

<b>ITEM No ...5.....</b>
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**REPORT TO:** SCRUTINY COMMITTEE – 24TH MARCH, 2022

**REPORT ON:** OLYMPIA MAINTENANCE PROGRAMME

**REPORT BY:** HEAD OF DEMOCRATIC AND LEGAL SERVICES

**REPORT NO:** 104-2022

## **1.0 PURPOSE OF REPORT**

1.1 The purpose of this Report is to provide background information regarding the Olympia Maintenance Programme to aid scrutiny.

## **2.0 RECOMMENDATIONS**

2.1 It is recommended that the Committee note the background information provided at Appendices 1 to 10.

## **3.0 FINANCIAL IMPLICATIONS**

3.1 There are no financial implications arising out of this Report.

## **4.0 MAIN TEXT**

4.1 At its meeting on 6th December, 2021 the City Development Committee:- .

- (i) noted the works undertaken to date to carry out reactive maintenance as detailed within the report;
- (ii) noted that a planned major refurbishment for the leisure pool was currently being finalised which would necessitate a longer-term closure of the pool facilities at Olympia;
- (iii) remitted the Executive Director of City Development to submit a tender report to City Development Committee for approval at the earliest possible date; and
- (iv) instructed the Chief Executive to undertake a review of the design and construction of the Olympia building and to report back to City Development on the outcome. Such a review would include an assessment of liability in respect of contractual works.

(Article VII of the minute of meeting of the City Development Committee of 6th December, 2021 - Report No 336-2021 refers).

4.2 It was subsequently agreed that this matter should also be considered by the Scrutiny Committee.

Attached at Appendices 1 to 10 is background information to aid scrutiny.

## **5.0 POLICY IMPLICATIONS**

This report has been subject to an assessment of any impacts on Equality and Diversity, Fairness and Poverty, Environment and Corporate Risk. There are no major issues.

**6.0 CONSULTATIONS**

6.1 The Council Management Team were consulted in the preparation of this report.

**7.0 BACKGROUND PAPERS**

7.1 None

ROGER MENNIE, Head of Democratic and Legal Services

DATE: 16th March, 2022

**APPENDIX 1**

## Key Dates Timeline

Planning Permission issued 19th May, 2009	Page 5
Building Warrant dated 7th April, 2010	Page 8
Building Warrant dated 22nd March, 2011	Page 9
Certificate of Practical Completion issued 5th June, 2013	Page 10
Completion Certificate – Submission dated 29th October, 2013	Page 14
Notice of Acceptance of Completion Certificate dated 30th October, 2013	Page 18
Architects Instruction dated 20th May, 2014	Page 21

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09/00152/FUL



DUNDEE CITY COUNCIL  
ARCHITECTURAL SERVICES  
DIVISION

**CHANGING  
FOR THE FUTURE**

2 MAY 2009

City Architectural Services Officer  
Dundee City Council  
Floors 11/12  
Tayside House  
Dundee  
DD1 3RQ  
FAO: [REDACTED]

ACTION .....  
ACTION .....  
SEEN .....  
DATE .....  
FILE .....

#### TOWN AND COUNTRY PLANNING (SCOTLAND) ACT 1997 AND RELATED LEGISLATION

With reference to the application received 9 March 2009.

Application Reference: **09/00152/FUL**

Particulars of Development: **Erect 50m Leisure Pool and Associated Facilities, Multi Storey Car Park and Ground Floor Retail Unit**

Site Location: **East Whale Lane Car Park, East Marketgait, Dundee,**

Notice is hereby given that Dundee City Council has GRANTED planning permission for the above development in accordance with the particulars given in the application and the plans accompanying the application, subject to the following conditions:

1. The development hereby permitted shall be commenced within five years from the date of this permission
2. Details of the pedestrian access route between the Gallagher Retail Park and the City Centre, including the hours of opening of the route through the leisure pool foyer area shall be submitted to the Council for approval before any development is commenced and if approved the development shall be carried out only in full accordance with such approved details.
3. Details of the improvements to pedestrian, cyclist and public transport access to the development as set out in the Transport Assessment by JMP dated 13 November 2008, including the footway improvements and signalised crossing on East Whale Lane, tactile paving at East Marketgait, improved crossing facilities at Blackscroft, cycle racks and lockers, new bus stop at East Whale Lane and improved bus shelters at Blackscroft shall be submitted to the Council for approval prior to the commencement of development and shall be fully implemented prior to the first use of the leisure pool or multi storey car park.
4. Prior to the occupation of any part of the development the modifications to the A92(T)/East Whale Lane priority junction shall be completed generally in accordance with JMP drawing number SCT3039/PPJ/001, to the satisfaction of the planning authority, after consultation with Transport Scotland - Trunk Road Network Management Directorate.
5. Prior to the first use of the leisure pool a comprehensive Travel Plan that sets out proposals for reducing the dependency on the private car shall be submitted to and approved in writing by the Council. The Travel Plan will require to be implemented within 5 years of the store opening, maintained for a minimum of 5 years and reviewed after 5 years of operation. The Plan will include, inter alia;
  - Details of proposed pedestrian and cycle infrastructure within the site and connections to the existing networks.
  - Details of cycle parking provision and location within the site.

- Details of proposed measures to improve public transport facilities.
  - Details of initiatives such as car share schemes and flexible working.
  - Details of employee locker and shower facilities.
  - Details of travel information to be provided within the site.
  - Details of car parking provision and management.
  - Details of mode share targets.
  - Details of the proposed monitoring schedule and reporting procedures.
  - Details for the management of the travel plan identifying the persons responsible for implementation
6. samples of the finishing materials proposed to be used shall be submitted to the Council for approval and if approved the development shall be carried out only in accordance with such approved samples
7. Details of the soft and hard landscaping of the site, including the reuse of existing trees on this or other sites, shall be submitted to the Council for approval prior to the commencement of development and if approved the proposed development shall be carried out only in full accordance with such approved details. Particular attention shall be paid to the landscaping of the site boundaries.
- Any trees or shrubs removed, dying, being severely damaged or becoming seriously diseased within five years of planting shall be replaced by trees or shrubs of similar size and species to those originally required to be planted in terms of this condition
8. Development shall not commence until the investigation and risk assessment proposed in the submitted Stage 1 Desk Study and Interpretative Report are completed and a remediation strategy to deal with contamination on the site has been submitted to and approved in writing by the planning authority. The strategy shall contain proposals to deal with contamination to include:
- \* the nature, extent and type(s) of contamination on the site
  - \* measures to treat / remove contamination to ensure that the site is fit for the use proposed and does not contain any significant pollution linkages.
  - \* measures to deal with contamination during construction works
  - \* verification of the condition of the site on completion of decontamination measures.
- Before any unit is occupied the remediation strategy shall be fully implemented and a verification report with relevant documentation demonstrating that the objectives of the remediation strategy have been achieved shall be submitted to and approved in writing by the planning authority.
9. No development shall take place within the site until the applicant has secured the implementation of a programme of archaeological work in accordance with a written scheme of investigation (including a timetable) which has been submitted by the applicant, agreed by the Archaeological Service and approved in writing by the Council.
10. Details of the design and location of the proposed public art shall be submitted to the Council for approval prior to the commencement of development and if approved the proposed development shall be carried out only in full accordance with such approved details.
11. A drainage assessment (foul and surface water) including the provision for SUDS shall be submitted to the Council for approval prior to the commencement of development and if approved the proposed development shall be carried out only in accordance with such approved details.
12. The proposed retail unit shall have a gross floor area not in excess of 655 sq. metres.

#### REASONS:-

1. To comply with Section 58 of the Town and Country Planning (Scotland) Act 1997

2. In order to provide safe and convenient pedestrian access.
3. In order to promote a shift away from the private car to more sustainable modes of transport.
4. To ensure that the standard of junction layout complies with the current standards and that the safety of the traffic on the trunk road is not diminished.
5. In order to promote a shift away from the private car to more sustainable modes of transport.
6. to ensure that the proposed development has a satisfactory external appearance in the interests of the visual amenities of the area.
7. to ensure a satisfactory standard of appearance of the development in the interests of the visual amenities of the area
8. In order to deal appropriately with contamination and to ensure that the site is fit for the use proposed.
9. The northern part of the site may be of archaeological interest and it is important that the opportunity created by the development to expose the history of the land, thereby contributing to the better understanding of the development of the city, is not lost.
10. In order to make appropriate provision for public art.
11. In order to make adequate provision for sustainable drainage.
12. In order to ensure that the proposed development does not prejudice the vitality and viability of the City Centre.

**INFORMATIVES :-**

The proposed modifications to the trunk road network shall in all respects comply with the DMRB and with the Specification for Highway Works published by HMSO. The developer shall issue a certificate to that effect signed by the design organisation.

Any trunk road works will necessitate a Minute of Agreement with the Trunk Roads Authority prior to the commencement of any works.

It should also be understood that this permission does not carry with it any necessary consent or approval for the proposed development required under any other enactment eg a building warrant or licence may be required.

Decision Date: 18 May 2009

Issued On: 19 May 2009



Director of Planning and Transportation.

The plans returned to you with this Decision Notice have been stamped as those to which this decision relates. Please ensure that all conditions are complied with and the development is completed in accordance with the approved plans.



City Architectural Services Officer FAO [REDACTED]  
Dundee City Council  
Floors 11/12  
Tayside House  
Dundee  
DD1 3RQ

If telephoning the number is [REDACTED]

THE APPLICATION REFERENCE IS 10/00133/NBUILD

Please quote this reference in correspondence and when enquiries are made regarding this application.

Date: 7 April 2010

Dear Sir/Madam

**The Building (Scotland) Act 2003**

**Proposal:** Non-Domestic -Staged - Construct new public swimming pool and leisure centre with adjoining public car park  
**Location:** East Whale Lane Car Park East Marketgait Dundee

I refer to the above application for Warrant which was registered on **25 February 2010**

In this connection, I am pleased to confirm that the application has been **APPROVED** and the relevant Warrant is enclosed for your retention.

Should you have any queries regarding this matter please contact [REDACTED]

Yours faithfully

[REDACTED]  
Ian G S Mudie  
Head of Planning

DUNDEE CITY COUNCIL  
ARCHITECTURAL SERVICES  
DATE RECEIVED  
12 APR 2010

ACTION.....

Please note due to staff training, surveyors will not be available on Tuesday mornings between 9.00 – 10.00 am

ACTION.....

Enc.

Chief Executive  
Dundee City Council  
21 City Square  
Dundee

If replying by letter please address to:  
Building Standards  
City Development Department  
Dundee City Council, Floor 15 Tayside House  
28 Crichton Street  
Dundee DD1 3RB

WLTR



City Architectural Services Officer FAO [REDACTED]  
Dundee City Council  
Floors 11/12  
Tayside House  
Dundee  
DD1 3RQ

If telephoning the number is [REDACTED]

THE APPLICATION REFERENCE IS 10/00133/NBUILD/A

Please quote this reference in correspondence and when enquiries are made regarding this application.

Date: 22 March 2011

Dear Sir/Madam

**The Building (Scotland) Act 2003**

**Proposal:** Non-Domestic - Amendment to 10/00133/NBUILD - Stage 2 External Building Envelope and Internal Building Layout  
**Location:** East Whale Lane Car Park East Marketgait Dundee

I refer to the above application for Warrant which was registered on 31 August 2010

In this connection, I am pleased to confirm that the application has been **APPROVED** and the relevant Warrant is enclosed for your retention.

Should you have any queries regarding this matter please contact [REDACTED]

Yours faithfully

Please note due to staff training, surveyors will not be available on Tuesday mornings between 9.00 – 10.00 am

Enc.

Chief Executive  
Dundee City Council  
21 City Square  
Dundee

If replying by letter please address to:  
Building Standards  
City Development Department  
Dundee City Council, Floor 15 Tayside House  
28 Crichton Street  
Dundee DD1 3RB

WLTR

Project Title: New Olympa and Multi Storey Car Park  
 Address: East Marketgait, Dundee

Certificate of

# Practical Completion

Client: Chief Executive, Dundee City Council  
 Address: City Square, Dundee

Project Ref: 09-011-A2 [REDACTED]

Contractor: Mansell Construction Services Ltd  
 Address: South Ind Business Park, Shore Road  
 Perth PH2 8BW

Certificate No: 1

Issue Date: 05.06.13

Contract Dated: 23.11.10

Under the terms of the above-mentioned Contract.

I/we hereby certify that Practical Completion of

†Delete as appropriate

†1. the Works  
 †2. Section No. of the Works  
 was achieved on

21<sup>st</sup> May, 2013

This Certificate is Issued subject to the Contractor's continuing obligation to complete the works detailed on the attached Appendix A - defective and outstanding work and Appendix B - outstanding snagging as at the date 21st May 2013

	Yes	Date	N/A
Building Warrant Applicable and Obtained	*	Stage 1 - 07.04.2010 Stage 2 - 22.03.2011	
Electrical Certificate of Compliance Obtained	*	04.06.2013	
Building Control Certification of Completion Applied For	*	17.05.2013	

To be signed for and  
 on behalf of the issuer  
 named below

Signed [REDACTED] City Architect

**Distribution**

Original to:

Copies to:

**DUNDEE CITY COUNCIL**  
 CITY DEVELOPMENT

\* Client       \* Contractor       \* M&E Services     

\* Quantity Surveyor       \* Engineer       \* [REDACTED]

\* [REDACTED] (Construction Projects Only)       \* Nominated Sub-Contractor       \* Clerk of Works       \* File

Rob Pedersen  
 City Architect  
 Floor 5, Dundee House  
 50 North Lindsay Street, Dundee DD1 1LS  
 Telephone: 01382  
 Fax: 01382

**09-011**  
**New Olympia and Multi Storey Car Park**

**Certificate of Practical Completion**  
**Appendices referred to on Certificate**

**Reference Date – 21<sup>st</sup> May 2013**

**Appendix A**

Works which are defective to be fully resolved to the satisfaction of the Architect-

- All outstanding Certification to be provided – see Appendix B.
- Service Yard Floor – waterproofing details have not been followed and are now compromised - remedial work to be co-ordinated with client's requirements for access. This is required by the date of the opening to the public 27/06/13
- Ceiling Voids have not been installed in accordance with the contract drawings nor AI 42 – Fire Engineer has now been engaged with a remit to advise and risk assess – remedial works as required to be advised.
- Level deck channel – failure at concrete/SBR junction and failure in waterproofing treatment (added to the contract) - remedial proposals have been discussed - works involve an extensive workforce which will require out-of-hours working and co-ordination with the client's requirements for access
- Legionella risk – AI 697 which instructed remedial action – compliance with this is yet to be completed and confirmed.
- Copes – the finished installation is only partially compliant with the specification – letter to be issued to Mansell to record DCC's position
- MSCP Kick plates / push plates - have been fitted in accordance with the specification, but have been condemned as unfit for purpose - remedial proposals have been given by the supplier, who claims the issue is in the preparation and fitting.
- Snagging – the generality of outstanding snagging on DCC F160 forms at the date of Practical Completion - see Appendix C
- Provide adequate unistrut frame for lighting to Service Block roof..
- Provide IP56 manual call points in pool hall as per specification.
- Session Control Installation not as per specification.
- Pool Hall time of day clocks to be supplied & installed.
- Generally clean debris from luminaires including, particularly luminaires beneath launchpad.
- Repair defective LED lights on flume collars.
- Resolve ropelight installation & demo to Client.

Works which are unfinished at the date of issuing Practical Completion, where possible the Contractor to use his best endeavours to finish these works as quickly as possible -

- Client Demos and proving demos to DCC staff.
- Firestopping – general check over required to ensure completeness.
- Basement workshop – unfinished.

