where the contractor can reasonably be assumed to be able to comply).

300.020 STANDARDS CONTRADICTIONS:

- Confirm that this document has been checked to identify any areas it appears to contradict any of the standards referenced in this document.

300.030 STANDARDS:

Carry out work in accordance with the following standards and all standards that are referenced within:

- BS EN 50173-1 - Information Technology - Generic Cabling Systems.
- BS EN 50174-1 - Information Technology - Cabling Installation. Specification and quality assurance.
- BS EN 50174-2 - Information Technology - Cabling Installation. Installation planning and practices inside buildings.
- BS EN 50174-3 - Information Technology - Cabling Installation. Installation planning and practices outside buildings.
- BS 6701 - Telecommunications equipment and telecommunications cabling. Specification for installation, operation and maintenance.
- BS 7671 - Requirements for Electrical Installations - IEE Wiring Regulations 17th Edition.

300.050 INDUSTRY PRACTICE:

Carry out work in accordance with the following industry practices.

- Ensure that the structured cabling system is fully compliant with the fibre optic industry association (FIA) code of practice for the installation of fibre cables.

300.060 MANUFACTURER'S GUIDELINES:

Carry out work in accordance with the manufacturer's requirements, guidelines and recommendations.

370.000 INSTALLATION

Ensure all manufacturer guidelines, main contractor site rules and client requirements detailed within the complete tender documentation are followed.

Carry out all installation works in accordance with the site health and safety file, with the contractor ensuring their areas of responsibility operate in a clean and tidy environment. Ensure all outlets are protected from dust ingress.

370.010 BRING INTO SERVICE SUPPORT:

Make available engineers over at least the two days either side of each bring into service (BIS) date, as well as on the BIS date(s) itself, to provide whatever support is required.

370.020 PROJECT MANAGEMENT:

Appoint a qualified and experienced structured cabling system project manager to plan, direct and oversee their works and workers, and to liaise with and provide timely information to all relevant parties.

370.030 TRAINING:

Train the users how to use the system, showing all elements of patching and user outlet relocation and addition. Provide training for up to four users with training being scheduled with reasonable notice at the request of client name or their agents. Train the users together or separately, before or within one month after hand over, at the discretion of client name or their agents.

370.050 TESTING EQUIPMENT:

List and describe the proposed testing equipment, which will be used on site and/or in their factory. Provide copies of valid calibration certificates for all equipment used for testing to the client or their agents at their premises with reasonable notice.

Provide sample test result sheets for each of the tests to be carried out.

370.060 INSPECTION CHECKS:

Note, during the installation period the client or their agents will make various physical inspections of the installation, including but not limited to: standard of workmanship, standards adherence, labelling. Also note, the client or their agents will carry out witness checks of about 10% of the structured cabling system and the testing. Ensure reasonable notice is given before commencement of any tests. Also note before hand over and after full testing by the contractor, the client or their agents will carry out random sample tests to confirm the quality of the installation. Tests will include electronic tests and inspection for such as labelling shortcomings.

Make available all personnel and equipment required to enable the client or their agents to carry out any of the above checks, both on site and in their factory.

370.070 AS INSTALLED INFORMATION:

Provide an operations manual that explains how to use the structured cabling system and describes what can and what cannot be connected to it.

370.080 LABELLING:

Provide appropriate labelling for all elements of the scheme, including:

- Horizontal Cabling Subsystem
 - Horizontal cable
 - User outlet

- Patch panel, both the panel and the outlet

Label cables at all points where they enter or exit from concealment.

Prove labelling is machine produced. Ensure that hand written labels are not used.

Label patch panel of two rows of characters, top row to be common to the complete length of the patch panel and be descriptive of the outlet type, i.e. 1st Floor User Outlets, the bottom row to identify each individual outlet.

370.090 LABELLING SCHEME:

Adopt the proposed labelling scheme identified below.

370.092 HORIZONTAL CABLING SYSTEM:

Uniquely identify each user outlet using the following notation:

N - NN - A - A - NN

N	1 digit number indicating building, 1 for building one, 2 for building two, etc,
NN	2 digit number indicating floor level, 00 for ground, 01 for first, 02 for second, etc
A	1 letter indicating patch frame or cabinet
A	1 letter indicating patch panel
NN	2 digit number from 1 to 48

Uniquely identify each horizontal cable at both ends using consecutive numbers.

Uniquely identify each fly lead at both ends to match the user outlet.

380.000 WARRANTY

Provide a warranty for the complete structured cabling system.

Duration of the warranty from the handover date of the completed system for a minimum of:

- 25 years

Cover appropriate extensions to the structured cabling system by the warranty. Note appropriate extensions to be those which meet the manufacturer's design guides, installed by the contractor (or by any other contractor registered with and authorised by the end manufacturer as a certified installer) using certified components and procedures as prescribed by the manufacturer.

Arrange for the structured cabling manufacturer to visit site during the installation and at practical completion and confirm to the client, or their agents, manufacturer compliance.

Ensure the warranty is voided by normal use of the system, including moves and changes carried out by the client or their agents.

Ensure the warranty provides for the client or their agents to contact the contractor in the first instance, who shall attend the site within one working day to carry out appropriate tests and who will then progress the claim through the manufacturer. Agree action on the claim and initiate within 10 working days of notification of the claim. Ensure the action shall be completed without unreasonable delay.

Arrange a contract between the client and the manufacturer such that if the contractor is no longer in existence (or in the event of non-performance by the contractor) then the manufacturer shall fulfil all the obligations of the contractor.

State the name, address and claim contact details (department name, persons name and phone no) of the manufacturer. Note this may be used to verify that the warranty is fully compliant with the above requirements.

APPENDIX A: ELECTRICAL Y-CLAUSES

Y60 CONDUIT AND CABLE TRUNKING

Y60.1000 GENERAL

Y60.1010 STANDARDS:

Provide conduit and cable trunking in accordance with the relevant British Standards and in particular the requirements of BS 7671 Requirements for Electrical Installations (The IEE Wiring Regulations).

Y60.2010B CONDUIT SYSTEMS METAL RIGID CLASS 4:

- Fittings
 - 2020A RIGID CONDUIT SYSTEM - METALLIC CONDUIT
 - Use couplers to match conduit grade and finish.
 - Use solid couplers to join lengths of conduit unless inspection couplers are shown on the drawings or schedules.
 - Conduit fittings and adaptable boxes
 - Material - Malleable iron adaptable boxes.
 - Do not use factory made bends, inspection bends or inspection couplers unless shown on drawings or schedules.
 - Ensure fittings are same class and finish as associated conduit system.
 - Supply covers for circular or adaptable boxes in the same material and finish as boxes.
 - Use steel dome or cheese headed screws to secure covers for Class 2 finish.
 - Use brass dome or cheese headed screws to secure covers for Class 4 finish.
 - Limit number of entry holes within loop-in boxes to four.
 - Adaptable box, minimum size - 100mm x 100mm x 50mm.
 - Connections
 - Use couplers and externally screwed brass bushes to connect conduit to loop-in circular conduit boxes, switchgear, distribution boards, and adaptable boxes. Use solid couplers.
 - Conduit fixing saddles - Spacer bar.
 - Plugs - Hexagonal malleable iron.
 - Locknuts - Hexagonal steel.
 - As drawings/schedules - reference Y60.2020B

Provide conduit systems to BS EN 61386. Use conduit of each type from one manufacturer.

Material - Metal, steel.

Method of connection - Threadable.

Suitability for bending - Rigid, BS EN 61386-21.

Electrical characteristics - with electrical continuity.

Resistance against corrosive or polluting substances

- Conduits with same protection outside and inside
 - High protection - Hot dip zinc coating. BS EN 61386-1 Table 10 Class 4.

Y60.2020A RIGID CONDUIT SYSTEM - METALLIC CONDUIT

Use couplers to match conduit grade and finish.

Use solid couplers to join lengths of conduit unless inspection couplers are shown on the drawings or schedules.

Conduit fittings and adaptable boxes

- Material - Malleable iron adaptable boxes.
- Do not use factory made bends, inspection bends or inspection couplers unless shown on drawings or schedules.
- Ensure fittings are same class and finish as associated conduit system.
- Supply covers for circular or adaptable boxes in the same material and finish as boxes.
- Use steel dome or cheese headed screws to secure covers for Class 2 finish.
- Use brass dome or cheese headed screws to secure covers for Class 4 finish.
- Limit number of entry holes within loop-in boxes to four.
- Adaptable box, minimum size - 100mm x 100mm x 50mm.

Connections

- Use couplers and externally screwed brass bushes to connect conduit to loop-in circular conduit boxes, switchgear, distribution boards, and adaptable boxes. Use solid couplers.

Conduit fixing saddles - Spacer bar.
Plugs - Hexagonal malleable iron.
Locknuts - Hexagonal steel.

Y60.2050A PLIABLE OR FLEXIBLE CONDUIT SYSTEMS - NON-METALLIC:

- Method of connection - Threadable conduit.
- Connections
 - Use plastic adaptors and bushes.
 - Use male adaptors to connect flexible conduit to motors and other equipment having a threaded entry.
 - Use female adaptors and externally screwed bushes to connect flexible conduit to trunking and equipment not having a threaded entry.

Y60.2080A CABLE TRUNKING AND FITTINGS:

Comply with BS EN 50085. Use trunking of each type from one manufacturer.

Y60.2110A SERVICE OUTLET BOXES:

- Recess lids
- Provide service outlet boxes and junction boxes constructed from sheet steel with same finish as trunking.
- Maintain continuity and segregation of compartments through boxes and fit flyovers where necessary.
- Provide service outlet boxes with separate and segregated access to outlets associated with each wiring compartment. Fit cable guard or grommet to each section.
- Incorporate spigots on boxes for connection to trunking.
- Make frames adjustable on each corner, recess lids.
- Manufacture frame and lids for service outlet boxes and junction boxes of cast metal, and suitable to accept type of floor covering.
- Outlet plates
 - Provide outlet plates for each low voltage compartment equipped with socket outlets.
 - Provide outlet plates for each extra low voltage compartment equipped with items.
 - Provide outlet plates for each information technology compartment that ensures the IT compartment and its outlet plate conform to the requirements of BS EN 50174 and of the IT system installer, equipped with suitable outlets.
 - Provide blank outlet plates for any unused compartments.

Y60.2130A PVC SERVICE TRUNKING - GENERAL PURPOSE:

- Trunking to BS 4678-4
 - Mechanical properties, trunking for medium mechanical stress.
 - Temperature tolerances - BS 4678-4, Table 1.
- Electrical characteristics
 - Without electrical insulating characteristics.
- Resistance against ingress of solid objects
 - Protected against solid objects greater than 1.0mm (IP4X).
- Resistance to ingress of water
 - Protected against dripping water (IPX2).
- Resistance against corrosive or polluting substances
 - Medium protection.
- Fittings
 - Use fittings from same manufacturer as trunking. Use 'snap-on' covers. Use trunking fittings and accessories suitable for jointing by solvent welding.
 - Use proprietary cable retaining clips at 500 mm maximum intervals on trunking that exceeds 1.8 m in length. Where junctions occur ensure first clip is not more than 300 mm from junctions.

Y60.2130C PVC DADO TRUNKING - GENERAL PURPOSE:

- Trunking to BS 4678-4
 - Mechanical properties, trunking for medium mechanical stress.

- Temperature tolerances - BS 4678-4, Table 1.
- Electrical characteristics
 - Without electrical insulating characteristics.
- Resistance against ingress of solid objects
 - Protected against solid objects greater than 1.0mm (IP4X).
- Resistance to ingress of water
 - Protected against dripping water (IPX2).
- Resistance against corrosive or polluting substances
 - Medium protection.
- Fittings
 - Use fittings from same manufacturer as trunking. Use 'snap-on' covers. Use trunking fittings and accessories suitable for jointing by solvent welding.
 - Use proprietary cable retaining clips at 500mm maximum intervals on trunking that exceeds 1.8m in length. Where junctions occur ensure first clip is not more than 300mm from junctions.

Y60.2150A SEPARATE OR MULTI-COMPARTMENT TRUNKING:

Use separate trunking or multi-compartment trunking for segregation of services. Ensure steel partitions have a provision for connecting a circuit protective conductor.
Provide separation of wiring for circuits as required by BS 7671.

Y60.2170 SUPPORTS AND FIXINGS:

- Provide proprietary suspension systems comprising channel sections with return lips and compatible fixing accessories made of material to BS EN 10162, BS EN 10210 and/or slotted angles to BS 4345.
- Ensure support components for Class 4 conduit have the same finishing method as the conduit carried out after manufacture. Ensure components in direct contact with conduit match profile of conduit.
- Ensure all steel components such as studding, bolts and steel screws, bolts, nuts and washers are either cadmium plated and passivated or zinc electroplated to BS 7371 after manufacture. Do not use metal fixing components likely to deteriorate and/or cause damage through electrolytic action.

Y60.3010A GENERAL:

- Ensure entire system is electrically and/or mechanically continuous, to BS 7671.
- Fire barriers
 - Comply with the requirements of BS 7671 wherever the conduit or trunking passes through the perimeter of a fire compartment (wall, floor or ceiling).
- Appearance
 - Arrange conduit, trunking and ducting to present neat appearance, parallel with other service runs and lines of building construction, except where in screed or in-situ concrete. Ensure plumb vertical runs.
- Cable installation
 - Install cable in conduit, trunking or equipment enclosures only when completely erected throughout its length.
 - Do not use framework of partitions or similar unless indicated.
- Building expansion and settlement
 - Make provision in conduit and trunking at expansion and settlement joints to allow for movement of building structure. Provide circular through or adaptable boxes no more than 300 mm either side of expansion or settlement joints for conduit crossing.
 - Join boxes with flexible steel conduit type C or conduits arranged to form a telescopic joint and cover overall with PVC sleeve to provide minimum degree of protection of IP44 or purpose made telescopic joint protected by a PVC sleeve to at least IP44.
- Quality
 - Cut conduit clean and square with axis. Remove any burrs prior to erection.
 - Site form 90° in conduit wherever practical or use circular or adaptable boxes.
 - Construct bends and sets cold with a bending machine. Do not apply heat when forming sets or bends.
 - Use bending tools complying with British Standards appropriate to conduit material.
 - Ensure no indentation or reduction in cross sectional area occurs during installation.