- Duty Officer's Room – it is noted that this won't be finished until all electrical installations are complete.
- South Car Park – part of contractor's prelims obligations – it is noted that these have been suspended by works to East Dock Street Junction – although they should have been finished for handover.
- Pool Hall – fixing down detail for ferrules for poolside sockets.
- Store for emergency equipment GR32 – due to cill installed at threshold detail floor requires to be screeded.
- MSCP – additional floor treatment to south stair.
- Menerga installation - to be completed as agreed.
- Seating on top deck of terracing currently placed in Fitness Studio.
- Lid trays on Service Block roof.
- Complete lighting controls commissioning and client demonstration.
- Complete CCTV installation & client demos.
- Complete Ascom installation & client demo.
- Complete Cameron Communication installation & client demo.
- Competitive Seating fan & controls installation (DCC to clarify wiring requirements).
- MSCP entrance lights installation.
- Retail unit electrical & fire alarm installation to be completed.
- MSCP access arrangements to external door at North Stair to be completed.
- ACS to prove & demo 3 x MSCP door access arrangements on completion of the item above.
- Supply & Install lockable enclosures for lift isolators.
- Letter from Mansell / Balfour Beatty with respect to honouring warranty for Zumtobel TOL light fittings in Pool Hall.
- Controls - Pool Vent AHUs (1, 2, 3, and 4) incorporated within the BMS, and thus viewable on the BMS front end. Communications Control Wiring for this is by the Controls Specialist (i.e. not over our IT network).
- Pool Vent Controls Requirements not fully met (i.e. items such as filter DPs, etc. to be incorporated).
- Once above two ventilation items done, final BMS front end demo to take place.
- Ventilation commissioning results to be witnessed. Both general ventilation and specialist pool ventilation.
- Water temperatures at taps to be witnessed.
- AI-697 works to be completed, in accordance with the mechanical specification. Risk of legionella.
- All gas knock-offs to be fully operational, and signed-off.

- Maintenance and Service Contract documents, as per clauses R100 and R110 of the mechanical specification.
- The mechanical services handover checklist to be completed and returned, with substantiating documents/certificates.
- O and M Manuals - ongoing

#### Appendix B

Provide the following Certificates required by Building Control and DCC under our requirements for Practical Completion and QA procedures -

- Electrical NIC Certificates
- Sprinkler Certificate
- Fire Alarm Certificate – completed but please confirm on certificate that the soak test and verification are done
- Chemical Extract
- Intruder Alarm
- Access control
- CCTV
- IT Network
- Induction Loops
- Disabled Refuge
- Assistance Call
- TVs / Communications
- Boilers
- AHU and Ventilation
- Air Balancing
- Pressurisation Test
- Pumps
- Water Mix
- Fire Dampers
- Smoke Dampers
- Heating
- Water Balance
- Auto Controls / BMS
- Menerga
- Solar heating
- CHP
- Underfloor Heating
- ESG Pool Ventilation
- Kitchen Equipment
- Gas knock-off
- Fire Alarm shut down

#### Appendix C

Snagging works as incomplete on 21st May 2013. Complete list of snagging appended (DCC form F160 Defects and Incomplete Works). Contractor to liaise with Clerks of Works to demonstrate issues are attended to. Documents also require sign-off by Mansell site manager. It is recognised that as at 21<sup>st</sup> May this list was partly actioned, Once it is fully actioned and signed off this this requirement of the Certificate will be considered to be discharged.



**COMPLETION CERTIFICATE - SUBMISSION**

**Building (Scotland) Act 2003**

Submission under section 17(1) and (7) of a completion certificate

**Relevant person (see below)**

Name: DAVID DORWARD  
 Address: FLOOR 2, 21 CITY SQUARE  
DUNDEE  
 Post Code: DD1 3BD Tel No: .....  
 FAX No: ..... e-mail (where available): .....

**Relevant person**

The completion certificate must be submitted by the relevant person as defined by the Building (Scotland) Act 2003, that is –

- (a) Where the work was carried out, or the conversion made, otherwise than on behalf of another person, the person who carried out the work or made the conversion
- (b) Where the work was carried out, or the conversion made, by a person on behalf of another person, that other person
- (c) If the owner of the building does not fall within paragraph (a) or (b) and the person required by these paragraphs to submit the completion certificate has failed to do so, the owner.

**Duly authorised Agent (if any)**

Name: [REDACTED]  
 Address: DUNDEE HOUSE FLOOR 5  
50 NORTH LINDSAY ST  
 Post Code: DD1 1LS Tel No: [REDACTED]  
 FAX No: - e-mail (where available): [REDACTED]  
 dundee.city.gov.uk

**Owner (see note 1)**

Name: DAVID DORWARD  
 Address: FLOOR 2, 21 CITY SQUARE  
DUNDEE  
 Post Code: DD1 3BD Tel No: .....  
 FAX No: ..... e-mail (where available): .....

**Details of building warrant**

Date of building warrant (and any amendments) - 22/03/11 + AMENDMENT 10/04/13  
 Reference number of building warrant - 10/00133/MSUILD  
 Address of building to which the building warrant applies - [Include post code if known].  
OLYMPIA, CV05/13 POP EAST WHALE LANE  
DUNDEE DD1 3JU

[If different] Address of building to which this submission applies – [Include post code if known] (see note 2): .....

**Description of building**

Does this submission cover all the work under the above building warrant?  YES  NO\*  
If NO, please describe the work to which this submission applies –

Is this the last submission related to the above warrant?  YES  NO\*

**Relaxation directions**

Was any relaxation of the provisions of the building regulations given?  YES  NO\*  
If YES, give date(s) and reference number(s) -

**Certificates**

Do any certificates from approved certifiers of construction accompany this submission?  YES  NO\*  
If YES, see annex 1

Did any certificates from approved certifiers of design accompany the building warrant application (see note 3)  YES  NO\*

**Notices**

Please indicate if this submission is as a result of any of the following notices, and if so give the reference number –

Building regulations compliance notice: ..... NO .....

Building warrant enforcement notice: ..... NO .....

Defective buildings notice: ..... NO .....

Is the building subject to any Dangerous building notice?  YES  NO\*  
(If YES, give the reference number): .....

Date work was completed - 25/12/13 .....

**Declaration**

We submit a completion certificate in accordance with the details supplied above and with any necessary accompanying information.

**[and where the certificate is submitted for work done under a building warrant]**

This completion certificate is confirmation that the work was carried out and/or conversion\* made in accordance with the building warrant. This completion certificate also confirms that in the case of work for the construction of a building, the building as constructed complies with the building regulations; that in the case of the provision of services, fittings or equipment in or in connection with a building that the services, fittings or equipment provided comply with building regulations; and in the case of conversion of a building that the building as converted complies with building regulations.

**[and when the provisions of building regulations apply]**

I enclose a copy of the energy performance certificate(s) for the building(s).  
I enclose a copy of the statement of sustainability issued for the purpose of regulation 9 of and section 7 of Schedule 5 to the Building (Scotland) Regulations 2004."

[and where the certificate is submitted for work done in response to a notice where no warrant was required].

This completion certificate is confirmation that the work done in response to a continuing requirement enforcement notice/a building regulations compliance notice (where no warrant was required)/a defective building notice (where no warrant was required)/a dangerous building notice\* has been completed in accordance with the requirements of the notice.

[and if there are any continuing requirements in the building warrant -]

This completion certificate confirms acceptance of the continuing requirements as stated below, made under Section 22 of the Act, imposed by the warrant

Continuing requirements (please list in full)

.....  
.....

Signed -  .....  
relevant person/duly authorised agent on behalf of relevant person\*

Dated -: 29/10/13 .....

\*Delete as appropriate

Address to which you should send this application:  
**Dundee City Council, Building Standards, Planning Division,  
City Development Department, Dundee House, 50 North Lindsay Street,  
Dundee, DD1 1LS**

or email this application to: [bs@dundeecity.gov.uk](mailto:bs@dundeecity.gov.uk)

**Notes.**

1. The name and address of the owner is required as the procedure regulations require the owner to be informed if a completion certificate is rejected.
2. Where the address has been amended since the building warrant was granted, or where the submission covers only part of a building warrant (for example is for one house in a development of several dwellings that were subject to a single warrant) an address identifying the work covered by the submission must be supplied.
3. Where a certificate from an approved certifier of design includes details yet to be designed, the Notification of Finalisation of Details model form must be completed by the approved certifier and approved body and forwarded to the verifier.
4. Any applicant aggrieved by the decision of a verifier to reject a completion certificate may, by summary application made within 21 days of the date of the decision, appeal to the sheriff. If a verifier has not determined this submission within 14 days from the date of receipt by the verifier of the certificate, the submission is deemed rejected and an appeal may be made to the sheriff in the same way and subject to the same timescale.

**WARNING**

This certificate does not permit the occupation or use of a building following construction or conversion. It is an offence to occupy or use such a building until a 'notice of acceptance of a completion certificate' is obtained except where this is done solely for the purposes of the construction or conversion of the building. Note that temporary permission may be obtainable from a verifier, and note that the restriction on occupation or use does not apply to alterations. If any person submits a completion certificate containing a statement which that person knows to be false or misleading in a material particular or recklessly submits a completion certificate containing a statement which is false or misleading in a material particular the person is guilty of an offence and liable on summary conviction to a fine not exceeding level 5 on the standard scale.

ANNEX 1

**CERTIFICATES FROM APPROVED CERTIFIERS**

Please list reference numbers of any certificates from approved certifiers of construction which relate to this submission, and attach the original signed certificates to this completion certificate –: .....

.....  
.....  
.....  
.....

**Important Note.**

The certificates must be original documents, signed by certifiers fully approved to issue for the matters certified on the date the certificate was signed.



City Architectural Services Officer FAC [REDACTED]  
 Dundee City Council  
 Floors 11/12  
 Tayside House  
 Dundee  
 DD1 3RQ

If telephoning the number is [REDACTED]

THE APPLICATION REFERENCE IS 10/00133/NBUILD

Please quote this reference in correspondence and when enquiries are made regarding this application.

Date: 30 October 2013

Dear Sir/Madam

**The Building (Scotland) Act 2003**

**Proposal: Non-Domestic -Staged - Construct new public swimming pool and leisure centre with adjoining public car park**

**Location: CV 01/13 pop  
 East Whale Lane Car Park East Marketgait Dundee**

I have duly considered your formal submission in respect of the above and now have pleasure in enclosing Notice of Acceptance of Completion Certificate.

Yours faithfully



File No	Md to	Due date
	[REDACTED]	
23 NOV 2013		
Act	Act date	Re-alloc to

Enc.

If replying by letter please address to:  
 Building Standards  
 City Development Department  
 Dundee City Council, Floor 6 Dundee House  
 50 North Lindsay Street  
 Dundee DD1 1LS



**NOTICE OF ACCEPTANCE OF COMPLETION CERTIFICATE  
BUILDING (SCOTLAND) ACT 2003**

Acceptance under section 18 of a Completion Certificate

**ACCEPTANCE**

This document confirms acceptance of the Completion Certificate submitted by:

**RELEVANT PERSON (APPLICANT OR AGENT)**

City Architectural Services Officer FAO [REDACTED]  
Dundee City Council  
Floors 11/12  
Tayside House  
Dundee  
DD1 3RQ

**DETAILS OF COMPLETION CERTIFICATE**

Date of Completion Certificate Submission :  
30th October 2013

**Address of Building to which Completion Certificate applies:**

East Whale Lane Car Park East Marketgait Dundee

**Plot Address (if known):**

Leisure Pool, 3 East Whale Lane  
Dundee  
DD1 3HE

**Details of Building Warrant**

10/00133/NBUILD Plot No. 2 dated 07.04.2010

**Stages and Amendments**

**Plot Number 2**

Reference:10/00133/NBUILD/A dated 22.03.2011

**Plot Number 2**

Reference:10/00133/NBUILD/B dated 07.05.2013

FORM\_M

**CONTINUING REQUIREMENTS IMPOSED BY THIS ACCEPTANCE [If relevant]****DECLARATION**

We confirm as verifiers, so far as we are aware to ascertain after making reasonable enquiry, that we are satisfied the work which is the subject of the above Completion Certificate has now been completed in accordance with that Certificate and the Warrant (and any amendments) detailed above.

**Signed****for Dundee City Council (Verifier)****Date 30th October 2013****\* Delete as appropriate****NOTES**

1. The Building Warrant details should be provided unless the Completion Certificate was submitted without a Building Warrant having been obtained.
2. For work of construction or conversion, this acceptance permits the occupation or use of the building.

**WARNING**

**The acceptance of a Completion Certificate is no guarantee of standard of workmanship.**

**This acceptance is an important document that may be requested during property transactions, and should be kept securely.**



**EAST MARKETGAIT DEVELOPMENT (09-011)**

Schedule of Defects which relate to the non-issue of the Certificate of Making Good (May 2014)

**DEFECTS OUTSTANDING FROM PRACTICAL COMPLETION**

Item Nr.	Items Identified on Site
1	Ceiling voids – the following ceiling voids are not compliant as they deviate from the contract drawings and subject to further advice by the Council's insurers exceed the revised guidance of max 1000mm. In addition the advice of the electrical engineer is that where there are sprinklers required then void detection should also be allowed. <ul style="list-style-type: none"> <li>o GR11 – Cleaners' Cupboard</li> <li>o GR24 – Cleaners' Cupboard</li> <li>o FR6 – Vending Store</li> <li>o FR8 – Disabled Toilet</li> <li>o FR9 Cleaners' Cupboard</li> </ul>
	In addition the following areas are covered by other documentation which confirms that sprinklers should be installed - <ul style="list-style-type: none"> <li>o BR19 – was included in AI 717</li> <li>o FR5 – Is included on drawing N5563-PW-02 Rev E</li> </ul>
2	Failure of waterproofing treatment to pool transfer channels.
3	Ropelight – no longer operating properly. Only colour option now available along entire length is green. Blue colour option no longer available. Compromise already agreed to limit the use of red as there had been problems getting all red sections to function. This is now only working to 1/3 capability. (Note - There are sections in storage because the CDP Curtain Walling contractor could not resolve the interface to incorporate this feature)
4	Basement fire stopping at pipework penetrations through ground floor compartment floor.
5	Pool hall AHU's – ESG interface to be put on BMS.
6	O and M Manuals, as-fitted drawings and log books.
7	Health and Safety file.
8	Collateral Warranties.

**LIST OF DEFECTS**

Item Nr.	General Items
9	Splash Encounters installation – still not operational. Must be brought to a resolution.
10	Tiling remedials – various repairs.
11	Foyer roof – leak at east end.
12	Foyer roof - smoke vent dripping.
13	Orsogril – query whether fixed – please confirm.
14	Competition store walls – saturated and infested with mould.
15	Leak at MSCP - make good after repair.
16	Reception air conditioning – not working, keeps going faulty.
17	Viewing gallery to café – FD29.3 replace kick plates on door.
18	Solar thermal – outstanding issues. Ref site meeting. Auto-changeover on the duty/standby pumps to be installed in accordance with the contract documents. O & M manuals were found to be misleading and inaccurate in places – to be re-written by technical author.
19	Wave Plant Room – leak from aquacatch surround and/or drainage channel, including leak at drain outlet adjacent to access stair.
20	Corrosion in Pool Hall – mechanical damage and poor preparation for corrosion protection system various locations
21	Corrosion at Flume Columns - remedial work to flume columns has failed – remedial work to full spec to be repeated.
22	Corrosion at Dive Stair – corrosion protection system has failed – to be fully prepped and repainted to full spec.
23	Dive stairs – treads lifting - to be refixed. Treadmaster treads do not fully fill the stair tread.
24	Plant room leaks at perimeter – not resolved. Works to be actioned to the waterproofing of the Toddler Pool transfer channel. Further to this and in association with item below – investigations still to be carried out relative to other possible causes such as south Disabled Platform and deckside boxes / containment.
25	Leaks on north side of competition pool – not resolved. Investigative exercise indicated possible cause. However the resolution of this could not be confirmed due to time constraints on site. This exercise needs to be repeated to be concluded at both sides of both the north and south disabled platforms

26	Water leaks through compartment floor between Ground Floor and Basement – investigations under way but not complete – investigation to be completed and remedial action taken, including reinstatement of firestopping. Please note that it has recently been reported that there has been leaks around other drain positions, typically in the changing village, which presumably have been treated in the same way. Again firestopping will also need to be dealt with in the same manner.
27	Flumes – leaks, confirm if resolved.
28	MSCP office door – hinge had come off.
29	MSCP snagging list issued by PZ (2/5/14) to be actioned – generally joinery snagging, one item for POF machines.
30	Patch of vinyl on launch platform de-laminating
31	Boiler flue capping – charring or soot accumulating and smell, investigate.
32	Tile repairs generally.
33	Submersible boom – fails to remain in position on occasion.
34	Pool Length – The official ASA Surveyor was unable to certify the length of the pool as it was too short. Generally the pool is short in both 25m and 50m modes. So far this has only been advised to us verbally and the surveyor's report is yet to be forwarded to us.
35	Service block parapet - Copes to Service Block – ref my letter 30.04.13 – remedial exercise was incomplete – to be completed
36	Service Block parapet – crack along inner face of parapet under copes
37	North Stair 2nd Floor, movement and settlement cracks at east wall.
38	North Stair Gr Floor Exit door, refix back plate of door restrictor (loose).
39	South Stair 2nd Floor, refit ceiling tiles above lift door.
40	South Stair Gr Floor Exit door refix back plate of door restrictor (loose).
41	South Stair Basement Protected Lobby, repaint floor.
42	2nd Floor Admin Office Meeting room gasket still missing from movawall partition end panel.
43	1st Floor Activity Room, entrance door not closing against strike plate (adjust).
44	Replace or clean ceiling tiles around AC units.
45	Admin Suite - replace water damaged ceiling tiles next to left hand window.
46	1st Floor Fitness Suite, movement and settlement cracks at south wall next to ducting on wall.
47	1st Floor Disabled Toilet, door handles loose.
48	Gr Floor Reception, glass panel still missing in security shutter.
49	Gr Floor Cleaners store GD 11, replace or clean ceiling tiles.
50	Foyer Walkway, east wall panels at bottom next to south exit door (loose).
51	Foyer Walkway, wall at north west end next to curtain walling has settlement crack running the length of wall.
52	Basement, repaint walls and floors after damage caused by water ingress from above.
53	Basement Bulk Hydro BR17 room, movement and settlement cracks on walls.
54	Pool Hall, Exit door at east side of pool cracks on glass panel (investigate)
55	Re-Weld handrail and barrier cover rings to base of legs (north side of pool)
56	Competitor store east side 2no acoustic panels not fixed to curtain walling
57	Floor ceramic tiles are lifting at exit doors next to wave pool .
58	Noise from Pool Hall north duct riser.
59	External roof – condensation falling to walkway
60	Filtration room/all affected fittings/equipment
61	Filtration room/floor paint – removed by leaks
62	Plant room entry – Fire penetration seals/missing
63	Reception/Tensa barrier pole – insert loose
64	Toddler pool/Pillar-showing signs of corrosion
65	Training pool-South side/Floor tiles-broken at 25m
66	Training pool-North side/Floor tiles-broken at 25m
67	Training pool/North corner-broken tile/no plate cover
68	Training pool/Broken floor tile-near water fountain
69	T/Pool comp balcony – addition rails required
70	Activity room/Store FR14 door-not closing
71	Activity room/Store FR14 internal door strip-detached
72	Activity room/Store FR14-handle loose
73	Activity room/Aircon unit-missing internal cover
74	Activity room/Roof tiles-discoloured/dislodged
75	Activity room/Roof tiles/near windows/damaged & wet
76	Dive pool west/Tile work-corrosive staining
77	Dive pool west/Earth wire exposed in grout
78	Wave pool/South ramp throughout/grout missing
79	Wave pool/South fire exit/broken floor tiles
80	Wave pool/Tower area high level spot-out

81	Wave pool/Flume spots-1 x missing
82	Wave pool plant room/Floor paint-damaged
83	Various locations – Handles – loose
84	Fire panel(s) – showing faults
85	All stainless steel various locations – corrosion
86	Café/East-Spot light out/redirect onto reflector plate
87	Café/Roof leak-above RWP pipe
88	Café/South/Redirect spot light onto reflector plate
89	Café/Bridge access-globe light out
90	Change village-Emergency assistance button-inoperable
91	Change village-Shower door GR18-not closing
92	Level 2. Store SR9-Door does not close.
96	Level 2: Near L. Carr - Air-conditioning unit - Noisy
94	Roof drains/Water not flowing to drain/uneven levels – outlets stand proud of gutter level
95	South stair – various locations/cracked plaster
	<b>Mechanical Issues</b>
	<b>Basement :</b>
96	Control digital sensor probe serving competition pool is not fitted as per specification
97	Control digital sensor probe serving toddler pool is not fitted as per specification
98	Control digital sensor probe serving leisure pool is not fitted as per specification
99	Solar return pipe work not supported appropriately as they drop to pump sets
100	Please rigidly support in its entirety the Menerga backwash pipe work to the storage tank, to prevent all lateral movement when in operation. Works carried are insufficient. Pipe still moving 04/1/2013
101	Water leak from back wash storage tank at LL below left inlet
102	Outstanding controls wiring to level sensors on sprinkler holding tank
103	Pipework located directly below to be fire sealed through wall
104	No appropriate safe/coordinated to access hatches of CWST
105	Install energy meter front end to vertical trunking approx. 1m to the LH side, dressing cabling securely.
106	Solar sensor is not fitted to the 108mm CWS pipe work at the plate heat exchange to specification.
107	Badly corroded sprinkler pipe work in in basement hydrochloric acid bulk storage room.
108	FTL - Faulty motorized valve M48 serving competition pool make up.
109	FTL - Water leak from 150mm pipe work at leisure pool filter J.
110	Water leak at LTHW valve 59 serving toddler pool plate heat exchanger.
111	FTL - intermittent leak at low level take off from sodium hypochlorite bulk tank, more noticeable after bulk delivery.
112	Water leak from low level blanked take off on the backwash storage tank, Note - previously for the low level sensor.
113	AI 717 - item 12. <i>With regard to the redundant fire dampers which have been installed, please permanently disable these such that they will be incapable of closing. Confirm this has been done.</i>
114	BMS junction box open with joints exposed - located above toddler pool heat exchanger.
	<b>Ground :</b>
115	No appropriate access to Horne TMV partially located within the shower column
116	Reception indoor AC unit again faulty.
	<b>First :</b>
117	All DWS chrome pipe work not supported appropriately behind kitchen porter area/dish washer, loose and partially off wall M/2 riser.
118	Café gas control panel allowing gas to be used whilst canopy fan is off, gas control panel and system installed TCW Mk5 <b>not to specification</b> and thus not being accepted by DCC - TCW Mk6 should be installed for a kitchen.
	<b>Second :</b>
119	AHU3+4 Static inverters are not appropriately supported
	<b>Roof :</b>
120	Monodraught apron is not attached to louvre around north side
	<b>General :</b>
121	Menerga system(s) to be operational and demonstrated.
122	Solar system(s) to be operational and demonstrated.
123	BMS to be demonstrated.
124	Full accurate set of as-fitted drawings outstanding.
125	Full accurate / structured ( with commissioning and servicing folders etc) o&m manuals outstanding.

126	ESG air handling unit -broken air test point on AHU2 in second floor plant room.
127	Wave plant room FTL air compressor leaking fluid.
128	DHW - fault being indicated on PRI pumps control panel – <i>“digital input on -should be off”</i>
129	Kitchen gas consumption meter is not connected to the BMS as per W60 specification.
130	BMS – W60 specification states that the BMS controls are to provide an alarm signal at the control panel in the event of either a high or low pressure alarm condition on the solar DHW package. The installation has not been completed in compliance with this.
	<b>Electrical Issues</b>
	<b>POOL</b>
	<b>BASEMENT</b>
131	Lights not working at DB BP & at toddler pool filter K
132	Conduit to light fitting showing signs of corrosion at affected area from showers above
133	Emergency Lights not working at Boiler House door & entrance to protected lobby door.
134	Emergency light not working at exit door to East Whale Lane
	<b>GROUND FLOOR</b>
	<b>RECEPTION</b>
135	Diffuser on 1 <sup>st</sup> slot light still short.
136	Re-fit camera to ceiling at display unit
	<b>CHANGING VILLAGE</b>
137	Diffusers not fitted properly above green and blue lockers
138	Emergency Light out at post swim door to staff change.
	<b>STAFF CHANGE CORRIDOR&amp; STAFF CHANGING ROOM</b>
139	PA speakers to be refitted to ceiling.
	<b>SWITCHROOM</b>
140	Data cable not connected at meter??
	<b>POOLHALL</b>
141	Sports netting works to be complete
142	Light out above spectator seating.
143	Cables have come away from steelwork below green flume, seen from wave pool lifeguard position
	<b>STORES BELOW COMPETITION SEATING</b>
144	Containment showing signs of corrosion
145	Lights not working at DB and FT panel.
	<b>WAVE PLANT ROOM</b>
146	Conduit for socket below flumes showing signs of corrosion
147	Door Access panel is still being protected from water from hatch above, if still the case panel will have to be moved.
148	Trunking showing signs of corrosion at ducts (beside sub-main panel board)
	<b>1<sup>ST</sup> FLOOR</b>
	<b>CAFÉ</b>
149	Light on bridge still out
	<b>ACTIVITY ROOM</b>
150	Slot light diffusers to be replaced
	<b>CHANGING VILLAGE</b>
151	Different colour of lamp fitted in end shower before gym?
152	ID spurs for hairdryer and straightener's
	<b>FITNESS SUITE</b>
154	Three lights out
	<b>CORRIDOR AT CAFÉ STAFF DOOR</b>
155	Emergency light not working

	<b>2<sup>nd</sup> FLOOR</b>
	<b>PLANT ROOM</b>
156	Light not working in middle of plant room
157	Emergency light above door not working
	<b>MSCP</b>
	<b>LEVEL 11</b>
158	Master light not working?
159	Emergency light not working (south stair)
	<b>LEVEL 10</b>
160	Light out at bay 1038
161	Emergency lights out above both exit doors
	<b>LEVEL 9</b>
162	Lights out at bays 903,906,909 & 921
	<b>LEVEL 7</b>
163	Emergency light out at north stair exit.
	<b>LEVEL 6</b>
164	Emergency light out at south stair exit
165	Lights out at bays 600 ,625 and 1x on ramp level 5 to 6
	<b>LEVEL 5</b>
166	Lights out at bays 508,514 & 517
	<b>LEVEL 3</b>
167	Light out at bay 309
	<b>LEVEL 2</b>
168	Light out at bay 216
	<b>LEVEL 1</b>
169	Light out at bay 114
	<b>BY-PASS</b>
170	light out at high level
	<b>EXTERNAL DOORS</b>
171	Push pads not working at east whale lane entrance and x2 at south entrance
	<b>EXTERNAL WORKS</b>
172	Lamp post at main entrance to straightened- (Tayside Contracts)
	<b>GENERAL ONGOING ITEMS</b>
173	External rope light is now green?
174	Bega lights in pool hall - investigation between manufacture and contractor
175	NAS box still faulty
176	No Log books have been delivered to site?

177	O & M Manual points:
	<ul style="list-style-type: none"> <li>• (63)006 - Linear lights still shown on drawing</li> </ul>
	<ul style="list-style-type: none"> <li>• Drawings (64)002-004 missing</li> </ul>
	<ul style="list-style-type: none"> <li>• Pool Hall drawing with all cables/pipes beneath slab fully dimensioned(CDP requirement)</li> </ul>
	<ul style="list-style-type: none"> <li>• Drawing (90)001 missing</li> </ul>
	<ul style="list-style-type: none"> <li>• Lightning Protection CDP drawing missing , with test points shown?</li> </ul>
	<ul style="list-style-type: none"> <li>• Certificates - TG Baker Commissioning certificate for main PA system appears not be there, Omega Red Certificate appears to be a remedial works record sheet rather than a certificate. Certificates for Hoists, automatic doors etc from Architect?</li> </ul>
	<ul style="list-style-type: none"> <li>• (63)006 - Linear lights still shown on drawing</li> </ul>
	<ul style="list-style-type: none"> <li>• Drawings (64)002-004 missing</li> </ul>
	<ul style="list-style-type: none"> <li>• Pool Hall drawing with all cables/pipes beneath slab fully dimensioned(CDP requirement)</li> </ul>
	<ul style="list-style-type: none"> <li>• Drawing (90)001 missing</li> </ul>
	<ul style="list-style-type: none"> <li>• Can you confirm if all spares and consumables have been handed over to the client , (FA, Emergency Lighting, Etc)</li> </ul>
	<ul style="list-style-type: none"> <li>• Has annual emergency lighting testing been carried out?</li> </ul>

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**APPENDIX 2**

## Reports and Agenda Note

Replacement of Olympia Swim and Leisure Centre – Report No 204-2008	Page 31
New Olympia and Allan Street Car Park – Report 660-2010	Page 37
New Olympia and Allan Street Car Park – AN18-2011	Page 40
Tenders Received by City Architect – Report 377-2014	Page 41
Tenders Received by Head of Design and Property – Report 129-2018	Page 46

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**DUNDEE CITY COUNCIL****REPORT TO: Leisure, Arts & Communities Committee - 24 March 2008****REPORT ON: Replacement of Olympia Swim and Leisure Centre****JOINT REPORT BY: Depute Chief Executive (Finance) and Director of Leisure & Communities****REPORT NO.: 204-2008****1.0 PURPOSE OF REPORT**

- 1.1 To outline the proposal for the replacement of the Olympia Swim and Leisure Centre with a new purpose-built swimming and leisure centre on a site at Allan Street. The new centre would include a 50 metre pool for local swimming clubs, training and regional competitions.

**2.0 RECOMMENDATION**

It is recommended that the Leisure, Arts & Communities Committee:-

- 2.1 Agree the principle of the existing Olympia Swim and Leisure Centre being demolished and replaced by a purpose-built swimming and leisure facility on a site at the Allan Street Car Park.
- 2.2 Agree in principle to the inclusion of a new 50 metre pool within the new facility at Allan Street, primarily for local swimming clubs, training and regional competition, together with appropriate leisure facilities all as identified in the clients brief attached at Appendix 3.
- 2.3 Note the inclusion of the replacement of the Olympia Swim and Leisure Centre within the Council's Capital Plan which was approved at the Policy & Resources Committee on 14th February 2008, at a total estimated gross cost of £22.00m
- 2.4 Agree to the establishment of an Olympia Project Board and a stakeholder group, involving representatives from Dundee Leisure, Sportscotland and swimming clubs in Dundee to act as a client advisory group during the development of this important project. The Depute Chief Executive (Finance) will chair both groups

**3.0 FINANCIAL IMPLICATIONS**

- 3.1 The financial implications of the new swimming and leisure centre at Allan Street are twofold being capital and revenue, and are detailed in Paragraphs 3.2 to 3.5 and in Appendices 1 and 2.
- 3.2 The proposal to build the replacement swimming and leisure pool at Allan Street is predicated on the fact that the City Council will provide the Allan Street site free of charge to the project.