- Use correct tools to assemble conduit. Ensure no toolmarks or damage to components occurs.

Y60.3020 LAYOUT:

- Ensure the maximum circuit lengths and groupings of cables indicated are not exceeded.
- Conduit sizing
 - Where dimensions are not indicated select trunking and conduit sizes in accordance with Appendix A of Guidance Note I Selection and Erection published by the IET.

Y60.3030 SPACING:

- Install conduit, trunking and equipment clear of other services. Measure distance from external surface of any thermal insulation. Notify instances where minimum clearance cannot be achieved and bond items concerned. Minimum general spacings between conduits, trunking, equipment and insulated steam services - 300 mm, other services excluding steam - 150 mm, above central heating radiators - 1000 mm, ensure separation is in accordance with Appendix K of Guidance Note I Selection and Erection published by the IET and BS EN 50174.

Y60.3040 CONDENSATION PREVENTION:

- Install conduit and trunking systems to ensure internal condensation does not affect operation of associated circuits. Provide drainage points in accordance with BS 7671.
- Where conduit passes through external wall between two areas of different ambient temperatures or in other locations likely to cause condensation, install a conduit or adaptable box. After wiring fill box with inert, permanently plastic compound with high insulation value.

Y60.3050A PROTECTION AND REPAIR OF STEEL COMPONENTS:

- Paint joints of conduit and minor damages to finish of conduit and trunking immediately after erection or after damage occurs.
- Use paint compatible with finish as follows
 - Galvanized finish, use two coats zinc rich paint.
 - Black enamelled finish, use two coats of good quality, air drying, black enamel paint.
- Remove grease, oil, dirt and rust before applying protective paint.
- Notify serious damage and repair or replace as instructed.

Y60.3060 EQUIPMENT CONNECTIONS:

- Where surface mounted equipment is installed in conjunction with concealed conduit work, terminate concealed conduit at flush mounted conduit or adaptable box. Drill back of equipment, bush for back entry and mount equipment to conceal back box.
- Connect to fixed equipment via conduit box located adjacent to termination point, using either solid or flexible conduit as indicated for final connection to equipment terminations.
- Use conduit box as cable change point to facilitate changed wiring locally to adjacent equipment.
- Connect trunking to equipment by specially fabricated connectors or by couplers and externally screwed brass bushes.

Y60.3070 CLEANING BEFORE WIRING:

- Clean inside of conduits and trunking with swabs immediately before wiring.
- Inspect all components and remove any foreign matter, fit temporary plugs to open ends of conduit and trunking to prevent ingress of water and solid material.

Y60.3080A WIRING:

- Comply with BS 7671 when wiring installations.
- Segregate circuits as indicated.
- Ensure draw wires are left within empty conduits for use of specialist installers. Use draw wires comprising nylon tapes with fitted eyelets.
- For concealed conduit ensure system is installed to enable re-wiring to be carried out from boxes for fittings or accessories only. Draw-in boxes will only be permitted with prior permission in writing.
- Do not use tallow or any other substances to facilitate drawing-in of cables.

Y60.3090 BUILDERSWORK:

- Ensure conduit is not concealed until work has been inspected and approved.

- Obtain permission before horizontally chasing walls.
- Ensure that conduit and fittings buried in concrete or behind plaster are protected against corrosion or electrolytic action prior to rendering.
- Ensure conduit concealed in wall chases is covered by plaster and/or rendering to minimum depth of 12 mm.

Y60.4010 DRAW-IN BOXES:

- Provide draw-in boxes in conduit at maximum intervals of 10 metres or after bends and/or sets totalling 180 degrees.

Y60.4020 INSTALLATION OF CAST IN OR BURIED CONDUIT:

- Ensure cast-in conduits are firmly secured to reinforcing steelwork and that accessory and/or conduit boxes are secured so they do not move during subsequent building operations.
- Ensure there is no blockage immediately shuttering is removed.
- Check there is no mechanical damage to conduit in floor screed prior to screeding. Fix securely before screed is poured. Provide temporary protection to conduits until screeds are laid.
- Ensure minimum amount of cross-overs occur dependent upon screed depth. Do not install draw boxes in floors.
- Do not install conduits in screeds in areas indicated within site blinding, in main structural slabs unless prior permission in writing is obtained.

Y60.4030 CONDUIT BOXES:

- Ensure that wherever conduit boxes are cast in the face of the box is flush with the face of the concrete or plaster. Fit circular conduit boxes with extension rings to ensure a flush face with plaster or concrete or where terminal blocks are to be accommodated.
- Ensure fixing holes are countersunk where material thickness allows or use round head screws to prevent damage to cables and remove burrs before cables are drawn in.
- Use a minimum of two screw fixing for standard circular conduit boxes and four screws for large conduit boxes and adaptable boxes up to 150 mm x 100 mm.
- Use back outlet boxes where surface conduits pass through walls, to outside accessories or lighting points.
- Secure switch boxes and socket boxes using countersunk steel screws where provision is made for them or if not use round head screws. Use plug inserts and finally grout in position prior to plastering or screeding.

Y60.4040 FIXING CONDUIT:

- Support conduit in accordance with Appendix I of Guidance Note I Selection and Erection published by the IEE.
- Ensure conduit is not under mechanical stress. Fix conduit boxes independently of conduit. Make allowance for any additional mechanical loading supported by conduit boxes.
- Where protection is specified as IP44 or greater ensure fixings of conduit boxes are suitable to maintain degree of protection.
- Use following methods of fixing conduit:-

LOCATION	TYPE OF FIXING
Floor screeds.	Saddles or crampets.
Buried in plaster or render.	Crampets or saddles.
Above false ceilings.	Saddles.
Surface.	Saddles.

Y60.4050 FLEXIBLE AND PLIABLE CONDUIT:

- Use flexible conduit for final connections to motors, other equipment subject to vibration or adjustment and to thermostats, motorised valves and similar items mounted in pipelines or ducts.
- Use sufficient length between equipment and circular through box at end of conduit run (minimum 450 mm) to allow necessary full range of withdrawal, adjustment or movement.
- Use solid type adapters to terminate flexible conduit.
- Use PVC covered flexible conduit where installed externally, exposed to weather or in any position where ingress of moisture or condensation may occur.

Y60.4060 SCREWED STEEL CONDUIT:

- Use materials clean and free from defects, rust, scale and oil. Obtain prior permission in writing for use of materials subject to remedial work before erection. Repair any damage caused by threading, bending or erection by painting with zinc rich paint before any rust occurs.
- Ensure length of thread on conduit matches that in conduit couplers, fittings or equipment with no thread exposed after erection except at running couplers.
- Ensure conduits butt inside couplers.
- Use lubricant when cutting threads.
- Use minimum number of running couplings
 - For running couplings in Class 2 conduit, use coupler and locknut. Paint exposed thread with zinc rich paint.
 - For running couplings in Class 4 conduit, use three piece conduit unions.

Y60.5020 ACCESS:

- Arrange trunking to allow access to wiring. Locate covers on top or sides of trunking if practicable. Arrange access so covers are on a continuous face and cables can be laid in throughout the length of the trunking. Notify where either condition cannot be achieved.

Y60.5030A FIXING TRUNKING:

- Ensure trunking is independently fixed and supported from building fabric. Obtain approval for proposed fixings/supports.
- Support trunking in accordance with the manufacturers requirements and/or Guidance Note 1 Selection and Erection published by the IEE.
Use two fixings minimum per standard length.

Y60.5040A STEEL TRUNKING:

- Install steel trunking in accordance with the manufacturers requirements and those of BS 7671.
- Use trunking to avoid multiple parallel conduit runs, subject to approval.
- Cut trunking clean and square with axis, prepare ends and remove burrs and sharp edges. Ensure inside of trunking is free from anything liable to damage cables either during installation or after covers are fitted.
- When trunking is held in a vice, ensure surfaces remain undamaged and components are not warped.
- Avoid tool marking or damage to trunking system components.
 - Do not site fabricate trunking tees, bends, flanges and other accessories. Use only factory made accessories.
- Form circular holes over 6 mm diameter in trunking body using correctly sized punch sets. Use twist drill for holes up to 6 mm maximum diameter.
- Use only factory formed openings for accessories.
- Line unprotected apertures in trunking with PVC or nylon edging strip.
- Fit ends of runs with removable blanking plates.
- Ensure connections are not made to covers unless indicated or approval obtained.
- Provide fixed section of cover projecting 25 mm either side of fabric where trunking passes through wall, floors or ceiling.
- Fit cable retaining straps at 500 mm intervals except where cover is on top.

Y61 HV/LV CABLES AND WIRING

Y61.1010 CABLE MANUFACTURER:

- Use new cables, delivered to site with seals intact, manufactured not more than one year prior to delivery, labelled with manufacturer's name, size, description, BS number, classification, length, grade and date of manufacture.

Y61.1020 CABLE CERTIFICATION MARKING:

- Mark all types of cables with CENELEC cable certification marking or if included in British Approvals Service for Cables (BASEC) in accordance with BASEC regulations.

Y61.1030 MEDIUM VOLTAGE CABLE RECORDS:

- Keep records of MV cable drum numbers and supporting information, mark information on record drawings, indicating precise location of each length of cable, and submit copies of manufacturer's cable test certificate.

Y61.2020B STANDARD POWER SUPPLY CABLES, COPPER CONDUCTORS, THERMOSETTING INSULATION, SHEATHED AND ARMOURED:

- Standard - BS 5467, Tables 4, 6, 8, and 12.
- Mechanical protection - Armour.

Y61.2020E STANDARD POWER SUPPLY CABLES, COPPER CONDUCTORS, LSF SHEATHED AND ARMOURED:

- Standard - BS 6724, Tables 4, 6, 8, and 10.
- Mechanical protection - Armour.

Y61.2020K STANDARD POWER SUPPLY CABLES, COPPER CONDUCTORS LSF INSULATION, SHEATHED:

- Standard - BS 7211, Tables 3 and 4.
- Mechanical protection - Unarmoured.

Y61.2020M STANDARD CABLES WITH DEFINITE FIRE PERFORMANCE:

- Standard - BS 7629-1 type as shown on drgs/schedules.
- Fire performance BS 5839-1 Standard.
- Sheath colour - red.
- Mechanical protection, as shown on drgs/schedules.

Y61.2020N STANDARD CABLES FOR WALLS, PARTITIONS AND BUILDING VOIDS WHERE PENETRATION BY SHARP OBJECTS IS A HIGH RISK:

- Standard - BS 8436.

Y61.2050B PAIRED, SCREENED CONTROL CABLES WITH OR WITHOUT METALLIC PROTECTION:

- Standard - BS EN 50288-7 .
- Paired, screened control cables, with or without metallic protection.

Y61.2050G MULTI-CORE UNARMoured LSF, SHEATHED AUXILIARY CABLES:

- Standard - BS 7211, Table 4
- Mechanical protection - Unarmoured.

Y61.3010A CABLES GLANDS - UNARMoured CABLES, INDOORS:

- Cable type
 - Flexible; wiring and power; control and auxiliary; and communications.
- Standard - BS EN 62680-1 non-metallic, cable retention, IP54; Type A1 as BS 6121-5 Annex A..
- Environment - Indoor.

Y61.3010D CABLE GLANDS - ARMOURED CABLES, INDOORS:

- Cable type
 - Wiring and power; and control and auxiliary.
- Standard - BS EN 62680-1 metallic, cable retention Class A, protective connection to earth, IP54. Type B as BS 6121-5 Annex A.
- Environment - Indoor.

Y61.3010E CABLE GLANDS - ARMOURED CABLES, OUTDOORS:

- Cable type
 - Wiring and power; and control and auxiliary.
- Standard - BS EN 62680-1 metallic, cable retention Class A, protective connection to earth, IP54 with shroud. Type C as BS 6121-5 Annex A.
- Environment - Outdoor.

Y61.3110A CABLE DUCTS:

- Standard
 - BS 4660 provided by Electricity Supply Company.

Y61.3120A CABLE SLEEVES:

- Supply and hand to others for installation non ferrous cable sleeves for incorporation into the structure where cables pass through fire compartment floors and walls.
- Packing material
 - Weak mix mortar; intumescent, plaster or mastic; solid intumescent material; or intumescent granule filled bags.

Y61.3130A CABLE COVERS AND MARKERS:

- Material - Recovered plastic, integral tape.
 - Marking - Electricity or telephone.
- Plastic marker tape
 - Yellow, marked electricity or telephone.

Y61.4010 CABLE INSTALLATION - GENERAL:

- Use and install cables only as directed in the appropriate standard or as directed by the manufacturer in writing. Lay cables in one length unless otherwise indicated. Obtain permission from supervising officer for all through joints, and where overall length requirement exceeds practical drum size.
- Handle, install and dispose of cables on wooden drums in accordance with BS 8512.
- Install cables when ambient temperature is 5°C or greater, using cables stored at or above this temperature for not less than 24 hours.
- Use drum stands, drum axles, fair leads, rollers, cable stockings and other equipment as recommended by the cable manufacturer and as appropriate to the method of installation.

Y61.4020 CABLE INSTALLATION IN LOW TEMPERATURES:

- Install cables at lower installation temperatures when authorised by manufacturer in a written statement.

Y61.4030 INSTALLATION OF LSF CABLE:

- Install LSF cables in accordance with manufacturer's instructions. Ensure ambient temperature is above 5°C. Ensure oversheaths are not damaged by abrasion or scuffing.