- 3.3 In terms of capital costs, the City Architectural Service Officer estimated that the new facility will cost an estimated £22.0m at outturn prices. This cost has been compared against a number of similar facilities throughout the United Kingdom, and the officers believe that it represents good value for money in terms of the extensive facilities that will be available in the facility. In terms of the capital funding for the project the following are the main sources;

Prudential borrowing	£11.00m
Capital receipts	£ 4.00m
Estimated Grant from SportsScotland and other funders	£ 3.00m
Capital Plan	£ 4.00m

The funding sources have been assessed as being reasonable and achievable, and will continue to be monitored on an ongoing basis. It should be noted that an application has been made to SportsScotland and the Council have still to be advised of the outcome of this bid

- 3.4 In terms of the ongoing revenue costs there will be considerable savings in terms of running costs as the new building will be more efficient to operate both in terms of staffing requirements and property costs. A full costing has been carried out and assuming that the level of income at the new facility is the same as the income at Olympia, then the savings in net operating expenditure of £344,000, plus the saving in Olympia finance charges that cease in 2011 of £323,000 to allow for finance charges of £667,000 per annum to be incurred which equates to £11.00m of prudential borrowing. The net revenue expenditure of the new swimming and leisure facility will be £247,000 higher than the current net revenue expenditure of Olympia due to the increased finance charges, and this will require to be funded from Council Tax. During the development of the Olympia replacement, the Director of Leisure and Communities and the Board of Dundee Leisure will take steps to identify further efficiencies so that this increase can be reduced. Any balance of the annual revenue increase of £247,000 still remaining when the facility opens in 2011/12 will be met from that and future years Council Tax.
- 3.5 Discussions are ongoing with NHS Tayside with a view to their making use of the facilities in various fields of healthcare. These discussions may result in a financial contribution towards either or both the capital and revenue costs.
- 3.6 In conclusion, the capital cost of the new facility of £22m can be funded by an assumed £3m grant from SportsScotland and other possible funders, £4m assumed receipts from the sale of vacant sites, net prudential borrowing of £11m and £4m from the Capital Plan. The new facilities net revenue expenditure, including the finance charges on the £15m borrowing will result in an increase of £247,000 over the existing Revenue Budget of the Olympia facility. Details of all the capital and revenue expenditure are included in Appendices 1 and 2.

#### 4.0 SUSTAINABILITY POLICY IMPLICATIONS

##### 4.1 Sustainability

The new facility will be built to take advantage of energy efficiency and best practice in sustainable use of materials. It will also be designed to reduce revenue operating costs.

#### 4.2 Strategic Environmental Assessment

The existing Olympia Complex is not energy efficient and its replacement will yield significant environmental benefits.

#### 4.3 Anti-Poverty

Dundee Leisure pricing policy maintains a variety of concessions aimed at promoting access at affordable rates to those in receipt of benefit. The pricing at the new swimming and leisure facility will be in line with the prices at Olympia.

#### 5.0 **EQUAL OPPORTUNITY IMPLICATIONS**

The new Swimming and Leisure facility at Allan Street will be fully DDA compliant and will be operated on the basis of promoting access for all. The main contribution of this new public pool will continue to be equal access to leisure opportunities for all.

#### 6.0 **BACKGROUND**

##### 6.1 Introduction

Reference is made to the previous Committee Reports including the Central Waterfront policy where options for the long term provision of swimming and leisure pool facilities in Dundee were considered, and recommendations made that the Council replace the Olympia Swimming Leisure Centre with a new swimming and leisure complex.

While the existing Olympia facility is successful in that it had an attendance in excess of 366,000 paying customers and valued highly during 2006-07, the proposed works in and around the Central Waterfront will continue to isolate the facility which will increasingly look out of place and dated.

In addition to this, the complex design and age of the Olympia facility continues to provide the Council with a heavy burden in terms of revenue, and while the facility is managed by Dundee Leisure within the management fee of £230,000 provided by the Council, there was still a net estimated cost of £954,000 during 2007/08 for all building/energy cost etc.

##### 6.2 City Swimming Provision Strategy

Following much previous research into a potential replacement of the building, and taking into account the additional swimming capacity within the City through the provision of the pool at St John's High School and also the two PPP school pools at the Grove Academy and St Paul's Academy, it is proposed that a facility is created to replace the leisure experience of the Olympia which would aim to maintain the vibrancy and excitement that the Olympia provides via the flumes, etc., but at the same time be designed to prove less of a financial burden on the City Council in terms of running costs.

There have been increasing demands by clubs and the student fraternity for training facilities which develop swimmers to the highest level and a basic pool with a length of 50 metres is proposed for inclusion with the new facility at Allan Street. The advent of the London Olympic Games in 2012 and the Commonwealth Games in Glasgow in 2014 have provided new impetus to sport and acknowledgement that existing facilities at a regional level fall below today's expectations. With an imaginative and flexible design the City Architectural Services Officer and his staff have managed to include within the proposed new swimming and leisure facility at Allan Street a 50 metre competition and training pool.

### 6.3 Proposed Replacement Swimming and Leisure Pool

#### 6.3.1 Site Location

In terms of available sites within the city centre area, the north end of Allan Street, which is currently used as a car park, has emerged as the preferred option. The site is well served by public transport and closer than Olympia is to the main city bus terminal. At this stage the current site of the Olympia has been discounted as have peripheral sites to the City Centre. This is based on previously agreed policy to relocate the new swimming and leisure pool on a city centre site. It is recommended that the Allan Street site be agreed as the preferred site for the replacement for the Olympia Swimming and Leisure Centre.

#### 6.3.2 Site Condition Survey

The Allan Street Car Park site on which the proposed Swimming and Leisure Pool and the Multi Storey Car Park are to be constructed has been the subject of extensive site investigation and land assessment by the City Engineer and external consultants. The City Engineer and City Architectural Services Officer have confirmed that appropriate allowances have been made in the £22m capital budget for dealing with extra-ordinary foundation requirements and contaminated land issues associated with this project.

#### 6.3.3 Description of the facility

##### 6.3.3.1

It is recommended that in order to maximise the experience and popularity of the facility, key elements that have contributed to the success of the current Olympia be included - namely leisure water and fitness suite. The design and specification of new facility will meet the highest standards of safety. This new facility will also be flexible to accommodate competition events for both regional 25m short course events as well as a regional competition level 50m pool. At the same time and as the project progresses to design detail, that at every step, while not compromising customer experience and Health & Safety, that opportunity is taken to design out potential running cost burdens and that the design takes into account management efficiency. A copy of the clients brief is included at Appendix 3, and a floor plan of the facility is included at Appendix 4.

The key elements of the clients brief are as follows:-

Pool area including:-

- 50 metre pool for competitions, training, classes and leisure/fun
- Family pool 20 x 10 metres
- Leisure elements including rapid river/deluge
- Dive Area

Flumes (Similar mix as Olympia)

Fitness Suite

Café area

Support Accommodation

Staff area, offices, foyer/entrance

- 6.3.3.2 It is envisaged that car parking provision for the facility will be available within the proposals for the multi storey car park to replace the existing ground level Allan Street car park. The new Multi Storey Car Park will be adjacent to the new swimming and leisure facility at Allan Street. Access to the Multi Storey Car Park and to the Leisure facility will be via East Whale Lane, which will become one way (north-bound) at its northern end to allow for convenient Coach and Bus Drop Off facilities. Access to East Whale Lane will be from East Dock Street via a left-turn only. Egress from East Whale Lane will be to East dock Street and Seagate again via left-turns only. This arrangement will allow vehicular access to the new facility from all directions without the introduction of potentially difficult and dangerous right-turn manoeuvres.

Pedestrian access will utilise the existing pedestrian crossings on East Marketgait to allow easy movement to and from the main retail core and bus stops. A new pedestrian route will be formed between the Leisure Facility and the Multi Storey Car Park which will provide direct access to these buildings and onwards to the Gallacher Retail Park which already attracts considerable pedestrian flows.

#### 6.3.4 Management

It is proposed that the new facility will be owned by Dundee City Council and managed by Dundee Leisure on a similar basis to the existing Leisure facilities and management agreement.

#### 6.3.5 Programme

The City Architectural Services Officer predicts that the contractor will start on site in September 2009 and that with a construction programme of 24 months the new swimming and leisure centre will open in September 2011.

**7.0 CONSULTATION**

7.1 The Chief Executive, Head of Finance, Depute Chief Executive (Support Services), Director of Planning & Transportation, Director of Economic Development, Assistant Chief Executive (Community Planning) and City Architectural Services Officer have been consulted on this report and are in agreement with its contents.

7.2 In addition there has been consultation with the swimming clubs within the City, Fife & Tayside Institute of Sport, SwimsScotland, Sporttayside and Fife, Dundee and Abertay Universities and SportsScotland, on the facilities that should be included in the replacement swimming and leisure pool, in particular the inclusion of a 50 metres competition pool. It is the unanimous opinion of these bodies that a 50 metre competition and training pool would be a significant enhancement to swimming provision in Tayside and Fife and should be the City Council's aspiration.

**8.0 BACKGROUND PAPERS**

8.1 None.

**DAVID K. DORWARD**  
**DEPUTE CHIEF EXECUTIVE (FINANCE)**

**14 MARCH 2008**

**STEWART MURDOCH**  
**DIRECTOR OF LEISURE & COMMUNITIES**

**14 MARCH 2008**

**REPORT TO:** POLICY AND RESOURCES COMMITTEE - 8 NOVEMBER 2010

**REPORT ON:** NEW OLYMPIA AND ALLAN STREET CAR PARK  
CONTRACT NR 09-011

**REPORT BY:** DIRECTOR OF LEISURE AND COMMUNITIES, DIRECTOR OF CITY  
DEVELOPMENT AND CITY ARCHITECTURAL SERVICES OFFICER

**REPORT NO:** 660-2010

#### 1.0 PURPOSE OF REPORT

1.1 This report details the tenders received and requests a decision on acceptance thereof.

#### 2.0 RECOMMENDATIONS

2.1 It is recommended that the Committee approve the following :-

(1) the acceptance of the tender submission from Mansell Construction Services Ltd., Perth of £24,113,904.52.

(2) the allowances amounting to £7,347,000, giving a total cost of £31,460,904.52.

#### 3.0 FINANCIAL IMPLICATIONS

3.1 The Director of Finance has stated that the project costs of £31,460,904.52 can be met from the Council's Capital Plan. Provision of £37M was made in the Capital Plan which was approved by the Policy and Resources Committee on 11 February 2010 as follows:- £12M in the City Development Capital Plan for Allan Street Car Park and the Car Park/Swimming Pool Site Access Works and £25M in the Leisure & Communities Capital Plan for a New Swimming Pool.

Support financing of £3M from SportsScotland Lottery Funding has also been approved.

Acceptance of this most favourable tender is based on a current site start of January 2011 with a completion date of September 2012.

#### 4.0 POLICY IMPLICATIONS

4.1 This report has been screened for any policy implications in respect of Sustainability, Strategic Environmental Assessment, Anti-Poverty, Equality Impact Assessment and Risk Management.

4.2 The building has been designed to be fully accessible and to be environmentally sustainable where possible.

There are no major policy issues.

#### 5.0 TENDER REPORT

5.1 Reference is made to the meeting of the Leisure, Arts and Communities Committee of 24 March 2008 which approved report 204-2008 giving approval to the principle of the existing Olympia Swim and Leisure Centre being demolished and replaced by a purpose-built swimming and leisure facility on a site at the Allan Street car park.

5.2 Reference is made to the meetings of the Policy & Resources Committee and the Planning & Transport Committee of 14 April 2008 which approved report 201-2008 giving approval to the provision of a Multi Storey Car Park and infrastructure for a Retail Unit to be completed to coincide with the opening of the new Olympia Swim and Leisure Centre.

- 5.3 Description of project - The project comprises the construction of a new leisure pool and multi-storey car park on the northern site of the existing Allan Street car park in Dundee city centre. The leisure facilities include a flexible and adaptable 50m 6-lane competition pool, a wave pool, a rapid river, a dive pool and flumes. There will also be a changing village, fitness suite, cafe, foyer and administration area. The multi-storey car park is 13-deck, split deck, providing 500 spaces, including 30 disabled and 30 family spaces. On the ground floor of the car park there will be a 650m<sup>2</sup> lettable retail unit. The leisure pool and the car park, although two distinct parts, are joined together at a common foyer which also serves as a pedestrian route to an adjacent retail park.
- 5.4 An OJEU advert was published for this project in 22 December 2009 and the Council received 19 submissions. These were initially assessed by the Director of Finance and a short list was prepared containing eleven contractors. These were further assessed and eight contractors were invited for an interview to look in more depth at their submissions and proposals. As a result of this six contractors were then invited to tender for the project using Bills of Quantities. At the same time they were asked to provide project specific information which would enable the assessment team to complete the scoring of the quality aspects of their overall submission. A scoring weighting of 60% price and 40% quality was used to evaluate the tenders and at the conclusion of the tender exercise Mansell Construction Services Ltd., Perth were confirmed as the preferred contractor for the project.

- 5.5 Details of the six contractors submitted tenders are as noted below

<b>Contractor</b>	<b>Tender Amount</b>
1. Mansell Construction Services Ltd., Perth	£24,116,255.76
2. Morgan Sindall (Construction) plc., Livingston	£24,995,999.00
3. John Graham (Dromore) Ltd., Hillsborough	£25,181,291.00
4. Barr Holdings Ltd., Paisley	£25,295,445.12
5. Bam Construction Ltd., Glasgow	£26,338,020.98
6. Bovis Lend Lease Ltd., Harrow	£28,699,408.00

- 5.6 The Tender from Mansell, **arithmetically corrected to £24,113,904.52**, is recommended for acceptance and if agreed to it brings out the following:-

Several Works - Construction of Pool and Car Park	£24,113,904.52
---	----------------

Allowances for:

Provision of eastbound bus shelter	£15,000
Works to East Whale Lane (South)	£250,000
Works to South Car Park	£100,000
Road Traffic Assessment Works	£100,000
Pedestrian Access to Gallagher's Retail Park	£50,000
Archaeology Works	£50,000
Provision of Client Telephones	£20,000
Kitchen/Cafe Fit-Out	£135,000
Flumes Enhancement	£220,000
Feature Lighting	£100,000
Automatic doors (draught lobby)	£75,000
Pool Equipment	£100,000
Loose Furniture and Equipment	£150,000
Sundry Client Fit-Out Items	£100,000
Public Art (1%)	£250,000
Thermal Modelling	£20,000
Building Warrant	£76,000
Planning Fee	£15,000
Construction (Design and Management) Co-ordinator	£38,000
Professional and Specialist Consultancy Services	£3,483,000
Contingences	£2,000,000

Total	£7,347,000	£7,347,000
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<b>Total Project Cost</b>	<b>£31,460,904.52</b>
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- 5.7 The following sub-contractors for major trades will be used by Mansell Construction Services Ltd., Perth

<b>TRADE</b>	<b>SUBCONTRACTOR</b>	<b>LOCATION</b>
Ground Consolidation & Piling Work	BBGE (Balfour Beatty ) Ltd	Glasgow
Groundwork, Excavation	BBCE (Balfour Beatty ) Ltd	Aberdeen
Steelwork	RIM Fabrications	Inverurie
Concrete Work	Realm Construction Limited	Lochgelly
Glazing	Esk Glazing	Montrose
Metalwork	Fenwick Ltd	Dundee
Lift Installation	Kone Lifts plc	Edinburgh
WC Cubicles	Lamart	Dundee
Mechanical Installation	BBES (Balfour Beatty ) Ltd	Glasgow
Electrical Installation	BBES (Balfour Beatty ) Ltd	Glasgow
Render Work	Muirfield Contracts Ltd	Dundee
Roller Shutters	Able Doors Ltd	Dundee
Waterproof Render	Quickseal ltd	Glasgow
Stone Cladding	Stirling Stone Ltd	Stirling
Reception Fitments	Bentleys ltd	Dundee
Precast Concrete Stairs	Creagh Concrete Products ltd	Edinburgh
Flooring	McGregor Flooring	Glasgow
Bird Control	Richardson & Starling Ltd	Dundee
Painter	AT Roberts	Dundee

## 6.0 CONSULTATIONS

The Chief Executive, Depute Chief Executive (Support Services), Director of Leisure and Communities, Director of City Development and Director of Finance have been consulted in the preparation of this report.