Y61.4060 CABLE INSTALLATION IN TRENCHES:

- Lay cables on newly prepared bedding. Ensure multiple layers of cable are separated vertically by a 50mm layer of hard rammed bedding material.
- When using a power winch ensure tension on the cable is taken by element of the cable designed for that purpose, that is armour or conductor cores as appropriate and not plastic sheath, metal sheath or core insulation.
- When hand pulling cable ensure no kinks are formed and that flaking, when used, is done in the correct direction.
- Do not allow cable to twist during installation. Use swivels to connect pulling bond to cable stocking or equivalent fitting.
- Check drum is suitable for jacking before commencing installation. If drum or reel is unsuitable for jacking, flake cable in correct direction in maximum size turns from drum or reel before commencing installation. Use skilled labour to supervise all unreeling, flaking or running of cable from a drum.
- Lay cables in the formation shown, ensure spacing is not reduced below that indicated.
- Bind trefoil groups at 1m intervals. Bind any associated earth or protective conductor to its cable or trefoil group at 1m intervals.
- Space multiple cables in trenches in accordance with BS 7671.
- Ensure installation radii and permanent bending radii are not less than those recommended by the manufacturer.
- Do not lay cables to BS 7211 or BS EN 50525 direct in the ground.

Y61.4120A CABLE EMBEDDED INSTALLATION:

- Dress cables flat, free from twists, kinks and strain, and align parallel to building elements. When

glands and clamps are not required, take sheathing of cables into accessory boxes and equipment and protect against abrasion using grommets or similar sharp edge protection.

- Ensure plaster or screed over cable is a minimum of 12mm. Protect embedded cables with metal capping or PVC oval conduit.

Y61.4150A CABLE JOINTING AND TERMINATING GENERALLY:

- Ensure all joints and terminations are made by appropriately qualified cable jointers, using jointing materials, components and workmanship recommended by the cable manufacturer and the jointing accessory manufacturer. Install cable glands in accordance with BS 6121-5.
 - Cold pour resin and heat shrink joints.
 - Cut all cable ends immediately prior to jointing or terminating. Seal cables left unconnected for more than 24 hours to prevent the ingress of moisture. Seal plastic sheathed cables using proprietary shrink on end caps. Seal lead sheathed cables by a plumbed dressed lead cap with an airspace to allow conductor movement.
- Strip cables to bring out the cores and expose conductors, for the minimum length required for connection, to leave no exposed length of conductor after termination. Ensure that strands are not damaged when stripping cable cores. Twist strands together. Do not reduce number of strands. Secure all strands at terminations.
- Clean armour thoroughly prior to jointing or terminating.
- At connections to equipment and switchgear without integral cable clamping terminals, use compression or solder type lugs for bolted terminal connections, of correct bore.
- Form all compression connections to components using tools that cannot be released unless the correct degree of compression has been achieved.
 - Install and inspect compression and mechanical connectors on conductors in accordance with BS EN 60228 and BS 7609.
- Bolt core terminations with lugs to equipment using washers or proprietary shakeproof devices.
- Do not bunch more than three cores at clamping terminals or bolted connections.
- Mark cable conductor phasing, or other core identification, at each end of all cables, and at all joints, maintaining consistency of marking with any existing system.
- Connect all cores, including multicore cable spare cores, at all joints and terminations. Bond any unused cores or multicore cables to earth at both ends, unless otherwise indicated.

Y63 SUPPORT COMPONENTS - CABLES

1000 GENERAL

Y63.2010A CABLE SUPPORTS AND FINISHES:

- Cable supports
 - Support all cables throughout their length using conduit; or trunking and enclosures; or cable tray; or cable racking; or special support systems; or cleat or clip fixing direct to building fabric as indicated on the drawings/schedules.
 - Ensure tray, racking and special support systems are continuous and firmly fixed to building fabric. Allow space for additional cables as indicated on the drawings/schedules.
 - Ensure cable support system allows for spacing in accordance with BS 7671 for the design current of the cable.
- Fixings finishes
 - Ensure finish for all support components, fixings, hangers and accessories is as cable support system or manufacturer's standard.

Y63.2020A CABLE SUPPORT SYSTEM - PERFORATED TRAY:

- Type - Flanged or return flanged.
- Perforations
 - Admiralty pattern for light or medium duty; GD&C pattern standard 23; or manufacturer's standard pattern.
- Thickness - Manufacturer's standard thickness for type.
- Fittings
 - Use factory made fittings throughout of same material, type, pattern, finish and thickness as cable tray.
 - Use reducers, inside angles and outside angles as manufacturer's standard.

- Use flat bends, equal tees, unequal tees and crosses with corners gusseted.
- Join lengths of tray and fittings using manufacturer's standard shouldered ends, fish plates, or couplers, with galvanized or zinc plated slotted domed head 'roofing' bolts, nuts, washers and shakeproof washers.
- Material
 - Hot rolled steel galvanized after manufacture to BS EN 10327 or BS EN 10143.
- Finish - Self colour galvanized.

Y63.2025A CABLE SUPPORT SYSTEM - PROPRIETARY CABLE TIES:

- Two piece cable tray pattern, on cable tray only. Wrap round self locking non releasable pattern on everything except cable trays.

Y63.3010 CABLE TRAY INSTALLATION:

- Support from building fabric with minimum clearance behind of 20mm. Install fixings at regular intervals to prevent visible sagging when loaded, with maximum spacing 1.2m and 230mm from fittings.
- Keep cutting of cable tray to a minimum. Cut along a line of unperforated metal. Make good finish with zinc rich paint, primer and top coat, or two pack epoxy paste, as appropriate to tray material and finish.
- Fit holes cut in tray for passage of cables with grommets, bushes or other lining.
- Install all bolts, fixings and hangers with threaded portion away from cables. Cable routes to cross at right angles or spacing to BS EN 50374.

Y63.3020A CABLE CLEATS, TIES, SADDLES AND CLIPS INSTALLATION:

- For cables on horizontal tray use ties for each circuit. Use tie manufacturer's special tensioning tool where available. Crop off tie ends.
- For cables on vertical tray use cleats bolted to tray for paper, plastic or elastomeric insulated cables and saddles or clips for mineral insulated cables. Use cleats sized to grip cables firmly without undue pressure or strain on cable, but preventing slipping.
- For cables on vertical or horizontal rack use proprietary fixings to rack for paper, plastic or elastomeric insulated cables and saddles or clips for mineral insulated cables. On continuous flat surfaces of wood, plaster, brick etc.
 - Use polypropylene surface fixing clips with prefixed hardened steel pin for PVC insulated and sheathed cables and sheathed or bright mineral insulated cables. Use round or flat or flat twin pattern as appropriate, manufactured specifically for cable being fixed.
 - Use one hole 'P' clips or two way saddles of bright copper for unsheathed mineral insulated cable. Use PVC covered for sheathed mineral insulated cables.
- Space cleats, ties, saddles and clips
 - As Appendix G of Guidance Notes 'Selection & Erection' published by the IET.

Y71 LV SWITCHGEAR AND DISTRIBUTION BOARDS

Y71.1000 GENERAL

Y71.2010B CUBICLE CONTROL PANEL - LV SWITCHGEAR AND CONTROLGEAR ASSEMBLY:

- Standard - BS EN 61439-1.
- External design - Cubicle type assembly.
- Usage - Control panel.
- Conditions of installation - Indoors.
- Electrical characteristics
 - Rated operational voltage 400V +10% -6%
- Service conditions
 - Ambient air temperature and altitude as BS EN 61439.

Y71.2030A ENCLOSURE FINISH:

- Apply high standard finish to enclosure and supporting metalwork. Degrease metal and remove rust prior to applying finish.
- Comply with paint manufacturer's recommendations regarding preparation, stoving times, temperatures, mixing of finishes, application and coat thickness.

- Finish - Manufacturer's standard.
- Colour - Manufacturer's standard colour.

Y71.2060 SITE BUILT ASSEMBLIES:

- Ensure that components of site assemblies are part of a proprietary system and type tested as appropriate.
- Install assemblies in accordance with manufacturer's drawings and instructions.

Y71.2070 SITE MODIFICATION:

- Do not make site alterations unless authorised. Where site modifications to assemblies are authorised make in accordance with manufacturer's certified drawings and instructions. Ensure that modifications made comply with type test certificate obtained for arrangement of components.

Y71.2090D UTILISATION B, MCCB AIR BREAK CIRCUIT BREAKERS:

- Provide circuit breakers in accordance with BS EN 60947. Ensure that uninterrupted current rating indicated applies when unit is enclosed and in operating environment at rated operational voltage.
- Standard - BS EN 60947-2
- Details of equipment - Circuit breaker.
 - Characteristics of circuit breakers
 - a.c. Interrupting medium - Air.
- Rated and limiting values for the main circuit.
 - Rated voltage (Volts) - operational, 400.
 - Rated frequency 50 Hertz.
 - Circuit breaker Utilisation category - B.
 - Enclosure degree of protection IP 31.
- Circuit breakers and switches
 - Provide manual closing air-break circuit breakers, (MCCB).
 - Closing mechanism
 - Independent manual spring operated.
 - Provide automatic shutters to cover all live contacts when circuit breaker is isolated, withdrawn or removed from housing.
 - Provide a padlock to lock circuit breaker in isolated/withdrawn position, and to lock automatic shutters covering live contacts when removed from housing.
 - Provide moulded case circuit breakers with provision for safe maintenance.

Y71.2140 CURRENT TRANSFORMERS:

- Comply with BS EN 61869-2. Provide separate current transformers for each protection device and instrumentation. Ensure current transformers provide appropriate accuracy and are compatible with over current factors, characteristics, performance and VA rating required for satisfactory operation of protection devices, instruments and meters indicated.
- Ensure that current transformers are capable of withstanding maximum short time withstand current of value and duration indicated for assembly.
- Provide test links in secondary connections of all current transformers to facilitate testing of instruments, meters and protection devices.

Y71.2150A INSTRUMENTS AND METERS:

- Standards
 - Comply with BS 89 and BS EN 60051-1 for voltmeters, ammeters, watt meters, frequency indicators and power factor indicators.
 - Comply with BS 7856, BS EN 62053-11, BS EN 62053-22 or BS EN 62053-21 for kWh meters, kVA and kW maximum demand meters and polyphase reactive kVA meters, and BS EN 62053-23 for KVAhr meters.
- Protect wiring to voltmeters by separate fuses.
- Protect potential coils of watt meters, frequency indicators, power factor indicators and kWh meters, kVA and kW maximum demand meters and polyphase reactive kVA meters by separate fuses.
- Supply instruments and meters suitable for flush mounting and type, size and accuracy as indicated.
- Ensure that indicating scales for all instruments comply with BS 3693.
- Supply so that normal indication is 50% to 75% of full scale deflection.

- Completely segregate all instruments in instrument compartments. Panel mount meters on front of instrument compartment.

Y71.2170A INDICATOR LIGHTS:

- Supply lamps of same type throughout. Provide indicator lamps with lamp test facility.
- Lamps
 - Supply interchangeable indicators for respective units.
- Protect wiring to indicator lamp units by separate cartridge fuses.
- Lens Colour in accordance with BS EN 60073.

Y71.2190A FRAMEWORK:

- Construct framework for supporting electrical equipment from mild steel plate and strip, cold and hot rolled steel sections or slotted angles, in accordance with BS EN 10210 and BS 4345 respectively. Comply with BS EN 1011-2 for metal arc welding.
- Finish
 - Frameworks mounted inside building manufacturer's standard finish.
 - Frameworks mounted outside building hot dip galvanized to BS EN ISO 1461.
- Supply cadmium or zinc electroplated bolts, nuts, washers and screws.

Y71.2200A FUSES:

- Supply cartridge fuse links including fuse carrier, bases and associated components that comply with BS EN 60269 (BS 88), fusing factor category gG, unless otherwise indicated.

Y71.2210A DISTRIBUTION BOARDS:

- Comply with BS EN 60439-3 as appropriate. Make internal separation Form 1 unless otherwise indicated. Make fuseboards fully shrouded. Fit each distribution board with an isolating switch.
- Install busbars in same position relative to their fuse carriers or miniature circuit-breakers (MCBs) for each pole. In TPN distribution boards supply neutral busbars with one outgoing terminal for each outgoing circuit.
- Provide a multi-terminal earthing bar for circuit protective conductors for both insulated and metal-cased boards, with one terminal for each outgoing circuit. Connect directly to earthing terminal without dependence on exposed conductive parts of enclosure.
- Identify each fuseway and MCB way by numbering. Identify each terminal on neutral busbar and earthing bar with its respective fuseway or MCB way.
- Where specific ratings are indicated incorporate fuses or MCBs, otherwise leave ways blank for future additions.
- Enclosures finish
 - Finish - Manufacturer's standard.
 - Colour - Manufacturer's standard colour.

Y71.2230A MINIATURE CIRCUIT BREAKERS:

- Standard - BS EN 60898-1.
- Supply miniature circuit-breakers with voltage and current ratings, type according to instantaneous tripping current, energy limiting class, category of duty and frequency in accordance with BS EN 60898-1.

Y71.2245 COMBINED RESIDUAL CURRENT/OVER CURRENT OPERATED CIRCUIT BREAKERS:

- Supply combined residual current/over current operated circuit breakers (RCBOs) in accordance with BS EN 61009.

Y71.2250 CABLE TERMINATIONS:

- Ensure that switchgear and distribution boards are provided with facilities to terminate size, number and type of cable indicated. Where necessary use fabricated steel extension boxes for glanding large and multiple cables.
- Provide non-ferrous metal glanding plates for single core cable terminations.

Y71.3010 FIXING:

- Fix all equipment independently of wiring system. Use cadmium or zinc electroplated bolts, nuts, washers and screws.

Y71.3020 MOUNTING HEIGHT:

- Mount single items of equipment 1450mm above finished floor level to centre of equipment, unless otherwise indicated.
- Arrange groups of equipment, other than floor mounted assemblies, so that all parts of equipment requiring access for operation or maintenance are at least 500mm and no more than 2000mm above finished floor level, unless otherwise indicated.

Y71.3030 ACCESS:

- Ensure that clearance in front of switchgear and controlgear is not less than 1m, or as indicated.

Y71.3040A MARKING AND DRAWING:

- Number terminals, cables and component parts to correspond with manufacturer's certified drawings.

Y71.3050 CABLE TERMINATIONS:

- Terminate paper-insulated cable by means of switchboard manufacturer's standard compound filled cable boxes.
- Terminate PVC SWA PVC and MICS cables inside enclosure by securing cables to switchboard with glanding plates or glanding brackets; and outside enclosure with glanding plates or fabricated steel extension boxes.

Y71.3060A INSTALLATION AND COMMISSIONING:

- Install and commission switchgear and controlgear in accordance with the appropriate standard and the manufacturer's recommendations. Include CT Polarity check in commission tests.

Y73 LUMINAIRES AND LAMPS

Y73.1000 GENERAL

Y73.2005 LAMP EFFICACY:

- The system is designed to achieve an average initial circuit of at least 65 lumens/watt for fixed lighting equipment within the building.

Y73.2010A LUMINAIRES - GENERAL PURPOSE:

- Standards
 - Supply luminaires with photometric data in accordance with BS EN 13032-1.
 - Supply luminaires in accordance with BS EN 60598).
- Classification - To BS EN 60598-1.
- Safety Support for Components
 - Provide secondary support for translucent covers, diffusers and gear trays so they are prevented from falling when their primary fixing is released.
- Photometric performance
 - Ensure luminaires of similar type have same photometric performance as published data within the tolerances defined by BS EN 13032-1.
- Electromagnetic compatibility
 - Ensure luminaires comply with BS EN 61547 for EMC immunity.

Y73.2010C LUMINAIRES - SPECIAL APPLICATIONS:

- Standards
 - Supply luminaires with photometric data in accordance with BS EN 13032-1.
 - Supply luminaires in accordance with BS EN 60598).
- Classification - to BS EN 60598-1.
- Electromagnetic compatibility
 - Ensure luminaires comply with BS EN 61547 for EMC immunity.

Y73.2020A EMERGENCY LIGHTING LUMINAIRES:

- Comply with BS EN 60598-2-22.
- Comply with ICEL:1001. Ensure emergency lighting luminaires are marked with ICEL certification label.

Y73.2060A LAMPHOLDERS - GENERALLY:

- Lamp caps - BS EN 60061-1.
- Lamp holders - BS EN 60061-2.
- Lampholders with enhanced safety features - BS 7895.
- Bayonet lampholders - BS EN 61184.
- Lampholders for tubular fluorescent lamps and starter holders - BS EN 60400.
- Edison screw lampholders - BS EN 60238.
- Interchangeability
 - Ensure lampholders in luminaires of similar type and rating are identical.
- Earthing
 - Ensure metal lampholders incorporate an earthing terminal.

Y73.2080A LAMPHOLDERS - MOUNTING:

- Securely mount lampholder in luminaire when it is sole support for lamp.
- Cord grip
 - Provide integral cord grip type when lampholders are suspended by cord.
- Conduit Mounted
 - When mounted directly to conduit system use backplate lampholder for conduit box.

Y73.2090A CONTROL GEAR AND COMPONENTS:

- Compatibility
 - Ensure control gear and components are suitable for lamp type, wattage and starting characteristics. Obtain from manufacturers written confirmation of compatibility.

Y73.2095 CIRCUIT LOSSES:

- Use high frequency ballasts to ensure the installed circuit load does not exceed 3 W/m²/ 100 lux.

Y73.2120A CAPACITORS:

- Use capacitors in accordance with BS EN 61048 and BS EN 61049 in tubular fluorescent, high pressure mercury and low pressure sodium vapour discharge lamp circuits.

Y73.2130 SUPPLY TERMINALS:

- Use screw terminals for supply cables and circuit protective conductors, sized to terminate up to three 2.5mm² conductors. Provide separate terminal blocks for each incoming circuit, with marking to identify each circuit.

Y73.2140 FUSE:

- Include a fuse holder and BS 1362 fuse in each incoming circuit phase connection.

Y73.2160 REMOTE GEAR:

- Locate control gear in separate lockable cabinet of sheet steel with same degree of protection and finish specified for luminaire. Comply with manufacturer's recommendations for maximum cable length between gear and lamp.

Y73.2165 TYPES OF HIGH EFFICIENCY LAMP FOR NON-DAYLIT AREAS:

Light Source	Type
High pressure sodium	All ratings above 70W
Metal halide	All ratings above 70W
Tubular fluorescent	All 26mm diameter (T) lamps and 16mm (T5) lamps rated above 11W, provided with low loss or high frequency control gear. 38mm diameter (T12) linear fluorescent lamps 2400mm in length
Compact fluorescent	All ratings above 26W

Y73.2215A LED LAMPS:

- Comply with
 - BS EN 62031
 - DD IEC/PAS 62612

- BS EN 62386-207
- BS EN 61347-2-13

Y73.2240A SUPPORT SYSTEM - CONDUIT:

- Use not less than 20mm conduit of same type as main conduit system.
- Material - steel.

Y73.2280A SUPPORT SYSTEM - WALL BRACKETS:

- Provide wall brackets. Confirm wall brackets are suitable for supporting luminaire.

Y73.4060 MATERIAL OF SUPPORTING SURFACE:

- Ensure classification of luminaires is appropriate. Do not mount luminaires on readily flammable surfaces.

Y73.4110 SUPPORT:

- Ensure support is adequate for weight of luminaires.
- Number
 - Provide the following minimum number of supports for each luminaire longer than 600mm.

Luminaire width (mm)	Minimum number of supports
Up to and including 300	2
Over 300	4

Y73.4140A SUPPORT BY DIRECT FIXING:

- Refer to fixing methods, use luminaire supporting coupler to follow manufacturer's recommendations.

Y73.4220 CONNECTIONS TO LUMINAIRES

- Cable Protection
 - Use appropriate size of grommet where cables enter through hole in luminaire body.
- Earthing
 - Ensure that the earthing terminal of Class 1 luminaires is connected to the conduit protective conductor of the supply circuit.
- Loose Wiring
 - Clip or tie back with suitable proprietary devices loose wiring within luminaire, at 300mm intervals.

Y73.4230A CONNECTIONS TO LUMINAIRES - DIRECT TO CONDUIT - TERMINAL BOX:

- Terminate circuit wiring in terminal block within supporting conduit box. Use flexible cord from terminal block to luminaire.

Y73.4240B CONNECTIONS TO LUMINAIRES - DIRECT TO TRUNKING - AT LUMINAIRE:

- Terminate circuit wiring at supply terminals of luminaire. Take all conductors through same cable entry into luminaire.

Y73.4260A CONNECTIONS TO LUMINAIRES - RECESSED FITTINGS - PLUG AND SOCKET:

- Where luminaires are recessed in a suspended ceiling, terminate circuit wiring at plug and socket to BS 546, located not more than 500mm from the access through the ceiling. Use flexible cord from plug of ceiling rose to supply terminals of luminaire.

Y73.4270 CONNECTIONS TO LUMINAIRES - CONDUIT SUSPENSION:

- Terminate circuit wiring in terminal block within supporting conduit box. Use flexible cable from terminal block to luminaire, installed within tube.

Y74 ACCESSORIES FOR ELECTRICAL SERVICES

Y74.2010A ACCESSORIES COMMON REQUIREMENTS - WHITE PLASTIC PLATES GRID, FLUSH INSTALLATION:

- Area of installation - Interior.

- Enclosure pattern - Flush.
- Accessory mounting
 - Adjustable steel grid for grid switches or direct to enclosure for all other accessories.
- Enclosure material - Pressed steel.
- Enclosure finish - Galvanized.
- Coverplate finish, all accessories to match
 - Moulded plastic, colour - white.
- Coverplate pattern - Overlapping; with architrave where indicated.
- Ancillaries
 - Earthing terminal integral within switch box.
 - Neon indicator with red lens, illuminated in "ON" position, for connection units.
 - Switch rocker bar colour - white.
 - Operating keys for key operated switches, minimum number 2.
 - Fuses to BS 1362.
 - Blank inserts for spare ways on grid switches.
- Marking
 - Method - engraving. Mark front plate to indicate equipment served on connection units.
- Conduit and cable entries
 - Knockouts side, top and rear.
- Cable termination - Manufacturer's standard.

Y74.2010D ACCESSORIES COMMON REQUIREMENTS - METAL CLAD PLATES, SURFACE STEEL CONDUIT INSTALLATION:

- Area of installation - Interior.
- Enclosure pattern - Surface.
- Accessory mounting - Direct to enclosure.
- Enclosure material
 - Pressed steel or cast iron.
- Enclosure finish
 - As conduit system or galvanized.
- Coverplate finish, all accessories to match
 - Metal clad.
- Coverplate pattern - Surface type.
- Ancillaries
 - Earthing terminal integral within switch box.
 - Neon indicator with red lens, illuminated in "ON" position, for connection units.
 - Switch rocker bar colour as indicated.
 - Operating keys for key operated switches, minimum number 2.
 - Fuses to BS 1362.
- Marking
 - Method - engraving. Mark front plate to indicate equipment served on connection units.
- Conduit and cable entries
 - Threaded entries, top, bottom or side to suit conduit system.
- Cable termination - Manufacturer's standard.

Y74.2010F ACCESSORIES COMMON REQUIREMENTS - SURFACE, PLASTIC, WEATHERPROOF INSTALLATION:

- Area of installation - Exterior.
- Enclosure degree of protection to BS EN 60529, IP 54.
- Enclosure pattern - Surface and weatherproof.
- Accessory mounting - Direct to enclosure.
- Enclosure material - Impact resistant plastic.
- Enclosure finish - Natural or self coloured.
- Coverplate finish, all accessories to match
 - Moulded plastic, colour as indicated.
- Coverplate pattern - Surface type.
- Ancillaries

- Earthing terminal integral within switch box.
- Neon indicator with red lens, illuminated in "ON" position, for connection units.
- Protective shrouds to rocker bars.
- Screwed weathering cap and chain for socket outlets.
- Switch rocker bar colour as indicated.
- Operating keys for key operated switches, minimum number 2.
- Fuses to BS 1362.
- Conduit and cable entries
 - Threaded entries to suit cable/conduit system.
- Cable termination - Manufacturer's standard.

Y74.2020A INTERIOR LIGHTING SWITCHES - GENERAL PURPOSE MOULDED PLASTIC:

- Standard
 - BS EN 60669-1
 - Enclosure box to BS 4662
- Switch type - Rocker bar - moulded plastic.
- Rating - 6A.
- Gangs as indicated.
- Switch mechanism - Snap action microgap.
- Pole configurations
 - Single pole.
 - Double pole.
 - 2 way.
 - Intermediate.

Y74.2020B INTERIOR LIGHTING SWITCHES - GRID MOULDED PLASTIC:

- Standard
 - BS EN 60669-1
 - Enclosure box to BS 4662
- Switch type - Rocker bar - moulded plastic.
- Rating - 6A.
- Switch mechanism - Snap action microgap.
- Pole configurations
 - Single pole.
 - 1 way.
 - 2 way.
 - Intermediate.

Y74.2020D INTERIOR LIGHTING SWITCHES - GENERAL PURPOSE SECRET KEY:

- Standard
 - BS EN 60669-1
 - Enclosure box to BS 4662
- Switch type - Rocker bar - secret key.
- Rating - 6A.
- Gangs as indicated.
- Switch mechanism - Snap action microgap.
- Pole configurations
 - Single pole.
 - Double pole.
 - 2 way.
 - Intermediate.

Y74.2020F INTERIOR LIGHTING SWITCHES - GRID SECRET KEY:

- Standard
 - BS EN 60669-1
 - Enclosure box to BS 4662
- Switch type - Rocker bar - secret key.

- Rating - 6A.
- Switch mechanism - Snap action microgap.
- Pole configurations
 - Single pole.
 - 1 way.
 - 2 way.
 - Intermediate.

Y74.2050A LUMINAIRE CONNECTORS - GENERAL AND EMERGENCY LIGHTING:

- Rating - 2A.
- Connector type
 - Fixed terminal strip, screw cover and cord grip to BS 67.
- Load carrying capacity to match selected luminaire.

Y74.2050B LUMINAIRE CONNECTORS - GENERAL LIGHTING:

- Rating - 2A.
- Connector type
 - 3 pin plug/socket to BS 546.
- Load carrying capacity to match selected luminaire.

Y74.2060A LAMPHOLDERS - BC TYPE:

- Standard - BS EN 61184.
- Lampholder type
 - Bayonet clip.
 - B22.
- Fixing - Bracket
 - Straight.
 - Angle.
 - Suspension.
- Finish - Manufacturer's standard.
- Material - Heat resistant moulded plastic.
- Ancillaries
 - Cord grip.
 - Lampshade ring.
 - Protective lampshade ring.

Y74.2060B LAMPHOLDERS - ES TYPE:

- Standard - BS EN 60238.
- Lampholder type
 - Edison screw.
 - E27.
- Fixing - Bracket
 - Straight.
 - Angle.
 - Suspension.
- Finish - Manufacturer's standard.
- Material - Heat resistant moulded plastic.
- Ancillaries
 - Cord grip.
 - Lampshade ring.
 - Protective lampshade ring.