## 7.0 BACKGROUND PAPERS

- 7.1 None.

**Stewart Murdoch**  
**Director of Leisure and Communities**

**Mike Galloway**  
**Director of City Development**

**[REDACTED]**  
**City Architectural Services Officer**

28 October, 2010

660-2010

**17 NEW OLYMPIA AND ALLAN STREET CAR PARK (AN18-2011)**

On a reference to Article VI of the minute of meeting of this Committee of 8th November, 2010, it is reported that Mansell Construction Perth, the main contractor for the above project, has requested a change to the ground work sub-contractor from BBGE (Balfour Beatty) Ltd, Aberdeen to Dundee Plant Company Ltd, Dundee.

It is recommended that the Committee approve accordingly.

**REPORT TO:** CITY DEVELOPMENT COMMITTEE – 24 NOVEMBER 2014  
**REPORT ON:** TENDERS RECEIVED BY CITY ARCHITECT  
**REPORT BY:** CITY ARCHITECT  
**REPORT NO:** 377-2014

## 1 PURPOSE OF REPORT

1.1 This report details tenders received and requests a decision on acceptance thereof.

## 2 RECOMMENDATION

2.1 Approval is recommended of (1) the acceptance of the tenders submitted by the undernoted contractors and (2) the undernoted total amount, including allowances, for each project.

Project Reference Project Description	Contractor	Tender Amount	Total Amount	Finance Available
13-026 - Logie Avenue Depot - Alteration Works	Environment Department (Construction Services)	£452,832.19	£541,115.19	£2,757,000.00
14-016 - New Olympia Pool – Operational Enhancement Works	Environment Department (Construction Services)	£59,838.15	£79,993.15	£79,994.00
14-002 - Caird Hall - Refurbishment of First Floor Ladies Toilets	Environment Department (Construction Services)	£85,317.95	£109,371.95	£109,372.00
13-033 – Ardler Community Centre – Upgrade First Floor Toilets	Environment Department (Construction Services)	£25,432.79	£31,324.79	£31,325.00
13-032 – Ardler Community Centre – Small Hall Lighting	Environment Department (Construction Services)	£7,151.53	£8,245.53	£8,246.00
14-099 – Kirkton Community Centre – Window and Curtain Walling Replacement – Phase 2	Environment Department (Construction Services)	£43,190.02	£49,799.02	£49,800.00

## 3 FINANCIAL IMPLICATIONS

3.1 The Director of Corporate Services has confirmed that funding for the above project is available as detailed on the attached sheet.

## 4 POLICY IMPLICATIONS

4.1 This Report has been screened for any policy implications in respect of Sustainability, Strategic Environmental Assessment, Anti-Poverty, Equality Impact Assessment and Risk Management. Any issues are detailed on the attached sheets.

## 5 CONSULTATIONS

5.1 The Chief Executive, Director of Corporate Services and the Head of Democratic and Legal Services have been consulted and are in agreement with the contents of this report.

## 6 BACKGROUND PAPERS

6.1 None.

**7 FURTHER INFORMATION**

7.1 Detailed information relating to the above Tenders is included on the attached sheet. The construction works in this report have been procured using the general guidance contained in the following documents approved by the Council:

- a Report: 148-2003 - Partnering Guidelines for Construction Projects;
- b Report: 356-2009 - Construction Procurement Policy; and
- c Standing Orders - Tender Procedures of the Council.

Mike Galloway  
Director of City Development

  
City Architect

RP/AM/EC

11 November 2014

Dundee City Council  
Dundee House  
Dundee

CLIENT	City Development		City Development	
PROJECT NUMBER PROJECT PROJECT INFORMATION	13-025 Logie Avenue Depot – Alteration Works The works comprise the internal upgrade of the existing building to provide improved welfare and canteen facilities.		14-016 New Olympia Pool – Operational Enhancement Works The works comprise various tiling works, wave pool enhancements, installation of a storm cell backwash water level sensor, dryer machine relocation, non slip flooring enhancement, alphanumeric display unit and competition pool dosing unit..	
TOTAL COST	Several Works Allowances Total	£452,832.19 <u>£88,283.00</u> <u>£541,115.19</u>	Several Works Allowances Total	£59,838.15 <u>£20,155.00</u> <u>£79,993.15</u>
FUNDING SOURCE BUDGET PROVISION & PHASING	Capital - Redevelopment of HQ and Operational Depots 2014/2015 £2,757,000.00 <u>Cash Flow</u> Total 2014/2015 £318,416.00 2015/2016 <u>£222,700.00</u> <u>£541,116.00</u>		Capital – New Pool – Post Works Programme 2014/2015 £71,994.00 L&C Contribution £8000.00	
ADDITIONAL FUNDING	None		None	
REVENUE IMPLICATIONS	None		None	
POLICY IMPLICATIONS	There are no major issues.		There are no major issues.	
TENDERS	Negotiated contract.  1 Environment Department (Construction Services) £452,832.19		Negotiated contract.  1 Environment Department (Construction Services) £59,838.15	
RECOMMENDATION	Acceptance of offer.		Acceptance of offer.	
ALLOWANCES	Professional Services Utility Connections Loose Furniture Total	£69,283.00 £4,000.00 <u>£15,000.00</u> <u>£88,283.00</u>	Professional Services Alphanumeric Display Unit Ancillary Competition Pool Dosing Unit Total	£9,155.00 £8,000.00 <u>£3,000.00</u> <u>£20,155.00</u>
SUB-CONTRACTORS	None		None	
BACKGROUND PAPERS	None		None	



CLIENT	City Development		City Development	
PROJECT NUMBER PROJECT PROJECT INFORMATION	13-032 Ardler Community Centre – Small Hall Lighting The works comprise the replacement of lighting within the small hall.		14-019 Kirkton Community Centre – Window and Curtain Walling Replacement – Phase 2 The works comprise replacement of curtain walling to internal courtyard and 6 No office windows.	
TOTAL COST	Several Works	£7,151.53	Several Works	£43,190.02
	Allowances	<u>£1,094.00</u>	Allowances	<u>£6,609.00</u>
	Total	<u>£8,245.53</u>	Total	<u>£49,799.02</u>
FUNDING SOURCE	Capital – CommunityCentres		Capital – City Wide – Window Replacements	
BUDGET PROVISION & PHASING	2014/2015	£8,246.00	2014/2015	£49,800.00
ADDITIONAL FUNDING	None		None	
REVENUE IMPLICATIONS	None		None	
POLICY IMPLICATIONS	There are no major issues.		There are no major issues.	
TENDERS	Negotiated contract.		Negotiated contract.	
	1 Environment Department (Construction Services)	£7,151.53	1 Environment Department (Construction Services)	£43,190.02
RECOMMENDATION	Acceptance of offer.		Acceptance of offer.	
ALLOWANCES	Professional Services	<u>£1,094.00</u>	Professional Services	<u>£6,609.00</u>
	Total	<u>£1,094.00</u>	Total	<u>£6,609.00</u>
SUB-CONTRACTORS	None		None	
BACKGROUND PAPERS	None		None	

<b>ITEM No ...4.....</b>
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**REPORT TO:** CITY DEVELOPMENT COMMITTEE – 23 APRIL 2018

**REPORT ON:** TENDERS RECEIVED BY HEAD OF DESIGN AND PROPERTY

**REPORT BY:** HEAD OF DESIGN AND PROPERTY

**REPORT NO:** 129-2018

### 1 PURPOSE OF REPORT

1.1 This report details tenders received and requests a decision on acceptance thereof.

### 2 RECOMMENDATION

2.1 Approval is recommended of (1) the acceptance of the tenders submitted by the undernoted contractors and (2) the undernoted total amount, including allowances, for each project.

Project Reference/Project Description	Contractor	Tender Amount	Fees & Other Costs	Total Amount
17-6019 - Friarfield House - Boiler Replacement	Construction Services	£187,472.21	£29,920.61	£217,392.82
17-6029 - Rockwell Learning Centre - Improvements and Upgrade Phase 2	Construction Services	£158,462.29	£25,337.04	£183,799.33
16-6012 - Clepington Primary School - Roof Refurbishment	Construction Services	£143,960.37	£23,245.74	£167,206.11
17-6027 - Craigie High School - Upgrade of Home Economics Classroom	Construction Services	£136,277.33	£33,931.82	£170,209.15
17-6030 - Craigiebarns Primary School - Toilet Upgrade	Construction Services	£156,327.17	£24,999.69	£181,326.86
17-001 - West Area Housing Office - Alterations to Form Safety and Alarm Centre	Construction Services	£155,428.40	£39,557.69	£194,986.09
16-6038 - Forthill Primary School - Replace Windows and Door Screens - Phase 4	Construction Services	£326,453.18	£57,579.60	£384,032.78
17-6002 - Eastern Primary School - Replacement of New Fire Doors and New Lenel Swipe Card Entry System	Construction Services	£47,854.23	£8,060.97	£55,915.20
17-09245 - Olympia Pool Hall Electrical Services Improvements	EW Edwardsons (Electrical Contractor) Ltd	£185,704.82	£24,000.00	£209,704.82
P17684 - Dundee Dock Cycle Route Improvements	Jones Bros Ruthin (Civil Engineering) Co Ltd	£290,249.13	£66,523.00	£356,772.13

### 3 FINANCIAL IMPLICATIONS

3.1 The Executive Director of Corporate Services has confirmed that funding for the above projects is available as detailed on the attached sheet.

**4 POLICY IMPLICATIONS**

- 4.1 This Report has been screened for any policy implications in respect of Sustainability, Strategic Environmental Assessment, Anti-Poverty, Equality Impact Assessment and Risk Management. Any issues are detailed on the attached sheets.

**5 CONSULTATIONS**

- 5.1 All members of the Council Management Team have been consulted and are in agreement with the contents of this report.

**6 BACKGROUND PAPERS**

- 6.1 None.

**7 FURTHER INFORMATION**

- 7.1 Detailed information relating to the above Tenders is included on the attached sheet. The construction works in this report have been procured using the general guidance contained in the following documents approved by the Council:
- a Report: 148-2003 - Partnering Guidelines for Construction Projects;
  - b Report: 356-2009 - Construction Procurement Policy; and
  - c Standing Orders - Tender Procedures of the Council.

Mike Galloway  
Executive Director of City Development

██████████  
Head of Design and Property

██████████  
5 April 2018

██████████  
Dundee City Council  
Dundee House  
Dundee

CLIENT	CITY DEVELOPMENT	CITY DEVELOPMENT
PROJECT NUMBER PROJECT PROJECT INFORMATION	17-6019 Friarfield House – Boiler Replacement Renewal of existing boilers, flues, pipework and equipment in the existing plant room including automatic controls, BMS and associated electrical work, all necessary builder work and upgrading ventilation to plant room.	17-6029 Rockwell Learning Centre – Improvements and Upgrade Phase 2 Sub-division of 3 classrooms into 6 rooms, new staff and pupil toilets, refurbishment of existing toilets, conversion of existing toilet to cleaners store, various minor works together with all associated alterations to services and decoration.
ESTIMATED START AND COMPLETION DATES	Start: July 2018 Complete: August 2018	Start: July 2018 Complete: August 2018
TOTAL COST	Several Works £187,472.21 Allowances £29,920.61 Total <u>£217,392.82</u>	Several Works £158,462.29 Allowances £25,337.04 Total <u>£183,799.33</u>
FUNDING SOURCE	Capital - Service Provision – Heating and Ventilation Systems	Capital - Service Provision - Structural Improvements and Property Upgrades
BUDGET PROVISION & PHASING	2017/2018 £20,735.00 2018/2019 <u>£196,657.82</u> <u>£217,392.82</u>	2017/2018 £17,825.00 2018/2019 <u>£165,974.33</u> <u>£183,799.33</u>
ADDITIONAL FUNDING	None	None
REVENUE IMPLICATIONS	None.	None.
POLICY IMPLICATIONS	There are no major issues.	There are no major issues.
TENDERS	Negotiated contract:  <b>Tenderers</b> <b>Tender</b> Construction Services £187,472.21	Negotiated contract:  <b>Tenderers</b> <b>Tender</b> Construction Services £158,462.29
RECOMMENDATION	Acceptance of offer.	Acceptance of offer.
ALLOWANCES	Professional Services £29,620.61 Allowances £300.00 Total <u>£29,920.61</u>	Professional Services £25,037.04 Allowances £300.00 Total <u>£25,337.04</u>
SUB-CONTRACTORS	IT Data – Neill Technical Services Floor Finishes – Nobel & Bradford Fire & Intruder Alarms - ICFS Mechanical – Richard Irvin Window Film – Rainbow Blinds and Interiors	Scaffolding – IAS (Dundee) Ltd
BACKGROUND PAPERS	None	None

CLIENT	CITY DEVELOPMENT	CITY DEVELOPMENT
PROJECT NUMBER PROJECT PROJECT INFORMATION	16-6012 Cleington Primary School – Roof Refurbishment Refurbishment to roof finishes including stonework and pointing to chimneys, parapets, coping stones and leadwork renewals to flashings, flat roofs and ventilation fleshes.	17-6027 Craigie High School – Upgrade of Home Economics Classroom The works comprise the upgrading of existing Home Economics Classroom including new fixed furniture and storage units, new Teaching Station, replacement gas cookers together with all associated alterations to services, floor coverings and decoration.
ESTIMATED START AND COMPLETION DATES	Start: July 2018 Complete: September 2018	Start: July 2018 Complete: August 2018
TOTAL COST	Several Works £143,960.37 Allowances £23,245.74 Total <u>£167,206.11</u>	Several Works £136,277.33 Allowances £33,931.82 Total <u>£170,209.15</u>
FUNDING SOURCE	Capital - Service Provision – Roof Replacement/Improvement Programme	Capital - Service Provision - Structural Improvements and Property Upgrades
BUDGET PROVISION & PHASING	2017/2018 £16,000.00 2018/2019 <u>£151,206.11</u> <u>£167,206.11</u>	2017/2018 £15,500.00 2018/2019 <u>£154,709.15</u> <u>£170,209.15</u>
ADDITIONAL FUNDING	None	None
REVENUE IMPLICATIONS	None.	None.
POLICY IMPLICATIONS	There are no major issues.	There are no major issues.
TENDERS	Negotiated contract: <b>Tenderers</b> <b>Tender</b> Construction Services £143,960.37	Negotiated contract: <b>Tenderers</b> <b>Tender</b> Construction Services £136,277.33
RECOMMENDATION	Acceptance of offer.	Acceptance of offer.
ALLOWANCES	Professional Services £22,745.74 Allowances £500.00 Total <u>£23,245.74</u>	Professional Services £21,531.82 Supply of New Furniture and Equipment £12,000.00 Allowances £400.00 Total <u>£33,931.82</u>
SUB-CONTRACTORS	Stonework – MDM Builders Leadwork – Scan Scaffold - IAS	Floor Finishes – Westend Flooring, Dundee Laminated Goods – Lam-Art, Dundee Data Installation - Boston Networks, Glasgow Asbestos Removal – Gowrie Contracts, Dundee Mechanical Works – Scan Building Services, Dundee
BACKGROUND PAPERS	None	None