Y74.2070A ISOLATING SWITCHES - BS EN 60669-1:

- Provide isolating switches for fixed appliances.
- Utilization category as indicated.
- Making capacity as indicated.
- Standard
 - BS EN 60669-1

- Enclosure box to BS 4662.
- Switch type - Rocker bar.
- Rating as indicated on schedule.
- Pole configuration
 - DP.
 - Three pole.
 - TPN.

Y74.2070B ISOLATING SWITCHES - BS EN 60947-3:

- Provide isolating switches for fixed appliances.
- Utilization category as indicated on schedule.
- Making capacity as indicated.
- Standard - Enclosure box to BS 4662, BS EN 60947-3.
- Switch type - Rocker bar.
- Rating as indicated on schedule.
- Pole configuration
 - DP.
 - Three pole.
 - TPN.

Y74.2080A FUSE CONNECTION UNITS - SWITCHED:

- Standard
 - BS 1363-4
 - Enclosure box to BS 4662 and switched.
- Unit type - Rocker bar - plastic.
- Pole configuration - DP.
- Ancillaries
 - Cord outlet.
 - Cord grip and fuse.

Y74.2080B FUSE CONNECTION UNITS - UNSWITCHED:

- Standard
 - BS 1363-4
 - Enclosure box to BS 4662 and unswitched.
- Pole configuration - DP.
- Ancillaries
 - Cord outlet
 - Cord grip and fuse.
 - Lockable fuse carrier.

Y74.2090C SOCKET-OUTLETS - DOUBLE SWITCHED:

- Standard
 - 13A socket-outlet to BS 1363
 - Enclosure box to BS 4662
- Switching - Switched
- Switch type - Rocker bar - plastic.
- Rating - 13A.
- Ancillaries
 - Plug tops 25% of number of sockets, fused as indicated.
- Gangs - 2.

Y74.2130A TELEPHONE AND DATA OUTLET SOCKETS - GENERAL PURPOSE:

- Standard
 - For jack socket to telephone service provider requirements and enclosure box to BS 4662.
- Size - Standard.
- Circuit configurations as indicated.

Y74.2200A INDICATOR LAMPS - GENERAL PURPOSE LED:

- Standard BS EN 62094-1.
- Lamp - LED.
- Lamp rating - 230V supply.
- Lens cover - Moulded plastic.
- Lens colour - BS EN 60073.
- Lens retaining rings - Moulded plastic.

Y74.3010 EARTHING:

- Ensure metal framework of equipment is bonded to main earth point. Ensure that cable CPC's are connected to earth bar.
- Provide earth CPC between earth lug on metal box and accessory casing except where accessory is encased in plastic.

Y74.3020 PROTECTION:

- Ensure there is no physical or electrical damage to accessories when they are removed from their packaging and during installation.
- Provide masking covers for surface mounted accessories to protect surface from paint.
- Where accessories are flush mounted install front plate after painting is finished.

Y74.3030 FIXING:

- Align accessories horizontally and vertically. Where accessories are grouped, mount horizontally in line and parallel to each other and equidistant.
- Fix cover plates to boxes with brass fixing screws.

Y74.3040 MEASURING MOUNTING HEIGHTS:

- Take measurement for position of electrical accessories to the centre line of equipment from either finished floor or worktop. Where specified height coincides with top of tiling, leave a clear gap of 50mm above tiling.
- Mount equipment below a worktop 100mm below underside of worktop.

Y74.3050 STANDARD ACCESSORIES MOUNTING HEIGHTS:

Accessory	Location	Height (mm)
Lighting switch		1200
Socket outlet	General	450
	Kitchen	1000
	Above worktop	200
Shaver socket outlet		1000
Fused connection unit	General	450
	Above worktop	200
Fused connection unit controlling	Radiator heater, wall	1800
	Radiator heater, focal point	450
	Tubular heater	450
	Clock	1900
Cooker control unit	Above worktop	200
Cooker connection unit		600
Safety isolating transformer		1200
Room thermostat		1400
Telephone outlet		450
Radio/TV outlet		450
Push button		1200
Fire alarm manual call point		1200
Bell or buzzer		2000
Visible alarm indicator		2000

- In car parks and garages comply with appropriate petroleum regulation for mounting heights of socket outlets.

Y74.3070 ACCESSORIES MOUNTING HEIGHTS:

- Provide switches and socket outlets for lighting and other equipment in habitable rooms at appropriate heights between 450mm and 1200mm from finished floor level, in accordance with Building Regulations Approved Document M and BS 8300.

Y80 EARTHING AND BONDING

Y80.1000 GENERAL

Y80.2020B EARTHING SYSTEMS CONDUCTOR JOINTS:

- First Conductor
 - Form - strip; material - copper.
 - Dimensions - For conductor current density 50A/mm² earthing systems.
- Second conductor
 - Form - rod; material - copper.
 - Dimensions - For conductor current density 50A/mm² earthing systems.
- Solid joint - Brazed or welded, thermic.
- Disconnecting test joint
 - Square clamp, oblong clamp, plate clamp or screw-down clamp.

Y80.2090A MAIN EQUIPOTENTIAL BONDS:

- Provide main equipotential bonds in accordance with BS 7671.
- Material - Insulated cable, single core to BS 6004.
- Use no joints in main equipotential bonds.

Y80.2100A SUPPLEMENTARY EQUIPOTENTIAL BONDS:

- Provide supplementary equipotential bonds to BS 7430, BS 7671 and BS EN 50310. Do not use joints in supplementing bonds.
- Material - Insulated cable, single core to BS 6004.

Y80.2110A CIRCUIT PROTECTIVE CONDUCTORS:

- Material
 - Insulated cable, single core to BS 6004 as indicated; metallic screwed conduits (excluding flexible); metallic trunking with tinned copper links; armouring and/or metallic sheathing of armoured cables or integral conductor of multi-core cable.
- Size
 - Provide protective conductors sized in accordance with BS 7671 (IET Regulations) 543.1.4 and Table 54.7.

Y80.2120 EARTHING CLAMPS:

- Use clamps complying with BS 951, for bonding pipes and earthing of conductors. For bonding of lead sheathed cables use soldered or spring clamps.

Y80.2130A EARTH BUSBARS:

- Material
 - Manufacture earth busbars from hard drawn, tinned, high conductivity copper bar.
- Substation Earth busbar
 - 75 x 13mm cross section 600mm minimum length.
- Main Earth Terminal busbar
 - 25 x 6 mm minimum for incoming live conductor not exceeding 50mm and 50 x 6 mm minimum for incoming live conductor over 50mm².

Y80.2140 TEST LINKS:

- Provide two test links, in connections between main earth conductors and earth busbar. Fabricate each from two additional sections of earth busbar. Mount one section on stand-off insulators matching earth busbar; use remaining section as removable test link. Secure 12mm high tensile brass studs to fixed sections of busbar and drill corresponding clearance holes in test links and provide brass washers, nuts and locking devices to secure frame/neutral earthing and test links.

Y80.2150 LUGS/TAGS:

- Provide lugs or tags to enable connection of bonding conductors to equipment earth terminals.

Y80.2160 PROTECTIVE CABLE TERMINATIONS:

- For bolted connections use crimp type lugs compressed by automatic tool to achieve correct pressure and crimp depth.

Y80.2170 PROTECTIVE CONDUCTOR WARNING NOTICES/LABELS:

- Provide a permanent label durably marked in letters 4.75mm minimum height "SAFETY ELECTRICAL CONNECTION - DO NOT REMOVE", in visible position, at each bonding conductor connection to extraneous conductive parts.

Y80.2180 MAIN EARTH CONDUCTOR - WARNING TAPES:

- Provide green/yellow PVC tapes labelled "EARTHING CONDUCTOR" over complete external lengths of main earth conductors at 300mm depth below finished ground.

Y80.2190 EARTH BAR LABEL:

- Label earth bar "SAFETY ELECTRICAL CONNECTION - DO NOT REMOVE" with wall mounted laminated plastic tablet engraved in 10mm high red letters on white ground.

Y80.3010 LOW NOISE EARTH DISTRIBUTION:

- Install low noise earth distribution in double insulated cables from earth electrodes to equipment points. Mount all busbars with insulators and separate from other earthing systems.

Y80.3020 DISSIMILAR METALS:

- Ensure, where dissimilar metals are used for system, that purpose made jointing materials are used such that corrosion and deterioration of the electrical connection are not caused.
- Ensure bonding connections to other metal parts of building are electrolytically compatible with those metal parts. Use the guidance given in BS 7430 Table 8 when bonding dissimilar materials.

Y80.3040 STRANDED CONDUCTOR JOINTS:

- Provide waterproof protection at joints subject to moisture.
- Joint copper stranded conductors with compression joints to BS EN 61284.

Y80.3050A PROTECTIVE CABLE TERMINATIONS:

- For bolted connections use crimp type lugs compressed by automatic tool to achieve correct pressure and crimp depth.
- Make connections between tape and equipment using high tensile grade brass bolts with brass nuts, washers and locking devices. Use phosphor bronze bolts, nuts and washers where connections are liable to corrosion.

Y81 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES

Y81.1000 GENERAL

Y81.2010A INCORPORATED EQUIPMENT CHARACTERISTICS:

- Obtain and use information from manufacturers of equipment provided.
- Use information provided, for equipment supplied by others and incorporated into installation.

Y81.2020A PROSPECTIVE SHORT CIRCUIT CURRENT:

- Determine values of IP by measurement, unless other means are indicated. Determine IP at all necessary points within installation to confirm correct equipment selections.
- Obtain from supply undertaker written confirmation of maximum and minimum values of IP at origin of installation. Adjust subsequent measured values of IP accordingly.

Y81.2030A INITIAL VERIFICATION:

- Carry out detailed inspection to verify the requirements of BS 7671, Section 611 in the order given in clause 611.3.

Y81.2040A TEST EQUIPMENT AND CONSUMABLES:

- Provide test equipment and consumables to complete tests satisfactorily, and to retest any failed installations following corrective measures.
- Test equipment quality assurance requirements to BS EN ISO 10012.

Y81.2050A TESTING

- Carry out in the same order as published the tests required by BS 7671, Section 612 for New Installation or Altered or Added Installation as appropriate.

Y81.2070A EARTH FAULT LOOP IMPEDANCE:

- Use 25 A test current. Measure and record source impedance (ZE).
- If alternative LV supply arrangements are available, measure ZS when using supply with highest impedance.
- Measure ZS with main equipotential bonding conductors connected. Do not summate values of several parts of each loop.

Y81.2080 SETTINGS AND ADJUSTMENTS:

- Confirm characteristics and settings of protective devices are within maximum and minimum specified tripping times. Check correct operation of devices. Confirm interlocks and sequences operate safely and as indicated.

Y81.2100A HV AND LV SWITCHGEAR:

- Perform works tests on HV and LV switchgear in accordance with BS EN 62271-200 and BS EN 61439-1, as appropriate, and provide test certificates.

Y81.2120A FIRE DETECTION AND ALARM INSTALLATIONS:

- Carry out site testing and inspection and provide test certificates for fire detection and alarm systems in accordance with BS 5839-1.

Y81.2120E EMERGENCY LIGHTING INSTALLATIONS:

- Carry out site testing and inspection and provide test certificates for emergency lighting installations in accordance with BS EN 50172.

Y81.2130 CALIBRATION:

- Provide current certificates of calibration for all instruments used during test procedures. Record particular instrument identity on record sheets.

Y81.2140A CERTIFICATION AND REPORTING:

- Complete and hand over to the Client a Completion and Inspection Certificate to BS 7671 Appendix 6 for New Installation or Altered or Added Installation as appropriate.

Y81.2150A INSTALLATION CERTIFICATES:

- Provide installation certificates for electrical installations in accordance with BS 7671 (IET Regulations).
- Record details of departures from BS 7671 (IET Wiring Regulations) on certificate.
- Provide copies of calculations justifying departure from BS 7671 (IET Wiring Regulations) and attach to certificates.

Y81.2160 RECORDS:

- Record all results and instrument readings on approved Record Sheets and hand over to the client two copies for each inspection and test.
- Hand over copies of complete Record Sheets to
 - Client.
- Provide copies of Record Sheets
 - 2.

Y81.3010 CONDUCTIVE PARTS:

- Test conductive parts simultaneously accessible with exposed conductive parts of extraneous conductive parts. Establish that they are either not an extraneous conductive part, or that they are

- reliably connected by metal to main equipotential bonding.
- Confirm conductive parts which are not extraneous conductive parts are separated from earth by an impedance greater than 50,000 ohms. Confirm other conductive parts are bonded to equipotential zone earthbar by an impedance not exceeding 0.1 ohms.

Y81.3040A LV BURIED CABLES:

- Test continuity and insulation of buried cables immediately after back-filling. Test continuity and insulation of buried cables prior to handover.

Y82 IDENTIFICATION - ELECTRICAL

Y82.1000 GENERAL

Y82.2010A LABELS AND NOTICES:

- Apply identification labels and notices in accordance with BS 7671 (IET Wiring Regulations), section 514 to all electrical cables plant and equipment including components of mechanical systems.
- Identification of protective devices.
 - Diagrams, charts or tables to comply with Clauses 514.9 and 560.7.9.
 - Warning notices, voltages in excess of 250 volts.
 - Periodic inspection and test notices.
 - Residual current device notices.
 - Earth electrode safety electrical connection label.
 - Bonding conductor connector point to extraneous conductive parts label.
 - Earth free local equipotential bonding areas warning notice.
 - Electrical separation areas warning notice.
 - Outdoor equipment socket outlet notice.

Y82.2020A MATERIALS:

- Use materials for labels and notices with a predicted life equal to or greater than the design life of the electrical cables, plant, equipment or installation to which it refers.
- External
 - Signwritten, or stencil in paint compatible with surface.
 - Colour - Background, plant standard finish. Lettering, white.
- Internal
 - Engraved thermosetting plastic laminate.
 - Colour - Background, white or red. Lettering, red or white.

Y82.2030A FIXING - INTERNAL:

- Fix labels and notices using materials compatible with label or notice and surface to which it is fixed by screws into tapped hole or bolted complete with washer nut and locking device.

Y82.2040A ARRANGEMENT:

- Obtain approval prior to manufacture, with regard to style, colour, lettering, size and position of all labels and notices.
 - Provide sample showing style, colour, lettering and size, for approval.

Y82.2050A LETTERING AND SIZE OF LABELS AND NOTICES:

- Ensure that all lettering and symbols comply with the requirements laid out in BS ISO 3864-1 for height of lettering where not otherwise indicated. Ensure labels and notices of adequate size for the lettering required, and allow a minimum margin around all lettering of one line space vertically and two letter spacing horizontally.
- Font - Helvetica Medium.
- Size - BS EN ISO 7010 or 5mm minimum high letters.

Y82.2060A CONDUCTOR ARRANGEMENT:

- Arrange circuit polarity so that phases read in phase rotation order followed by the neutral, if any, from top to bottom in horizontal conductor layouts and left to right in vertical conductor layouts. Ensure flat horizontal arrays have leading phase to the left and neutral to the right from left to right when viewed from supply point. Arrange phase or live pole of two wire apparatus at top or left hand and neutral and earth both at bottom or right hand side. In all cases, ensure conductor arrangements defined are when viewed from front face of all equipment and terminating facilities. Apply identification markers in accordance with BS 7671 (IET Wiring Regulations), section 514 to all conductor termination points.

Y82.2070A SAFETY SIGNS:

- Label all electrical plant and equipment using safety sign 8.A.0044 of BS 5499-5 where voltages above ELV exist.
- Provide supplementary or text signs complying with BS 5499-5 with each safety sign 8.A.0044 as indicated.

- Label all electrical plant and equipment with the labels specified in the appropriate British Standards for that plant or equipment.
- Identify each substation and main switchroom with safety sign 8.A.0044 to BS 5499-5 for any fire extinguishing system and notice giving details of,
 - Name of the Substation or switchroom
 - The presence of Medium and Low Voltages.
 - Administrative instructions for access.
 - Location and method of contacting controlling authority.
 - Actions to be taken in an emergency.

Y82.2080A PLANT AND EQUIPMENT LABELS:

- Fit labels on all items of plant, equipment, switches, etc., include the following information: service controlled, circuit reference, voltage, type of supply and phase etc., circuit protection type and rating.

Y82.2090 MAINTENANCE NOTICES:

- Fix notices giving warning of, and instructions on, any special maintenance procedures to plant and equipment.

Y82.2130A SWITCHGEAR:

- Fit labels on switchgear as required by BS EN 60439 to indicate duty of unit, its voltage, phase and current rating, protective device rating size of conductor involved, and all other necessary details.
- Use an agreed serial coding system, provide at the switch a key to the coding system.

Y82.2140 DISTRIBUTION BOARDS:

- On each distribution board identify every outgoing way with a renewable circuit chart in a transparent plastic envelope permanently fitted inside distribution board cover. Clearly indicate in typed script, circuit identification number, cable size, fuse or circuit breaker rating and a description of item supplied and area supplied by circuit.

Y82.2150A SCHEMATIC DIAGRAMS:

- Provide a purpose made schematic diagram permanently fixed showing the connections of the equipment and plant.
- Locations and materials as indicated in contract preliminaries.

Y82.2190A CABLE IDENTIFICATION:

- Provide all cables, other than final sub-circuit wiring enclosed in conduits or trunking, with labels fixed at each end of cable either side of wall and floor penetrations at approximately 12m intervals at convenient inspection points by means of non-releasable plastic straps, minimum width 4mm.
- Ensure labels show the reference number of cable.

Y82.2200A TERMINAL MARKING AND CONDUCTOR IDENTIFICATION:

- Provide for switchgear and control gear elements whose terminals are marked in accordance with BS 5472 (EN 50005) and BS 6272 (EN 50042). Use a unique reference to identify each element in the switchgear or control gear. Mark on or adjacent to each element its reference. Identify each terminal for connection to external wiring or cabling using a reference system complying with BS EN 60445 based on the element reference and the appropriate element terminal reference.
 - Adjacent to terminals.
- Use lettered or numbered ferrules or sleeves to BS 3858 to mark each auxiliary conductor or control cable core with the identity of the terminal to which it is connected and the reference of plant or equipment to which it is connected and the identity of the terminal at the remote end. Ensure that main circuit conductors are identified in accordance with BS 7671 (IET Wiring Regulations) section 514. Ensure that all identification of terminals and conductors is recorded and included on record drawings and in operation and maintenance documentation.

Y82.2210A UNDERGROUND CABLE IDENTIFICATION:

- Identify external underground cable routes by means of approved markers along their length at distances not exceeding 50m and where a change of direction occurs on such routes. Provide cables markers with a brass plate or impress concrete to clearly indicate the reference of group of cables or reference number of cable and operating voltage of cable. Provide key to any reference system used at switchgear. Mark and protect direct buried cables with plastic tape yellow printed black "DANGER ELECTRIC CABLES" elsewhere.

Y82.2220A CABLE CONDUCTOR COLOUR CODING:

- Identify cable conductors in accordance with BS 7671 (IET Wiring Regulations) section 514 and Appendix 7, note that a lighting sub-circuit switch wire is a phase conductor in a single phase circuit.

Y82.2230 CABLE JOINTING AND TERMINATION:

- Connect all cables in the installation so that the correct sequence of phase rotation is maintained throughout. Where straight through joints are approved joint medium voltage conductors as they lie, ensuring their complete length is phased out on completion. Ensure connections at terminations of MV cables are made in the correct phase rotation and ensure cable conductor termination marking if any, complies with this phase sequence. Where straight through joints are approved on low voltage cables, whether power cables or control or auxiliary cables, joint conductors strictly in accordance with their colour or numeric coding. Where such joints are approved on mineral insulated or other non-coded conductor cables, identify each core at the joint and make the joint core to core.

Y90 FIXING TO BUILDING FABRIC

Y90.1000 GENERAL

Y90.2010 STANDARDS:

- Ensure that fixings such as expanding anchors are tested for tensile loading in accordance with BS 5080-1.

Y90.2020 PLUGS:

- Use plugs of suitable size and length for fixings. Use plastic, fibrous or soft metal non-deteriorating plugs to suit application. Do not use wood plugs.
- Ensure that when screw is in place, threaded length is in plug. Ensure plugs used for screw fixing are set-in to correct depth prior to final tightening.

Y90.2030 SCREWS:

- Use screws to BS 1210. Generally use sherardized steel wood screws for fixing to concrete, brickwork or blockwork.
- In damp or exposed situations use greased brass wood screws.

Y90.2080 NON-PENETRATIVE SUPPORT SYSTEMS FOR ROOF MOUNTED EQUIPMENT:

- Obtain approval prior to using non-penetrative support systems for roof mounted equipment.

Y90.3010 DRILLING:

- Drill holes squarely. Use drills of requisite size and depth, and appropriate to fabric. Do not flame-cut holes in metal work.

Y90.3050 FIXING TO TIMBER RAILS:

- Fix equipment, brackets and supports by drilling hole through timber rail and fixing with bolt, back plate, washer and loose nut.

Y90.3060A FIXING TO HOLLOW STUD/TILE/BLOCK WALLS:

- Fix equipment, brackets and supports where there is access at rear of wall, by drilling hole through wall and fixing with bolt, back-plate, washer and loose nut.
- Fix equipment, brackets and supports where there is no access at rear of wall, drill hole and use screw anchor type fixing or gravity type toggle fixing.

Y90.3070A FIXING TO CONCRETE, BRICKWORK OR BLOCKWORK:

- Fix equipment, brackets and supports using wood screws in plugs or, as appropriate, drill holes and fix using steel bolts of grouted bolt type or expanding bolt type fixing.

Y90.3080A FIXING TO METALWORK:

- Fix equipment, brackets and supports by drilling holes and fixing using set screws or bolts complete with washers, shakeproof washers and loose nuts.

Y90.3090A FIXING TO STRUCTURAL STEELWORK AND CONCRETE STRUCTURES:

- Provide manufacturer's information on recommended fixing. Obtain approval for any fixing to

structure steel work and concrete structures.

- Generally use proprietary fixings to structural steelwork and concrete structures.
- Obtain approval to cut holes in structural steelwork or concrete structures or weld to structural steelwork.

Y90.3100 NON-PENETRATIVE SUPPORT SYSTEMS FOR ROOF MOUNTED EQUIPMENT:

- Provide manufacturer's information on recommended support systems.
- Obtain the necessary approvals to use non-penetrative support systems as follows:
 - Ensure that the roof build-up is suitable for non-penetrative supports.
 - Ensure that necessary approval is given by
 - The Structural Engineer
 - The Architect
- Mounting positions
- Roof load management parameters (if known)
 - UDL deck loading kN/m²
 - Maximum Point Loads kN
 - Maximum Base Pressures kN/m²
- Components
 - Provide support manufacturer's information on recommended free-standing systems
- Roof maintenance building clearance
 - Ensure that future roof maintenance access to roof finish is provided under each support system
 - Minimum building clearance
- Documentation required for Project Team approval:
 - CAD drawings of supports
 - Roof load management calculations
 - O&M documentation
 - Warranty information
- Manufacturer

APPENDIX B: FORM OF TENDER

**CAINSCROSS PARISH COUNCIL
FORM OF TENDER**

FOR

“Mechanical and *Electrical Engineering Services*”

At

“Victory Park *Football Pavilion*”

To: DIRECTOR OF CORPORATE ADMINISTRATION

I/We, the undersigned, do hereby tender and undertake to execute all the works, required to be done and provide all necessary plant, equipment and materials required to be used in the execution of the above project as described and set forth and contained in the specification in a good workman-like manner strictly in accordance with the Drawings and Specification to the true intent and meaning thereof, under the direction and to the reasonable satisfaction of the Head of Design for the sum of :-

.....

.....(£.....) Excluding V.A.T. and which sum includes all provisional and prime cost items and amounts and contingencies provided in the Specification.
The above tender sum is broken down as follows:

- **Football Pavilion** - £..... excluding VAT.

I/We agree that if this Tender is accepted in writing by the Council the Tender and acceptance will together constitute a binding Contract.

As Witness My/Our Hand(s) this

day of Two Thousand

Name of Firm

Signature

Address

.....

.....

.....

The Council do not bind themselves to accept the lowest or any tender.

APPENDIX C: TENDER BREAKDOWN

The electrical contractor shall complete the following summary of tender and shall submit it with the form of tender.

Work Section	Description	Cost (£)
A64	Project Preliminaries	£
	<i>Operating and Maintenance Manuals</i>	£
	<i>Testing, Commissioning, Demonstration</i>	£
C10	Removal of Complete Systems	£
C21	Toxic / Hazardous Material Removal	£
R11	Foul Drainage Above Ground	£
S12	Domestic Water Services	£
T32	Low Temperature Hot Water (LTHW) Heating	£
T62	VRF Systems	£
U10	General Ventilation	£
V12	Public Utilities Supply	£
V20	LV Distribution	£
V21	General Lighting	£
V22	General LV Power	£
V40	Emergency Lighting	£
V41	Area Lighting	£
W15	Facilities for the Disabled	£
W40	Access Controls	£
W41	Security Detection and Alarm	£
W50	Fire Detection and Alarm	£
W51	Earthing and Bonding	£
W60	Building Management and Controls	£
W70	Structured Cabling	£
	Provisional Sum	£10,000
	CONTRACT GRAND TOTAL	£

APPENDIX D: SCHEDULE OF LUMINAIRES

REF	DESCRIPTION	IMAGE	Lamp	Manufacturer & Range
A1 & A1(S)	Linear fluorescent luminaire with GRP body and clear prismatic polycarbonate diffuser. Luminaires to be provided with a minimum environmental protection of IP65 and fitted with integral LED drivers. Note (S) denotes luminaire which is to be provided with integral “smart” controls.		1 x 30W LED	Thorlux Lighting Thoroproof Range
A1E & A1E(S)	Three hour emergency conversion of the above. Note (S) denotes luminaire which is to be provided with integral “smart” controls.		1 x 30W LED	Thorlux Lighting Thoroproof Range
A2	Linear fluorescent luminaire with GRP body and clear prismatic polycarbonate diffuser. Luminaires to be provided with a minimum environmental protection of IP65 and fitted with integral LED drivers and “smart” controls.		1 x 60W LED	Thorlux Lighting Thoroproof Range
A2E	Three hour emergency conversion of the above.		1 x 60W LED	Thorlux Lighting Thoroproof Range

REF	DESCRIPTION	IMAGE	Lamp	Manufacturer & Range
B1 & B1(S)	Decorative Semi-Recessed Luminaire with white body and satin diffuser. Luminaire to be supplied complete with integral LED driver. Note (S) denotes luminaire which is to be provided with integral “smart” controls.		1 x 17W LED	Thorlux Lighting DOT LED Range
B1E & B1E(S)	Three hour emergency conversion of the above. Note (S) denotes luminaire which is to be provided with integral “smart” controls.		1 x 17W LED	Thorlux Lighting DOT LED Range
B2	Small surface mounted circular prismatic LED luminaire with white body and satin diffuser. Luminaire to be supplied complete with integral LED driver.		1 x 12W LED	Thorlux Lighting MICRO DOT LED Range
C1(S)	Decorative Surface mounted shallow depth linear LED luminaire complete with prismatic diffuser. Luminaire to be provided with fitted with integral LED drivers. Note (S) denotes luminaire which is to be provided with integral “smart” controls.		1 x 31W LED	Thorlux Lighting Jubilee Range