CLIENT	CITY DEVELOPMENT	CITY DEVELOPMENT
PROJECT NUMBER PROJECT PROJECT INFORMATION	17-6030 Craigiebarns Primary School – Toilet Upgrades The works comprise the upgrading of 3 toilets at Craigiebarns Primary School. New laminate wall panelling, toilet cubicles, vanity units, new electrical, ventilation and mechanical installations along with decoration and flooring works.	17-001 West Area Housing Office – Alterations to Form Safety and Alarm Centre The works comprise alterations to existing first floor office layouts to form the new Council's Safety and Alarm Centre together with preparatory works for the UPS and CCTV monitoring systems.
ESTIMATED START AND COMPLETION DATES	Start: July 2018 Complete: August 2018	Start: May 2018 Complete: August 2018
TOTAL COST	Several Works £156,327.17 Allowances £24,999.69 Total <u>£181,326.86</u>	Several Works £155,428.40 Allowances £39,557.69 Total <u>£194,986.09</u>
FUNDING SOURCE	Capital - Service Provision - Structural Improvements and Property Upgrades	Capital – Community Safety and Justice – CCTV Project
BUDGET PROVISION & PHASING	2017/2018 £17,300.00 2018/2019 <u>£164,026.86</u> <u>£181,326.86</u>	2017/2018 £21,000.00 2018/2019 <u>£173,986.09</u> <u>£194,986.09</u>
ADDITIONAL FUNDING	None	None
REVENUE IMPLICATIONS	None.	None.
POLICY IMPLICATIONS	There are no major issues.	There are no major issues.
TENDERS	Negotiated contract:  <b><u>Tenderers</u></b> <b><u>Tender</u></b> Construction Services 156,327.17	Negotiated contract:  <b><u>Tenderers</u></b> <b><u>Tender</u></b> Construction Services £155,428.40
RECOMMENDATION	Acceptance of offer.	Acceptance of offer.
ALLOWANCES	Professional Services £24,699.69 Allowances £300.00 Total <u>£24,999.69</u>	Professional Services £24,557.69 Relocation Costs £15,000.00 Total <u>£39,557.69</u>
SUB-CONTRACTORS	Floor Finishes - Westend Flooring Asbestos Removal – Gowrie Contracts	Mechanical Works – Scan Building Services, Dundee Suspended Ceiling and Floor Coverings – Westend Flooring Window Blinds and Film - Deans Group Fire Alarm – WRB Fire and Security Data Installation – Neill Technical Services
BACKGROUND PAPERS	None	None



CLIENT	CITY DEVELOPMENT	CITY DEVELOPMENT																				
PROJECT NUMBER PROJECT	17-09245 Olympia – Pool Hall Electrical Services Improvements	P17684 Dundee Dock Cycle Route Improvements																				
PROJECT INFORMATION	The works comprise renewal of lighting/fittings at end of life with new long life equivalents and improvements to cable tray support to enhance lifespan.	Construction of shared use path through existing Dundee Dock Area including new surfacing and boundary fence.																				
ESTIMATED START AND COMPLETION DATES	Start: May 2018 Complete: July 2018	Start: May 2018 Complete: July 2018																				
TOTAL COST	Contract Cost £185,704.82 Non-Contract Allowances <u>£24,000.00</u> Total <u>£209,704.82</u>	Contract Cost £290,249.13 Allowances <u>£66,523.00</u> Total <u>£356,772.13</u>																				
FUNDING SOURCE	Capital – Service Provision – Electrical Upgrades																					
BUDGET PROVISION & PHASING	2017/18 £8,000.00 2018/19 <u>£201,704.82</u> Total <u>£209,704.82</u>	<table border="1"> <thead> <tr> <th></th> <th>17/18</th> <th>18/19</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Low Carbon Transport Travel Fund</td> <td>-</td> <td>£320,249.13</td> <td>£320,249.13</td> </tr> <tr> <td>TACTRAN</td> <td>£18,261.50</td> <td>-</td> <td>£18,261.50</td> </tr> <tr> <td>Sustainable Transport Revenue Fund</td> <td>£5,500.00</td> <td>£12,761.50</td> <td>£18,261.50</td> </tr> <tr> <td></td> <td></td> <td></td> <td><u>£356,772.13</u></td> </tr> </tbody> </table>		17/18	18/19	Total	Low Carbon Transport Travel Fund	-	£320,249.13	£320,249.13	TACTRAN	£18,261.50	-	£18,261.50	Sustainable Transport Revenue Fund	£5,500.00	£12,761.50	£18,261.50				<u>£356,772.13</u>
	17/18	18/19	Total																			
Low Carbon Transport Travel Fund	-	£320,249.13	£320,249.13																			
TACTRAN	£18,261.50	-	£18,261.50																			
Sustainable Transport Revenue Fund	£5,500.00	£12,761.50	£18,261.50																			
			<u>£356,772.13</u>																			
ADDITIONAL FUNDING	None																					
REVENUE IMPLICATIONS	None	None																				
POLICY IMPLICATIONS	There are no major issues.	There are no major issues.																				
TENDERS	Negotiated contract.  <u>Tenderers</u> EW Edwardsons (Electrical Contractor) Ltd  <u>Tender</u> £185,704.82	The project was an open tender through Public Contracts Scotland with 7 contractors returning.  <u>Contractors</u> Jones Bros £290,249.13 R J McLeod £334,080.00 MW Groundworks £314,130.25 Crummock £346,470.16 W Brown £306,324.39 Tayside Contracts £332,975.97 Dundee Plant £406,437.16  <u>Corrected Tender</u> - - £314,130.27 £379,174.08 £322,973.49 - -  <u>Quality Ranking</u> 2 1 6 3 7 5 4  <u>Cost/Quality Ranking</u> 1 2 3 4 5 6 7																				
RECOMMENDATION	Acceptance of offer from EW Edwardsons (Electrical Contractor) Ltd	Acceptance of offer from Jones Bros Ruthin (Civil Engineering) Co Ltd																				
ALLOWANCES	Professional Services £6,000.00 Contingencies <u>£18,000.00</u> Total <u>£24,000.00</u>	Professional Services £36,523.00 Contingencies <u>£30,000.00</u> Total <u>£66,523.00</u>																				
SUB-CONTRACTORS	Independent Access Scaffolding	None																				
BACKGROUND PAPERS	None	None.																				

**APPENDIX 3**

## Tender Documentation

Tender Offer dated 13th September, 2010	Page 55
Tender Acceptance dated 23rd November, 2010	Page 57
Final Account Agreement dated 5th August, 2013	Page 58

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13/09/10

**TENDER**

09-011

(based on a 20 month construction period)

To Dundee City Council

Councillors

I/we hereby offer, tender and agree to execute and completely finish the East Marketgait Development - New Leisure Pool and Car Park in accordance with the Condition of Contract, the drawings and Bill of Quantities dated July 2010 prepared by the City Architectural Services Officer for the sum of

Twenty Four Million One Hundred and Sixteen Thousand Two Hundred and Fifty Five Pounds  
and Seventy Six Pence

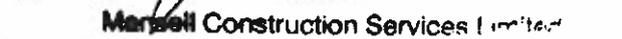
which offer remains open for consideration for three months from the date fixed for the lodgement of tenders, and I/we further agree in the event of my/our tender being accepted, to enter into a regular contract for the execution of the work.

I/we agree that should arithmetical errors in extensions or summations made by me/us in filling up the Bills be discovered they shall be rectified and that the tender sum shall be the total amount brought out in the Bills as so rectified. I/we further agree that any errors not so discovered shall be deemed to have been accepted by the parties hereto.

I/we understand that the Council does not bind itself to accept the lowest or any of the offers and that it shall not be responsible for any loss or expense incurred by me/us in tendering.

£ 24116255.76

Signature ..... 

Name of Firm 

Address ..... Marshall Construction Services Limited

South Inch Business Centre, Shore Road, Perth PH2 8BW

Date ..... 13th September 2010

Witness .. 

Witness ..... 

Address .. c/o Marshall

Address ..... c/o Marshall

Tender and priced Bill of Quantities under separate sealed covers, using the labels provided, to be lodged with the Chief Executive, City Chambers, Dundee DD1 3BY not later than 10.00 am on Tuesday 24th August, 2010.

Where a tender envelope does not bear the label provided the tender may not be considered.

**Non-collusive Tendering****Tender for the construction of new pool and car park at East Marketgait, Dundee**

The essence of the public procurement process is that the Authority shall receive bona fide competitive Tenders from all Tenderers. In recognition of this principle I/we warrant this is a bona fide Tender, intended to be competitive and that I/we have not fixed or adjusted the amount of the Tender or the rates and prices quoted by or under or in accordance with any agreement or arrangement with any other party.

I/We also confirm that I/we have not done and undertake that I/we will not do at any time any of the following acts:

Communicate to a party other than the Authority the amount or approximate amount of my/our proposed Tender (other than in confidence in order to obtain quotations necessary for the preparation of the Tender and/or insurance), enter into any agreement or arrangement with any other party that he shall refrain from tendering or as to the amount of any Tender to be submitted, or offer or agree to pay or give or pay or give any sum of money inducement or valuable consideration directly or indirectly to any person for doing or having done or causing or having caused any act or omission to be done in relation to any other tender or the proposed Tender.

In this Schedule:

the word "person" includes any person, body or association, corporate or incorporate

the phrase "any agreement or arrangement" includes any transaction, formal or informal whether legally binding or not.

Dated: 13 . 09 . 2010

Signed: (Name)

In the capacity of: ...

on behalf of:

**Mansell Construction Services Limited**

whose registered office is situated at:

PLUME DOCUMENT

DUNDEE CITY COUNCIL  
ARCHITECTURAL SERVICES  
24 NOV 2010  
SECTION  
AUCTIONED

Mansell Construction Services Ltd  
South Inch Business Centre  
Shore Road  
PERTH  
PH2 8BW

Email address: [REDACTED]

If calling please ask for [REDACTED]

Our Ref [REDACTED]  
Your Ref [REDACTED]  
Date 23 November 2010

Dear Sirs

**NEW OLYMPIA AND ALLAN STREET CAR PARK (09-011)**

On behalf of Dundee City Council, I hereby accept your offer dated 13th September, 2010 to carry out the above works for the sum of £24,116,255.76 corrected to £24,113,904.52 (TWENTY FOUR MILLION, ONE HUNDRED AND THIRTEEN THOUSAND, NINE HUNDRED AND FOUR POUNDS AND FIFTY TWO PENCE), and otherwise all in accordance with the terms and conditions of your aforesaid offer.

Please submit to the City Architectural Services Officer, within 14 days of the receipt of this letter, documentary evidence and/or policies and receipts for the insurances required by the conditions of contract.

Please submit to the CDM Co-ordinator within 14 days of the receipt of this letter a Construction Phase Plan and details of the welfare facilities to be provided. It should be noted that no construction work (CDM Reg 16) should start until such time as a suitable Construction Phase Plan is in place and adequate welfare facilities are planned.

This acceptance is conditional upon your Company delivering to the Council a completed executed Bond of Caution in terms of the draft attached hereto and that within twenty one days from this date.

In the meantime, I require your written confirmation accepting this qualification in order to conclude a binding contract between your Company and the Council.

This acceptance is conditional upon your Company delivering to the Council a completed executed Parent Company Guarantee in terms of the draft attached hereto and that within twenty one days from this date.

In the meantime, I require your written confirmation accepting this qualification in order to conclude a binding contract between your company and the Council.

All claims for payment should be made out for the attention of [REDACTED]  
[REDACTED] Floor 11, Tayside House, 28 Crichton Street, Dundee.

Yours faithfully

Depute Chief Executive (Support Services)

cc [REDACTED]

Client - Director of Leisure and Communities

**Mansell**  
**Balfour Beatty**

Granitehill Road, Northfield  
 Aberdeen, AB16 7AW

+44 (0)1224 717700

[REDACTED]  
 5 August 2013

City Development  
 Dundee City Council  
 50 North Lindsay Street  
 Dundee  
 DD1 1LS

For the attention of [REDACTED]

Dear Sirs,

East Marketgait Development, Dundee

We are pleased to return the Final Account agreement for the above project duly signed and dated by [REDACTED]. The amount of final account is agreed as full and final commercial settlement with no LAD's to be deducted and all claims from both parties being waived. All other terms of the contract remain intact.

Yours faithfully

[REDACTED]  
 [REDACTED]  
 Encl

File No	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
06 AUG 2013		
Ack	Ans date	[REDACTED]

DUNDEE CITY COUNCIL

New Olympia & Allan Street Car Park  
New Build\*

Final Account for works carried out by Mansell Construction Services Ltd

09/011

Amount of Contract			£	24,113,904	52
<b>SUMMARY</b>					
Contract Sum				24,113,904	52
Remeasurement				229,999	48
Architects Instructions				2,598,378	00
CVIs				257,720	00
		Total	£	27,200,000	00
Contractors Loss & Expense (32 weeks @ £50,000)				1,600,000	00
<i>The amount of final account is agreed as full and final commercial settlement with no L&amp;D's to be deducted and all claims from both parties being waived.</i>		Amount of Final Account	£	28,800,000	00
Quantity Surveying Section Floor 5 Dundee House 50 North Lindsay Street Dundee DD1 1LS					
Date:					
Agreed to					
Date	31/7/13				

File No.	Hd to	DATE
		06 AUG 2013
Ack	APPROVED	

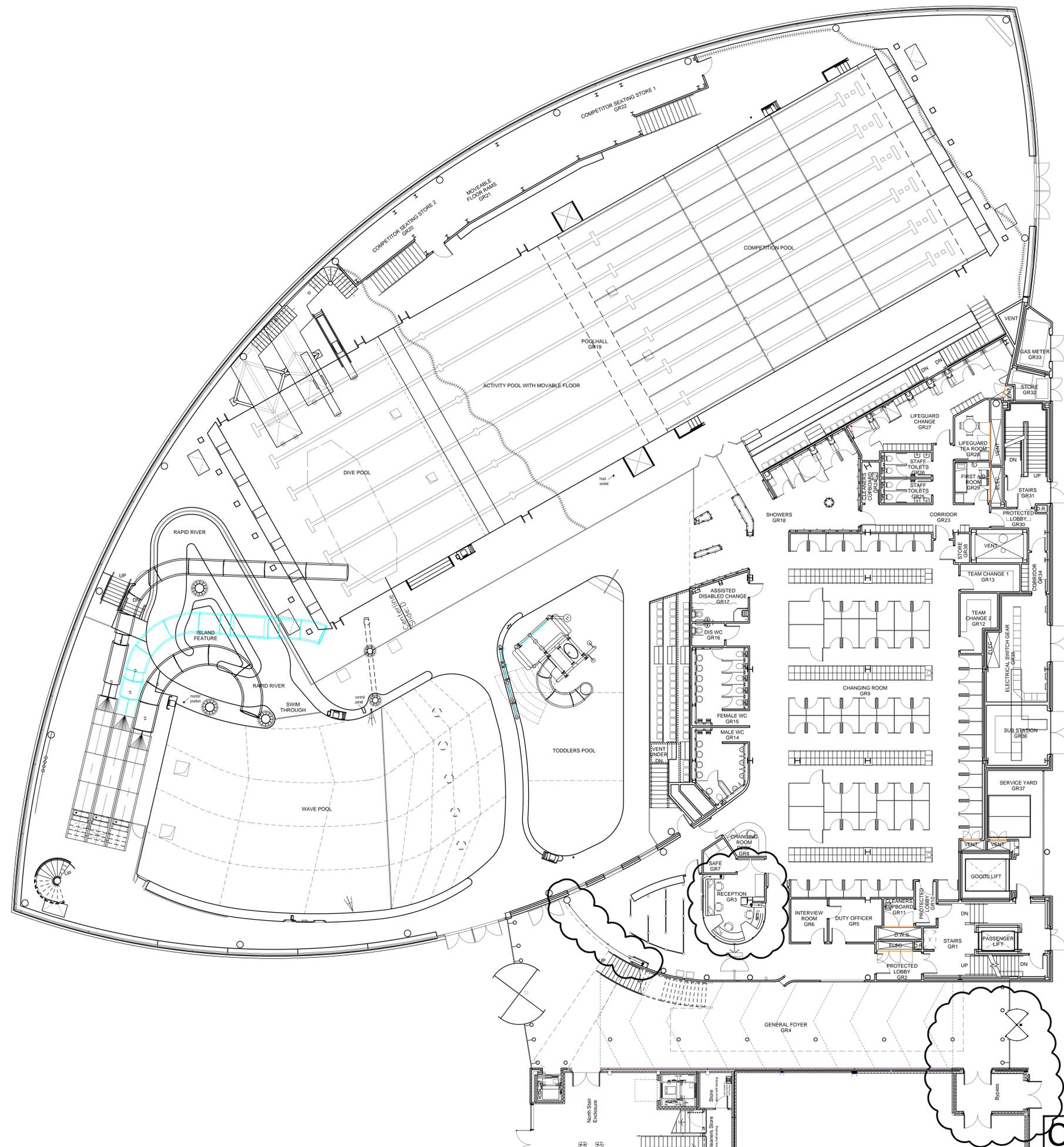
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**APPENDIX 4**