REF	DESCRIPTION	IMAGE	Lamp	Manufacturer & Range
C1E(S)	Three hour emergency conversion of the above. Note (S) denotes luminaire which is to be provided with integral “smart” controls.		1 x 31W LED	Thorlux Lighting Jubilee Range
C2(S)	Decorative Surface mounted shallow depth linear LED luminaire complete with prismatic diffuser. Luminaire to be provided with fitted with integral LED drivers. Note (S) denotes luminaire which is to be provided with integral “smart” controls.		1 x 43W LED	Thorlux Lighting Jubilee Range
C2E(S)	Three hour emergency conversion of the above. Note (S) denotes luminaire which is to be provided with integral “smart” controls.		1 x 43W LED	Thorlux Lighting Jubilee Range
C3(S)	Decorative Surface mounted shallow depth linear LED luminaire complete with prismatic diffuser. Luminaire to be provided with fitted with integral LED drivers. Note (S) denotes luminaire which is to be provided with integral “smart” controls.		1 x 51W LED	Thorlux Lighting Jubilee Range

REF	DESCRIPTION	IMAGE	Lamp	Manufacturer & Range
C3E(S)	Three hour emergency conversion of the above. Note (S) denotes luminaire which is to be provided with integral “smart” controls.		1 x 51W LED	Thorlux Lighting Jubilee Range
D1(S)	Decorative modular recessed edge lit lay-in LED luminaire complete with polycarbonate controller. Luminaire to be provided with fitted with integral LED drivers. Note (S) denotes luminaire which is to be provided with integral “smart” controls.		1 x 38W LED	Thorlux Lighting Radiance LED LG7
D1E(S)	Three hour emergency conversion of the above. Note (S) denotes luminaire which is to be provided with integral “smart” controls.		1 x 38W LED	Thorlux Lighting Radiance LED LG7
E	Emergency IP65 general purpose non-maintained emergency bulkhead luminaire complete with clear prismatic polycarbonate cover. Luminaire to be supplied complete with LED driver and suitable for three hour operation.		1 x 4W LED	Thorlux Lighting Mini 8 Range
ES	Emergency non maintained luminaire complete with running man legend. Luminaire to be supplied complete with LED driver and suitable for three hour operation		1 x 4W LED	Thorlux Lighting Exit Sign Range

REF	DESCRIPTION	IMAGE	Lamp	Manufacturer & Range
F1	External IP65 die-cast aluminium luminaire with impact resistant polycarbonate diffuser. Luminaire to be supplied complete with integral photocell and LED driver.		1 x 28W LED	Thorlux Lighting Mercian Range
F1E	Three hour emergency conversion of the above.		1 x 28W LED	Thorlux Lighting Mercian Range
G1(S)	Linear fluorescent luminaire with extruded aluminium body and clear prismatic polycarbonate diffuser. Luminaires to be provided with a minimum environmental protection of IP65 and fitted with integral LED driver. Note (S) denotes luminaire which is to be provided with integral “smart” controls.		1 x 41W LED	Thorlux Lighting A-Line Range



VICTORY PARK FOOTBALL PAVILLION

MECHANICAL AND ELECTRICAL SERVICES
SPECIFICATION

TENDER ADDENDUM 1

SEPTEMBER 2017

ELECTRICAL SERVICES **SPECIFICATION**

TENDER ADDENDUM 1

This Addendum shall be read in conjunction with the Mechanical and Electrical Services Specification – P1 Issue 24th April 2017.

The following amendments shall be included and contained within the Tender returns.

MECHANICAL SERVICES

1. Page 46 Hot Water Services – Provide a 2nd cost for an 800Litre cylinder option with only 1No 30kW electric element.
2. T62 VRF SYSTEMS Page 54 – Provide cost saving to omit the cooling system 2 for the club room and office.
3. 100.030 LTHW – Provide a 2nd cost option to provide a robust floor standing below bench steel radiator system in the Changing rooms as Hudevad LK 2-20 (140 h) or equal approved
4. 100.030 LTHW – Provide a proposal with cost for all TRV's to be anti tamper fixed type
5. U10 GENERAL VENTILATION – Provide a cost to introduce anti back draft dampers into the Clean Areas ducted system.
6. U10 GENERAL VENTILATION - Provide a 2nd Option cost to provide a dedicated separate 'dirty extract' ventilation system from the ventilation system
7. Add drinking water taps to each changing room or low level in shower to enable water bottles to be filled for football use

ELECTRICAL SERVICES

1. 100.030 Control systems and power for Ventilation systems – Provide all necessary power supplies and controls wiring for the extract fans as described in the mechanical services section and respective drawings.
2. Provide cost to omit 63A supply for top immersion heater to HWS cylinder

SECTION NO 6 – SCHEDULE OF WORKS

1 General

- 1.1 The Schedule of Works prepared by Church Architectural is included hereinafter (Pages 3/1 – 3/13)
- 1.2 In pricing the same, the Contractor is to allow for all works shown and/or which can be reasonably inferred from the drawings and documents etc together with the amendments and revisions noted herein/on other drawings and documents etc appended hereto and no claim will be entertained if any such items shown and/or referred to are not included by the Contractor

2 Clarifications

- 2.1 The Asbestos Survey (1.00) has been procured by the Employer and is included in the Appendices hereinafter
- 2.2 Although part of the building is to be retained/not demolished, the Works are not phased and the Contractor will have vacant possession of the whole at start on site (Protection 2.00)
- 2.3 The truss rafters (9.02) are the subject of Contractor/Sub Contractor design for which a Warranty is required to the benefit of the Employer as included in the Appendices hereinafter
- 2.4 The Electrical Services (16.00) are the subject of Contractor/Sub Contractor design for which a Warranty is required as described above
- 2.5 The Mechanical Services (17.00) are the subject of Contractor/Sub Contractor design for which a Warranty is required as described above

Schedule of works

		£	p
VICTORY PARK, CAINSCROSS.			
Contractors are requested to price each paragraph or item separately and come up with a sub-total for each part of the works.			
The schedule of works and drawings are primarily intended to enable contractors to prepare estimates and submit a tender. All items are not a full description of workmanship or materials. Thereafter, each shall be used by the CA for assessing valuations and variations of the works carried out.			
Tenderers should visit the site and take their own particulars relative to the works, carefully noting conditions, construction and special features of the working area, adjacent building and surroundings. Claims due to lack of knowledge in regard to the conditions of execution of the contract will not be allowed.			
Contractors should take down their own site dimensions for all materials and equipment that is to be obtained from specialist manufacturers. Contractors will, therefore, be entirely responsible for the correct setting out, accuracy, dimensions and levels of all the works. Any works to rectify sections that have been caused by errors or inaccuracy shall have no cost implication to the project.			
Drawings to be prepared by the contractor for approval shall be submitted with sufficient time, so as not to delay the contract.			
Contractors should mark any changes to the fabric or structure and produce an accurate set of "as built" record drawings to be handed over upon completion along with updated or new building manuals to the client.			
1.00	<u>ASBESTOS SURVEY</u>		
1.01	The contractor is to include for a full demolition/refurbishment asbestos survey of the work area prior to works commencing on site. Asbestos survey to be undertaken in accordance with current legislation and HSE requirements. Submit results and survey to the CA. Contractor is to also obtain a copy of the asbestos register from the client. The Contractor cannot commence works until they have received a copy of the asbestos register and carried out demolition / refurbishment as the asbestos survey.		
2.00	<u>PROTECTION</u>		
2.01	Allow for protection of all existing rooms from dust/noise. Doorway in to existing building should be sealed prior to commencement of work.		
3.00	<u>DEMOLITIONS AND ADAPTATIONS</u>		
3.01	Carefully strip out all existing windows and doors as identified on drawing 13 and remove from site.		
3.02	Carefully removed existing roof structure and covering as identified on drawing 13 and remove from site. Note: The existing roof covering is Asbestos. Refer to the Asbestos register.		
10492	3/1	To Collection	

		£	p
3.03	Remove all existing rainwater goods from the building and clear debris from site.		
3.04	Carefully remove existing fittings and finishes from the existing building as identified on drawing 13 and clear from site.		
3.05	Remove all redundant electrical items from the external wall of the existing building and clear from site. Note: Allow for the repositioning of the existing electrical fuse board.		
3.06	Adapt existing openings and form new openings in existing walls. Areas identified on drawing 13 and clear debris from site.		
3.07	Demolish existing redundant changing rooms as identified on drawing 13 and clear debris from site.		
4.00	<u>SUBSTRUCTURE AND GROUND FLOOR</u>		
4.01	Excavate into ground material to reduce ground levels ready for the new ground floor structure. Dispose of all material surplus to requirements on site to locations illustrated on drawing 20.		
4.02	Excavate into solid rock to reduce levels over footprint of new development. Dispose of all materials surplus to requirements off site.		
4.03	Allow to excavate through ground material for new 600mm wide trenches to a minimum depth of 1500mm below DPC as per engineer's details. Refer to NBS: E20-170		
4.04	Pour the concrete foundations in grade C30 concrete. Depth to be confirmed by the Structural engineer.		
4.05	Construct walls up to dpc level in 215 x 140 x 440mm 7kN concrete blockwork in 1:3 cement/sand mortar with 125mm wide cavity & 215 x 140 x 440mm inner leaf. Include lean mix concrete cavity fill as shown on drawings. Lay buff colour bricks a minimum 150mm before the finished ground level. Refer to NBS: F10-355A		
10492	3/2	To Collection	

		£	p
4.06	Construct sleeper walls up to underside of floor construction using 440 x 215 x 140mm 7kN dense concrete blocks laid flat in 1:3 cement/sand mortar as shown on drawings. Refer to NBS: F10-355A		
4.07	Lay a minimum of well consolidated 150mm deep DOT Type 1 blinded hardcore. Supply and lay Visqueen Radon Membrane under concrete slab. Refer to appended details for installation guidance. Lap membrane in to Visqueen Zedex CPT DPC. Pour 150mm deep concrete slab. Concrete to be as Structural Engineers design and details. Allow for formation of drainage/ductwork/service penetrations and grouting of voids. Allow to lay Visqueen DPC under all beams.		
4.08	Supply and lay Visqueen Zedex CPT DPC to all walls at finish floor level as per the drawing.		
4.09	Supply and lay 150mm Celotex FF4000 rigid insulation board including 25mm thick perimeter upstand. Refer to NBS: E20-170		
4.10	Supply and lay 500 gauge polythene separating membrane over insulation.		
4.12	Pour 75mm fibre reinforced screed. Ensure the level of the new screed is in line with the existing building's floor level. Refer to NBS: M10-115A		
5.00	<u>UNDERGROUND/BURIED DRAINAGE</u>		
5.01	Expose and excavate existing manhole. Break into run and construct new brick built inspection chamber internal dimensions 750 x 675mm, forming all slippers and inserting concrete lintels over pipes ready for new connections. Make good as necessary to existing drainage run.		
5.02	Supply and lay 100mm plastic drains for new storm and foul drainage sewage, including all necessary couplers, bends, jointing, etc., Bed and surround in minimum 150mm single sized pea gravel. Where pipes run under building footprint, bed and surround in minimum 150mm concrete.		
5.03	Build in new soakaway in location as shown on drawing, size to be 3000 x 1500 x 1500mm, backfilled with Dot type 1X hardcore. Provide terram T1000 geotextile membrane a minimum 300mm below finished ground level, make good topsoil to existing levels.		
10492	3/3	To Collection	

		£	p
5.04	Carry out a percolation test as follows:- Percolation test method (H2 pg32) – a hole 300mm square should be excavated to a depth 300mm below the proposed invert level of the effluent distribution pipe. Where deep drains are necessary the hole should conform to this shape at the bottom, but may be enlarged above the 300mm level to enable safe excavation to be carried out. Where deep excavations are necessary a modified test procedure may be adopted using a 300mm earth auger. Bore the test hole vertically to the appropriate depth taking care to remove all loose debris. Fill the 300mm square section of the hole to a depth of at least 300mm with water and allow it to seep away overnight. Next day, refill the test section with water to a depth of at least 300mm and observe the time, in seconds, for the water to seep away from 75% full to 25% full level (i.e. a depth of 150mm).		
5.05	Supply and lay Aco threshold door drain to all of the entrances with level access as shown on plans and allow for connection into storm water system.		
5.06	Supply and install all necessary gulleys and connections as shown on drawings.		
5.07	Supply and install shower floor connections, rest bend's etc for the ground floor en-suites		
5.08	Supply and install 600mm diameter plastic inspection chambers bed and surround by 150mm single sized pea-gravel as shown on drawings, complete with medium duty covers and frames.		
6.00	<u>BRICKWORK, BLOCKWORK & PARTITIONS</u>		
6.01	Construct new external cavity walls above dpc to level of wall plate in Forterra Hanson Fenlite 1500 100mm wide 7.3N/mm ² medium dense concrete blockwork. 125mm unventilated cavity, Forterra Hanson Evalite paint grade aggregate 140mm wide 7.3N/mm ² medium dense concrete blockwork (where walls are painted) & Forterra Hanson Fenlite 1500 140mm wide 7.3N/mm ² medium dense concrete blockwork (where walls are plastered) in 1:1:6 cement/lime/sand. Allow for Clay facing bricks to be laid up to 1200mm high above the DPC and full height around the front entrance. Refer to NBS: F10-110 / 355 / 355A		
6.02	Construct Forterra Hanson Evalite paint grade aggregate 140mm wide 7.3N/mm ² medium dense concrete blockwork (where walls are painted) & Forterra Hanson Fenlite 1500 140mm wide 7.3N/mm ² medium dense concrete blockwork (where walls are plastered) (above sleeper walls) in 1:1:6 cement/lime/sand mortar, as shown on drawings.		
6.03	Construct 125mm thick non load-bearing stud partitions using 100x50mm sw framing. 1 layer of 15mm Rigidur H board each side. 60mm Isover Ultimate piano		
10492	3/4	To Collection	