## Drawings

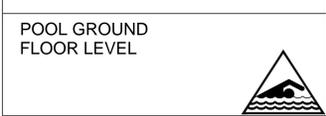
Pool Ground Floor Level	Page 63
Pool First Floor Plan	Page 64
Pool Second Floor Plan	Page 65
Pool Basement Floor Plan	Page 66
Pool Roof Plan	Page 67
Pool Elevations North and West	Page 68
Pool Elevations South and East	Page 69
Pool Sections 1 and 2	Page 70
Pool Sections 4 and 8	Page 71
Pool Sections 3 and 11	Page 72

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No.	Description	Date	Issued
A	Drawing number changed (L(00)200-L to L(00)200)	NOV 10	
B	Main pool added ladder access points, disabled access lifts in new positions and walk in steps in new positions. Safety barriers to walk in steps and lifts. Diving boards revised. Wave pool/rapid river reshaped. Toddlers pool new layout. Revised first aid room. Lifeguard tea room & changing room. Revised Male WC	NOV 10	
C	Spectator & Competitor seating layouts revised. pool balance tanks now concrete and access points revised. Accommodation North & South stairs/lobbies revised. Passenger lift moved. NE pool hall Fire Escape relocated. Accommodation under spectator seating increased in area due to revised seating layouts. Team change 1&2 revised. Additional steel column at grid 6/K. 2 New SHS at North & South junction of accommodation back/poolhall. revised sub-station trench.	FEB 11	
D	Toddler pool, Leisure pool/Rapid river updated, flumes & flume supports added.	JULY 11	
E	See revision clouds	SEPT 11	
F	Doors GD3.1 & 3.2 repositioned. Added GD5.2 in Duty Officer Room. Reception, Changing Room Desk and Safe Room layout revised	NOV 11	
G	Updated reception queue management floor socket positions, turnstile & gate resized & repositioned	FEB 12	
H	Revised lifeguard change tubs layout & lockers	MARCH 12	
J	Blockwork at lift altered to take Hypochlorite bulk fill boxes	MAY 12	
K	Door GD4.3 changed from Geer sliding door to Boon Edam revolving. Bypass doors GD4.3, 4.4 & 4.5 added. Reception desk and foyer screen updated.	MAY 12	

**PROPOSED NEW LEISURE POOL AND MULTI STOREY CAR PARK EAST MARKETGAIT, DUNDEE**



Project number	09-011
Date	30/11/10
Drawn by	
Checked by	
Drawing No. & Revision	L(00)200 - K
Sheet Size & Scale	A0 1:100

**CONTRACT**

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No.	Description	Date
A	Drawing number changed (L(00)201 to L(00)201)	NOV '10
B	Specifier & Contractor meeting layouts revised, pool balance tanks now concrete and access points revised, Accommodation North & South stairs/lobbies revised, Passenger lift moved, NE pool hall Fire Escape relocated, Additional steel column at grid 6/K, 2 New SHS at North & South junction of accommodation block/poolhall. Services access to east side of north wall increased in size to follow curve of pool hall.	FEB '11
C	See revision clouds	SEPT '11
D	Door into Store FR30 handed, Door in Fitness Suite screen handed	MAR '12
E	Pass doors shown in folding partition in multi purpose judges seating and desk added	MAY '12

**PROPOSED NEW LEISURE POOL AND MULTI STOREY CAR PARK EAST MARKETGAIT, DUNDEE**

**POOL FIRST FLOOR PLAN**



Project number	09-011
Date	30/11/10
Drawn by	[Redacted]
Checked by	[Redacted]
Drawing No. & Revision	L(00)201 - E
Sheet Size & Scale	A0 1:100

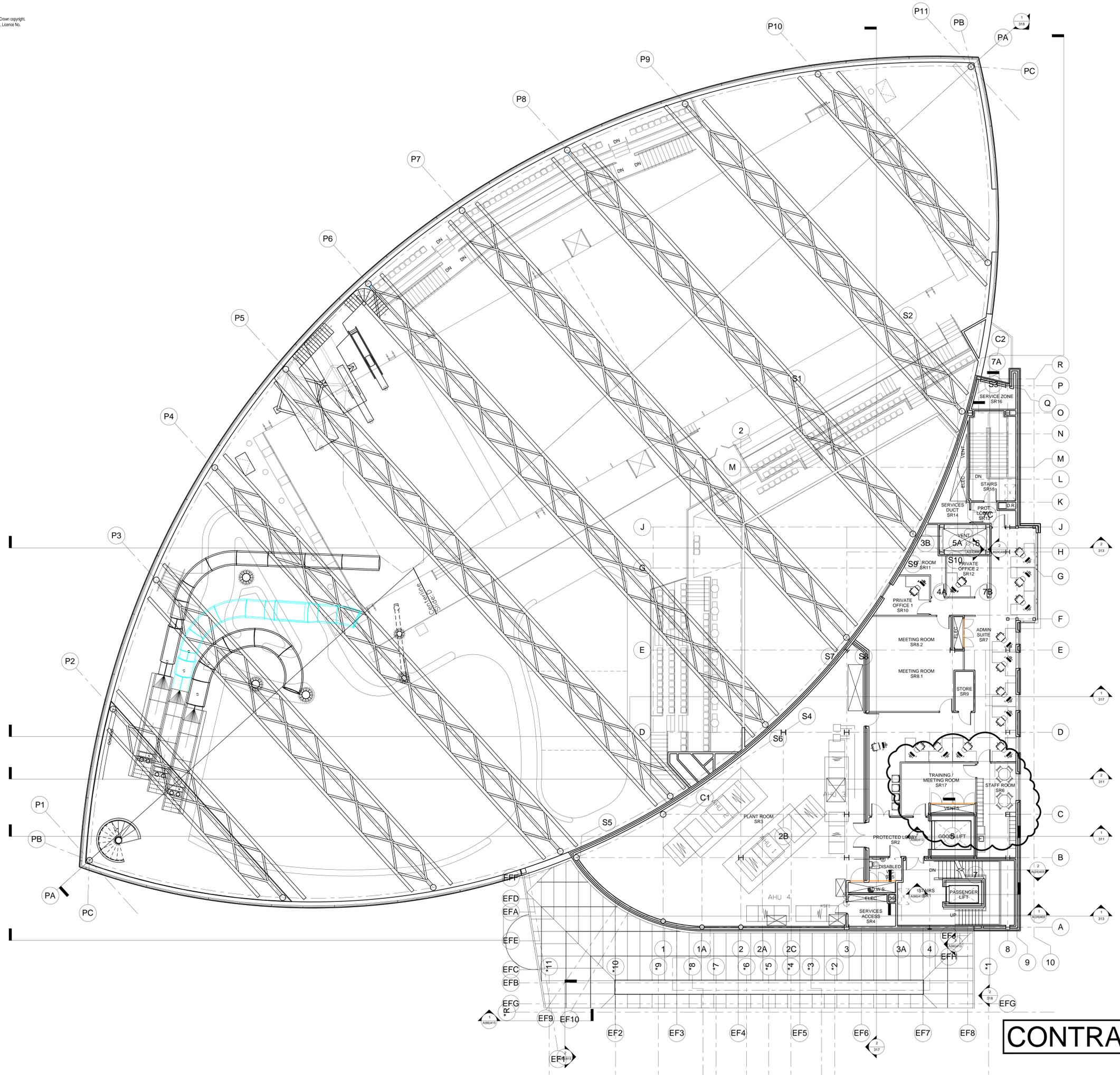
**CONTRACT**



Support Services, Patricia McIlquham, Director.  
ARCHITECTURAL SERVICES, Rob Pedersen, City Architectural Services Officer, Floors 11/12 Tayside House, 28 Crichton Street, Dundee, DD1 3RQ. Tel: 01382 433640 Fax: 01382 433034



No.	Description	Date	Issued
A	Drawing number changed (L00202-1 to L00202)	NOV 10	
B	Spectator & Competitor seating layouts revised, Accommodation North & South stairs/lobbies revised, Passenger lift moved, NE pool hall Fire Escape relocated, Additional steel column at grid 6/K, 2 New SHS at North & South junction of accommodation block/poolhall, Disabled WC & protected lobby from goods lift revised, Roof access stair now a continuation of the accommodation block South stair, Plant room increased in area due to roof access stair being relocated.	FEB 11	
C	Plant Room increased in size, Plant room access & escape doors relocated, Private offices 1, 2, I.T. Room & Disabled WC layouts reconfigured.	MAY 11	
D	See revision clouds	SEPT 11	
E	Added SR8.3 in new meeting room.	NOV 11	



PROPOSED NEW LEISURE POOL AND MULTI STOREY CAR PARK EAST MARKETGAIT, DUNDEE

POOL SECOND FLOOR PLAN

Project number	09-011
Date	30/11/10
Drawn by	
Checked by	
Drawing No. & Revision	L(00)202 - E
Sheet Size & Scale	A0 1:100

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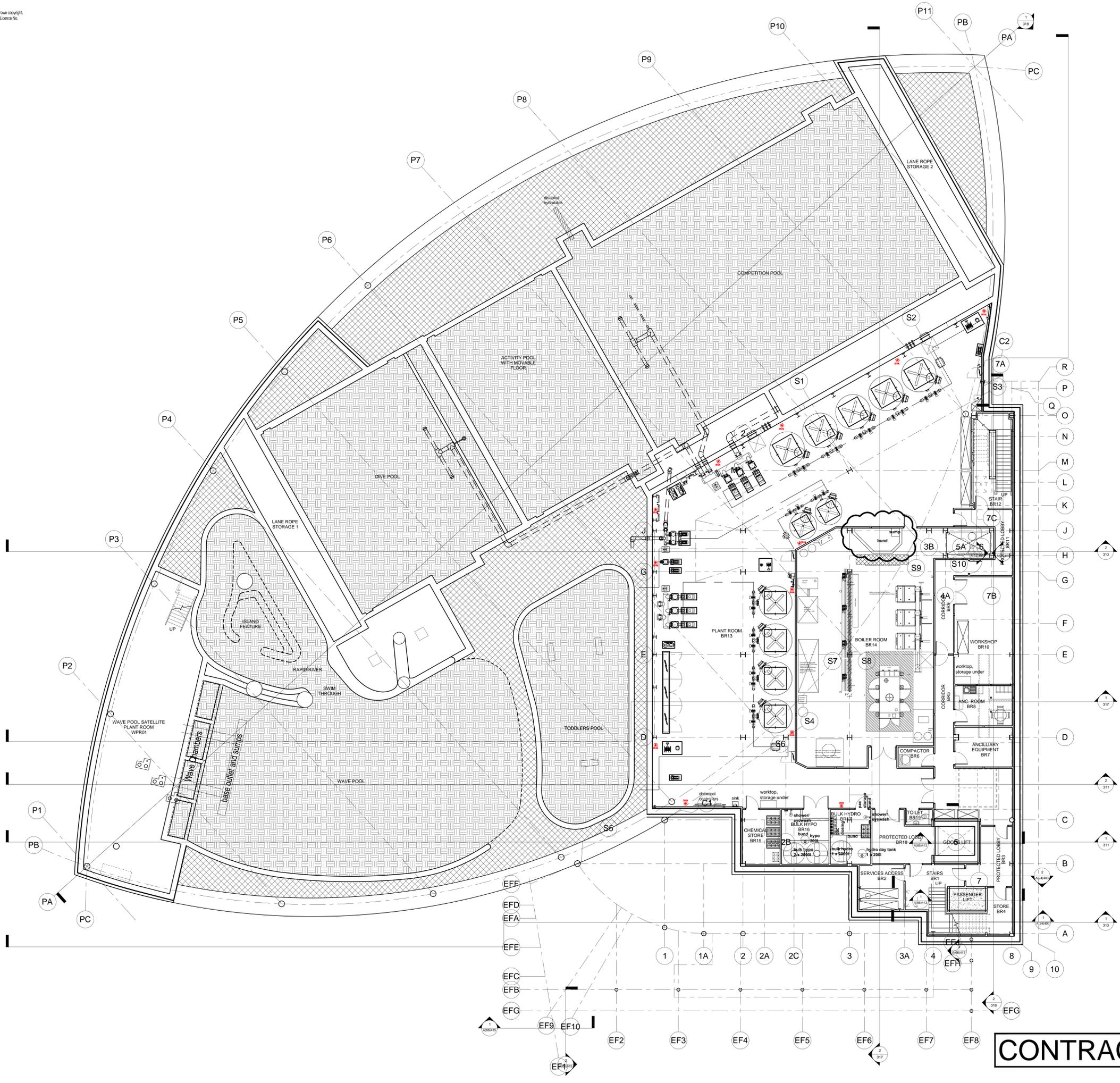
**Dundee City Council**

Support Services, Patricia McIlquham, Director.