		£	p
plus insulation in the cavity. 60 minutes fire resistance. Maximum 4 metres high. Sound reduction 51Rw dB. Allow for 2.5mm British Gypsum Thistle Dura finish.			
7.00	<u>OPENING/LINTELS</u>		
7.01	Form openings in external cavity walls as per the lintel schedule.		
7.02	Supply and fix IG L1/S 100 & INTERGR8 180LS – 1 & INTERGR8 180C lintel shutter system over all proposed openings as per the lintel schedule.		
7.03	Create new opening in existing cavity wall in the Entrance lobby.		
7.04	Provide and fix Naylor 140 x 140 precast, reinforced, non-composite concrete lintels over the above openings.		
Note: all lintels to have a minimum bearing of 150mm at each end and to be fully installed to manufacturers guidelines.			
7.05	Allow to form openings in stud partitions for the following:-		
	Internal timber doors. DG01, 02, 03, 04, 05 & The Tea Point counter.		
8.00	<u>SUNDRY WALL ITEMS</u>		
8.02	Build in buff bricks up to 1200mm above DPC level.		
8.03	Build in red bricks at the entrance full height.		
8.04	Build in 97mm Celotex CF5097 insulation board within cavity, held back to internal blockwork with retaining clips on cavity wall ties as recommended by manufacturer. Refer to NBS: F30-150A		
8.05	Build in Ancon ST1 stainless steel, 225mm long wall ties to external cavity walls at 750mm horizontal centres, 450mm vertical centres.		
8.06	Provide Ruberoid Permabit dpc and cavity trays where shown on drawings and generally as shown. Refer to NBS: F30-210A		
	i. At floor level to external and internal walls.		
	ii. Over all openings.		
	iii. Vertically around all openings.		
8.07	Build in Kingspan Kooltherm pre-insulated cavity wall closers around all external openings. Refer to NBS: F30-180A.		
8.08	Supply and install 10mm Promat supalux paint grade cement board for the porch and external store ceilings. Fix to underside of truss rafters with 100mm rockwool mineral wool as detail on drawing.		
8.09	Close head of cavity using 15mm thick cement board as shown on the drawings.		
10492	3/5	To Collection	

		£	p
9.00	ROOF STRUCTURE		
9.01	Provide and fix 140 x 75mm treated softwood wall plates to the top of external cavity walls as shown on drawings. Wall plates bedded in mortar and strapped down to internal walls at minimum 1000mm using 30 x 3mm galvanised mild steel straps at maximum 1200mm centres. Refer to NBS: G20-780.		
9.02	Supply and fix truss rafters to specialist sub-contractor's design, drawings should be submitted to CA and approved in writing prior to manufacture/installation. Allow for site survey of the existing roof design.		
9.03	Supply and lay Tyvek Suproplus roofing membrane over roof timbers, fully installed to manufacturer's guidelines and specification.		
9.04	Supply and lay 22mm WBP plywood fixed to the truss rafters.		
9.05	Supply and lay 150mm Rigid urethane foam warm roof insulation.		
9.06	Employ a specialist contractor to supply and lay Alumasc VAE single ply membrane as per the NBS		
9.08	Supply and install Alumasc prefabricated insulated lockable loft access hatch as shown on drawings.		
9.09	Supply and install Rytons 25mm T-Strip in-line fascia ventilators and fly screen as shown on drawings.		
9.10	Allow for all necessary lead flashings, in-line vent tiles, terminal tiles, etc.,		
9.11	Allow for making good to existing roof in all areas affected by the new works.		
10.00	EXTERNAL DOOR & WINDOWS		
10.01	Employ the services of a specialist window and door manufacturer to supply and install new aluminium windows and doors to match existing property. All fittings should comply with Part L2 of the Building Regulations and have all necessary Fensa/BRE certification. Fittings to include all necessary trickle ventilation, ironmongery, locking mechanism, restrictors, etc., Refer to NBS: L10-330A Include for Main Contractor's discount, if required. Allow for profit and overheads _____% Allow for general attendance Allow for special attendance Refer to door and window schedules.		
10.02	Allow for sealant pointing around windows.		
11.00	INTERNAL DOORS		
10492	3/6	To Collection	

		£	p
11.01	Supply and install new internal painted doors. Refer to door schedule. Refer to NBS: L20-485		
11.02	Allow to fix the following ironmongery per door leaf:- i. 1½ pair butt hinges ii. 1 pair lever handles iii. 1 mortice latch and catch plate Refer to Ironmongery Schedule for all requirements.		
12.00	<u>CARPENTRY & JOINERY</u>		
12.01	Supply and install 40mm thick softwood door linings to all new door openings, thickness to suit width of wall. Refer to door schedule. Include for timber door stops.		
12.02	Supply and install MDF skirting boards. Size to be ex 125x25mm. Profile to be pencil round.		
12.03	Supply and install MDF architraves to new doors. Size to be ex 63x25mm. Profile to be pencil round.		
12.04	Supply and install moisture resistant MDF window boards, 25mm thick pencil round boards to new windows.		
12.05	Supply and install 25 x 75mm treated softwood blind track batten above all windows.		
12.06	Supply and install brushed stainless steel skirting mounted door stop to every door.		
12.07	Allow for 15mm plywood patressing to Tea point to ensure secure fixings of fittings.		
12.08	Allow for constructing all boxing's for drainage and services using 50x50mm sw framing and 12.5mm plasterboard and skim.		
12.09	Allow to fix 100x50mm internal softwood lining to the existing building and fill with 100mm celotex insulation and cover with 12.5mm foil backed plasterboard and skim.		
13.00	<u>FINISHES</u>		
13.01	Render new blockwork faces with 10mm Thistle Hardwall gypsum plaster and set with 3mm multi-finish skim coat. Locations identified on drawing XXXXXXX		
13.02	Render all external blockwork with K-rend through colour render synthetic system. Render to be applied in strict accordance with the manufactures recommendations. Colour of render TBA. Refer to NBS: M20-160A.		
10492	3/7	To Collection	

Schedule of Works

		£	p
13.03	Existing walls that becomes internal, apply SBR bonding agent and render with 10mm Thistle Hardwall gypsum plaster and set with 3mm multi-finish skim coat.		
13.04	Allow for dubbing out of existing walls and make good to reveals where disturbed by new works.		
13.05	Supply and fix 12.5mm British Gypsum Dura board plasterboard to underside of new ceiling joists and the face of the new studwork partitions, set with 3mm multi-finish skim coat. Note: all joints in boards to be staggered, taped and filled.		
13.06	Supply and install Ecophon focus Dg semi concealed 600x600mm suspended ceiling. Refer to the finishes schedule for the locations. Refer to NBS: K40-115A.		
13.07	Supply and fix 12.5mm British Gypsum Moisture Resistance Dura board plasterboard to underside of new ceiling joists and the face of the new studwork partitions, set with 3mm multi-finish skim coat. Note: all joints in boards to be staggered, taped and filled. Refer to the finishes schedule for the locations.		
13.07	Supply and lay "protein-free" latex self-levelling compound over exposed floor screeds, ready to receive coverings.		
13.08	Walls/ceilings: decorate all plastered surfaces with 3 coats vinyl silk emulsion (1 mist coat, 2 top coats).		
13.09	Woodwork: knot, stop. Prime and paint exposed finished timber (and MDF) with 1 undercoat and 2 coats high gloss.		
13.10	Floors: supply and lay Kircman and Dolman M50/130A:- Refer to the finishes schedule for the locations.		
13.11	Floors: supply and lay Altro marine 20 safety flooring non-slip Vinyl flooring, bed in adhesive and epoxy grouted Refer to NBS: M50-155A:- Refer to the finishes schedule for the locations. Include for coved skirtings.		
13.12	Floors: supply and lay Altro Classic 25 safety flooring non-slip Vinyl flooring, bed in adhesive and epoxy grouted Refer to NBS: M50-150A:- Refer to the finishes schedule for the locations. Include for coved skirtings.		
13.12	Wall cladding: supply and lay Altro Whiterock in colour white 3000mm high bed in adhesive and epoxy grouted Refer to NBS: M50-150B:- Refer to the finishes schedule for the locations.		
10492	3/8	To Collection	

		£	p
13.13	Splashbacks: Supply and lay Altro Whiterock in colour white 450mm behind all wet areas, bed in adhesive and epoxy grouted:- Refer to the finishes schedule for the locations. Altro to be bonded with W139 adhesive spread with 5 mm square notched trowel. Clean back of sheets with Altro cleaner/ thinner before bonding to wall and support sheets whilst adhesive cures. Apply firm even pressure with suitable roller to whole surface as work proceeds. Thermoform internal corners. Remove protective film on completion and clean off any marks with Altro cleaner/thinner. When dry apply anti-static solution to new cladding. Seal all perimeters with Altro Chameleon silicone sealant. Colour to be confirmed. All work to be carried out by Altro approved specialist contractor in strict accordance with manufacturer's recommendations. Colours to be confirmed.		
13.14	GENERAL: provide and lay flooring in accordance with the finishes schedule identified on the drawing. Include for all necessary Gradus or equal approved coved skirtings. Provide and fix Gradus or equal approved PVC diminishing threshold strips at changes in floor finish.		
13.15	LEVELLING: apply 1 no. coat Arditec latex levelling compound as available from Ardex UK Limited to all new and existing floor areas. Rub down with rotating disc to remove any ridges and leave smooth ready to receive new floor finishes.		
14.00	<u>SANITARY & ABOVE GROUND DRAINAGE</u>		
14.01	Allow for new stub stack and air admittance valve in en-suites (100mm) as shown on drawings.		
14.02	Allow to connect all new sanitary appliances to vertical stacks in self coloured (white) UPVC pipework, include for all necessary traps, bends, connectors, etc. Include for waste outlet connections.		
14.04	Supply and install 100mm diameter Marley Alutec Evolve aluminium downpipes taken below gully gratings as shown on drawings to new extension and in existing locations on existing property. Allow for all necessary brackets, shoes, connectors, etc. Colour to match existing.		
14.05	Supply and install sanitary ware as per the schedule appended.		
14.07	Supply shower drain to showers. Shower drain to be Harmer Vertical Shower Drain – Star Gate in Stainless Steel suitable for sheet flooring		
15.00	<u>EXTERNAL WORKS & COMPLETION</u>		
15.01	Allow to reinstate all hard/soft surfaces disturbed by the works.		
10492	3/9	To Collection	

		£	p
15.02	Supply and lay new footpath using Tarmac on 50mm sand on 150mm well consolidated hardcore, as shown on drawings.		
15.03	Allow for 50mm wide flat top concrete edging kerbs.		
15.04	Upon completion clean and clear up, wipe down surfaces, windows, doors, sweep hardstandings and remove all litter and building debris, etc.,		
16.00	ELECTRICAL SERVICES		
16.01	Employ the services of a NIC/EIC registered and Part P approved electrical sub-contractor to carry out the installation of all electrical services works in accordance with current IEE regulations. Sub-contractors should allow for all necessary cabling, trays, fixings, connections and sub-meters and must provide drawings to the CA for approval prior to any manufacture and/or installation works.		
	Include any allowance for main Contractors discount (if required)		
	Allow for profit and overheads _____%		
	Allow for general attendance		
	Allow for special attendance		
17.00	MECHANICAL SERVICES		
17.01	Employ the services of an approved Corgi registered mechanical sub-contractor to carry out the full installation of all mechanical service works in accordance with current CIBSIE regulations. Sub-contractors should allow for all necessary hot/cold supplies, heating pipework (flow and returns), fixings, connections and sub-meters and must provide drawings to the CA for approval prior to any manufacture and/or installation works.		
	Include any allowance for main Contractor's discount (if required).		
	Allow for profit and overheads _____%		
	Allow for general attendance		
	Allow for special attendance		
10492	3/10	To Collection	

		£	p
<u>COLLECTION PAGE</u>			
PAGE	3/1		
PAGE	3/2		
PAGE	3/3		
PAGE	3/4		
PAGE	3/5		
PAGE	3/6		
PAGE	3/7		
PAGE	3/8		
PAGE	3/9		
PAGE	3/10		
PAGE	3/11		
PAGE	3/12		
9947	3/13	To General Summary	

SECTION NO 7 - PROVISIONAL SUMS

Defined Provisional Sums

P.1	Testing of materials and goods (except as specifically described in the Specifications and Drawings) (five hundred pounds)	500.00
P.2	Samples (except as specifically described in the Specifications and Drawings) (five hundred pounds)	500.00
P.3	Site signboard (five hundred pounds)	500.00
P.4	Notice boards (one thousand, five hundred pounds)	1,500.00
P.5	Tea point fittings (two thousand pounds)	2,000.00
P.6	External gates to storage area (four thousand pounds)	4,000.00

Provisional Sums for undefined work

P.7	Additional substructure work (two thousand, five hundred pounds)	2,500.00
P.8	Additional mechanical and electrical works (ten thousand pounds)	10,000.00
P.9	Additional site works (one thousand pounds)	1,000.00
P.10	Additional drainage works (two thousand, five hundred pounds)	2,500.00
P.11	Employers Contingency (twenty five thousand pounds)	25,000.00

SCHEDULE OF WORKS

SECTION NO. 7 SUMMARY

Provisional Sums

TOTAL CARRIED TO MAIN SUMMARY

£

MAIN SUMMARY

SECTION No 1 - INTRODUCTION

SECTION No 2 - PRELIMINARIES AND GENERAL CONDITIONS OF CONTRACT

SECTION No 3 - ARCHITECTS DRAWINGS AND SPECIFICATION

SECTION No 4 - CIVIL/STRUCTURAL ENGINEERS DRAWINGS

SECTION No 5 - SERVICES ENGINEERS DRAWINGS AND SPECIFICATION

SECTION No 6 - SCHEDULE OF WORKS

SECTION No 7 - PROVISIONAL SUMS

FIXED PRICE TOTAL CARRIED TO FORM OF TENDER

£