ARCHITECTURAL SERVICES, Rob Pedersen, City Architectural Services Officer, Floors 11/12 Tayside House, 28 Crichton Street, Dundee, DD1 3RQ. Tel: 01382 433640 Fax: 01382 433034



No.	Description	Date	Issued by
A	Drawing number changed (T204-H to L(0)204-H)	NOV 10	
B	Plantroom West & North wall positions revised, Boiler Room & Workshop North wall positions revised, pool balance tanks now concrete and access points revised, Accommodation North & South stairs/lobbies revised, Passenger lift moved. Additional steel column at grid 5/K, revised sub-station trench.	FEB 11	
C	Toddler pool, Leisure pool/Rapid river, Wave machine plant room, Leisure balance tank updated & flume supports added.	JULY 11	
D	See revision clouds	SEPT 11	
E	Revised bunds in chemical stores	MARCH 12	
F	Revised leisure balance tank to be as built	MARCH 12	
G	Sink in workshop omitted, replaced with worktop and storage unit. New worktop and storage unit added adjacent to chemical store.	OCT 12	
H	Bund added to Boiler Room	MAY 13	



**CONTRACT**

**PROPOSED NEW LEISURE POOL AND MULTI STOREY CAR PARK EAST MARKETGAIT, DUNDEE**

**POOL BASEMENT FLOOR PLAN**

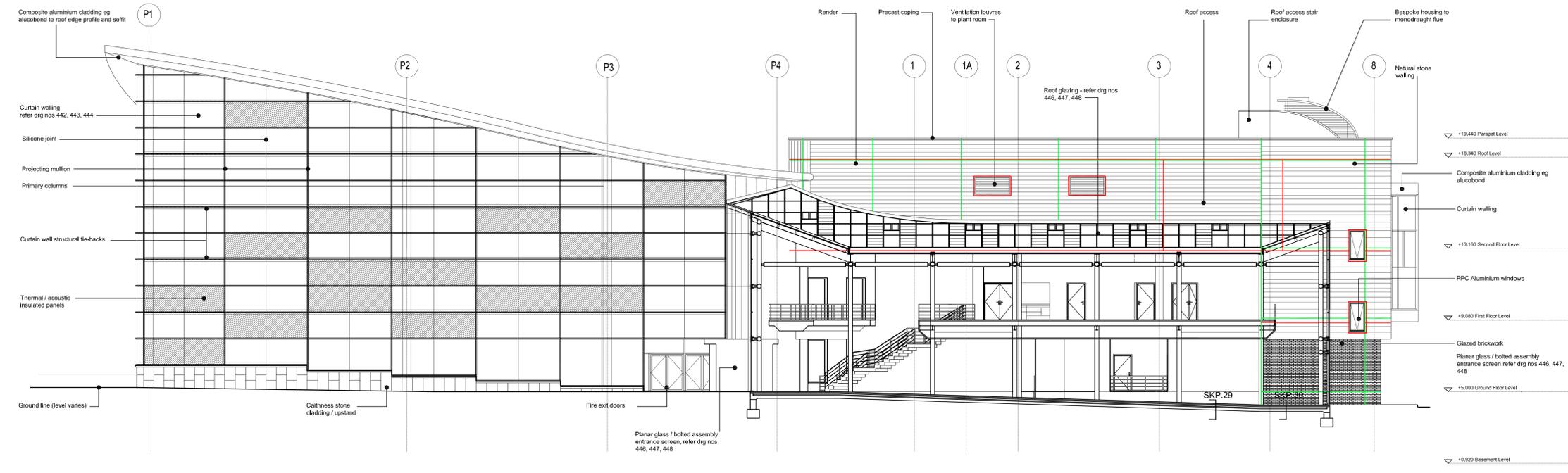
Project number	09-011
Date	30/11/10
Drawn by	
Checked by	
Drawing No. & Revision	L(0)204-H
Sheet Size & Scale	A0 1:100

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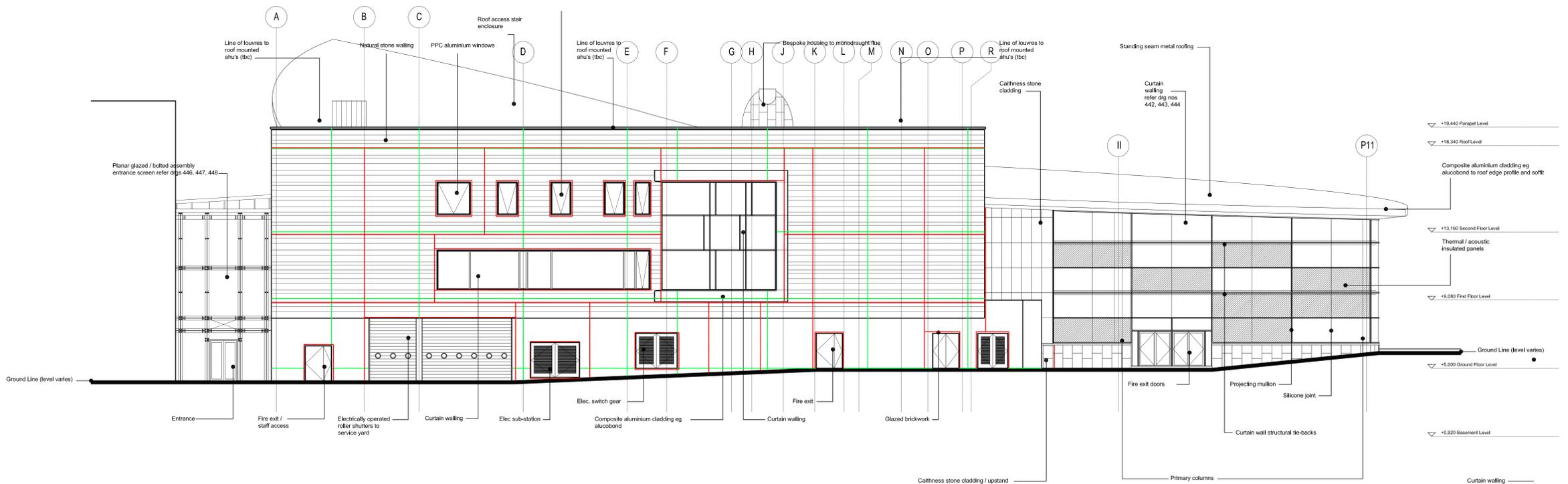


No.	Description	Date	Issued by
A	Drawing number changed (T1301-A to L(00)301)	NOV 10	
B	Block coursing to East Whale Lane revised to match Stone Engineering layouts and windows to south stair repositioned	AUG 11	
C	Location of spandrel panels revised on all elevations. Extent of spandrel panels corrected. NOTE: Total number of spandrel panels remains unchanged.	05.03.12	
D	Location of spandrel panels revised to reflect locations shown on revision B. Spandrel panel location revised on South elevation at high level between grids P1 & P2	09.07.12	



SOUTH SECTIONAL ELEVATION

**LEGEND**  
 Horizontal & Vertical Movement Joints  
 Horizontal & Vertical Cavity Fire Barriers



EAST ELEVATION

**PROPOSED NEW LEISURE POOL AND MULTI STOREY CAR PARK EAST MARKETGAIT, DUNDEE**

**POOL ELEVATIONS SOUTH & EAST**



Project number	09-011
Date	30/11/10
Drawn by	
Checked by	
Drawing No. & Revision	L(00)301 - D
Sheet Size & Scale	A0 1:100

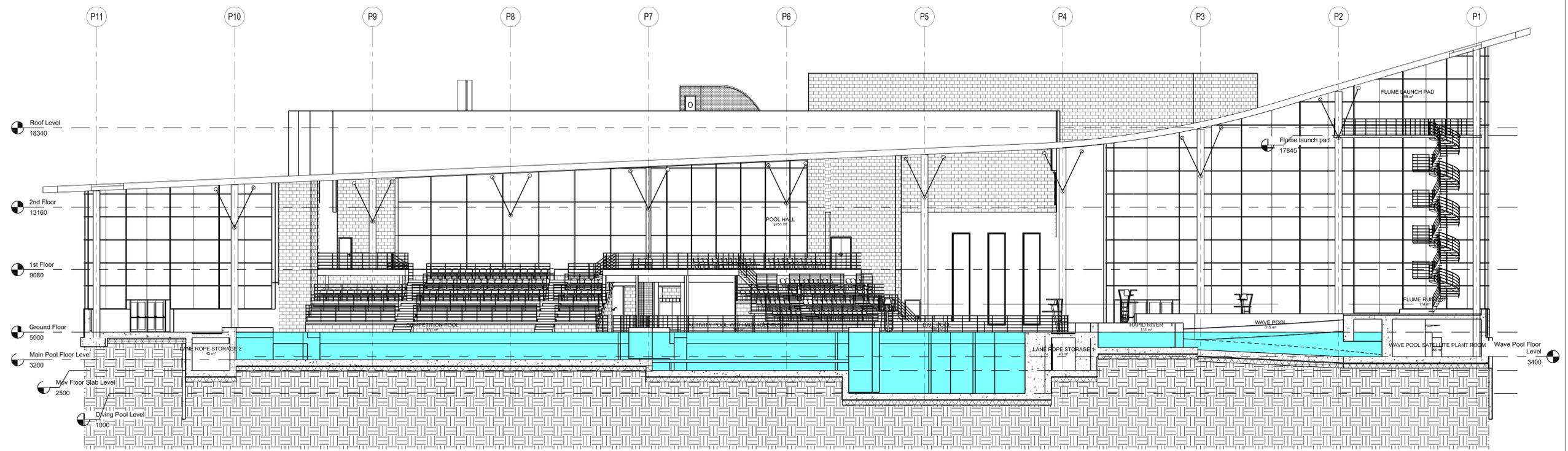
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At timber is to be from the following source, in order of preference (1) Recycled wood and (2) FSC, PEFC. CSA, SFI certified as approved by DEFRA. The Council will not accept timber which has been illegally logged. Reproduced from the Ordnance Survey mapping with the permission of the Controller of Her Majesty's Stationery Office. © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Dundee City Council, Licence No. 100023371 2007.

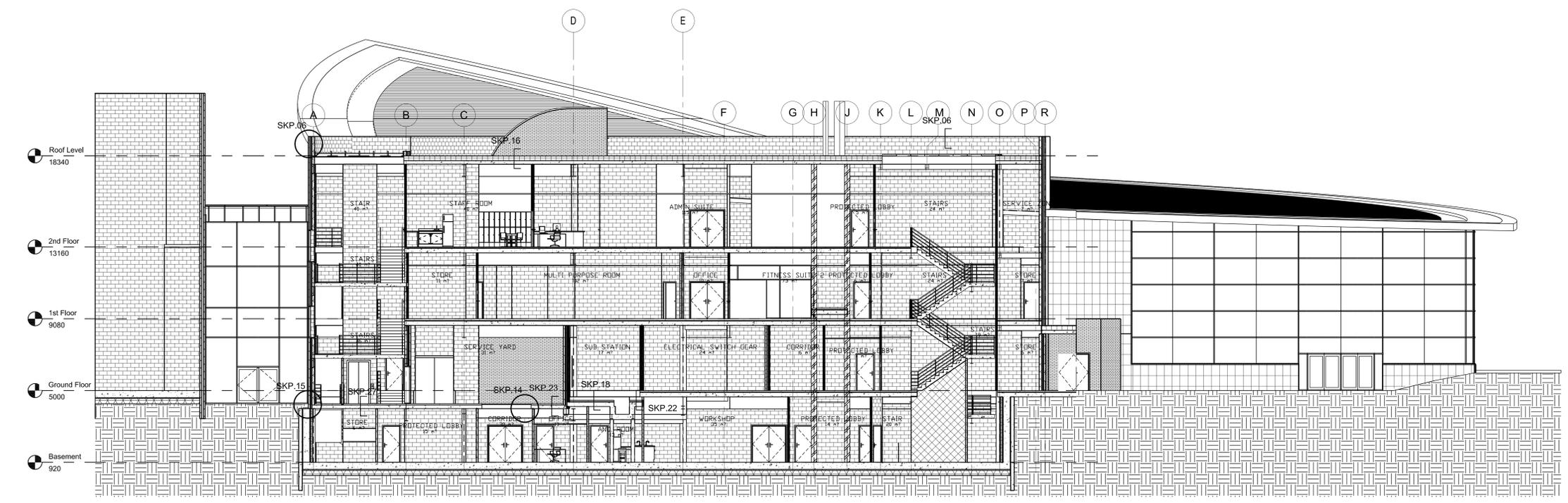




No.	Description	Date	Issued by
A	Drawing number changed (T1318-C to L(00)318	NOV 10	



1 V - Section 11  
1 : 100



2 V - Section 3  
1 : 100

**PROPOSED NEW LEISURE POOL AND MULTI STOREY CAR PARK EAST MARKETGAIT, DUNDEE**

**POOL SECTION 3 & 11**



Project number	09-011
Date	30/11/10
Drawn by	
Checked by	
Drawing No. & Revision	L(00)318 - A
Sheet Size & Scale	A0 1:100

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**APPENDIX 5**

## Specification

D – Groundwork	Page 75
E – In situ Concrete/Large Precast Concrete	Page 90
F – Masonry	Page 126
G – Structural/Carcassing Metal/Timber	Page 157
H – Cladding/Covering	Page 172
J – Waterproofing	Page 223
K – Linings/Sheathing/Dry Partitioning	Page 243
L – Windows/Doors/Stairs	Page 282
M – Surface Finishes	Page 333
N – Furniture/Equipment	Page 402
P – Building Fabric Sundries	Page 464
Q – Paving/Planting/Fencing/Site Furniture	Page 518
R – Disposal Systems	Page 566
Z – Building Fabric Reference Specification	Page 605

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D  
Groundwork

**D20**  
**Excavating and filling**

## D20 Excavating and filling

To be read with Preliminaries/General conditions

### GENERALLY/THE SITE

- 110 SITE INVESTIGATION
- Report: A copy has been issued to the main contractor or can be inspected at Dundee City Council City Engineer's, Ttayside House, Dundee .
- 145 VARIATIONS IN GROUND WATER LEVEL
- Give notice: If levels encountered are significantly different from levels in the site investigation report or previously measured.
- 150 EXISTING SERVICES, FEATURES AND STRUCTURES
- Services: See section A12 for locations.
  - Site features to be retained: See section A12 for details.
  - Structures: See section A34 for details of protection.

### CLEARANCE/EXCAVATING

- 240 ADJACENT EXCAVATIONS
- Requirement: Where an excavation encroaches below a line drawn at an angle from the nearest formation level of another higher excavation, the lower excavation, all work within it and backfilling thereto, must be completed before the higher excavation is made.
  - Angle of line below horizontal: 45°.
  - Backfill material: Hardcore filling as clause 710 or as agreed with the Engineer.
- 242 EXCAVATIONS ADJACENT TO EXISTING BACKFILLED TRENCHES
- Proximity: When width of undisturbed ground between the two excavations will be less than . . . . .
  - Action: Assume that the ground between the trenches is unstable and provide side support accordingly.
- 246 EXCAVATIONS ADJACENT TO PILE SUPPORTED STRUCTURES
- Proximity: When the formation level of an excavation will be lower than the pile cut off level and the distance between the near faces of the pile cap/ ground beam and the excavation is less than the difference in depth between the pile cap and the excavation formations.
    - Complete all work within the excavation and backfilling before casting the pile cap/ ground beam, or
    - Delay the adjacent excavation until 3 days after casting the pile cap/ ground beam.
- 248 BACKFILL TO EXCAVATIONS LOWER THAN FOUNDATION FORMATION LEVEL
- Critical level:
    - Distance between near faces of foundation and lower excavation less than 1 m: 150 mm above foundation formation level.
    - Otherwise: 150 mm above level at which line defined in clause 240 cuts near face of lower excavation.
  - Backfill material:
    - Below critical level: Lean mix concrete.
    - Above critical level: Hardcore filling .

- 250 PERMISSIBLE DEVIATIONS FROM FORMATION LEVELS
- Beneath mass concrete foundations:  $\pm 25$  mm.
  - Beneath ground bearing slabs and r.c. foundations:  $\pm 15$  mm.
  - Embankments and cuttings:  $\pm 50$  mm.
  - Ground abutting external walls:  $\pm 50$  mm, but such as to ensure that finished level is not less than 150 mm below dpc.
- 255 ACCURACY - LINEAR DIMENSIONS
- Permissible deviations from linear dimensions generally: See CIRIA Special publication C709 .
- 283 FORMATIONS FOR PILE SUPPORTED STRUCTURES
- Excavate: To the design formation level.
  - Compact: As necessary to ensure formation will support weight of concrete without settlement.
  - Blinding to formation: Lean mix concrete 50 mm thick.
- 310 UNSTABLE GROUND
- Generally: Ensure that the excavation remains stable at all times.
  - Give notice: Without delay if any newly excavated faces are too unstable to allow earthwork support to be inserted.
  - Take action: If instability is likely to affect adjacent structures or roadways, take appropriate emergency action.
- 320 RECORDED FEATURES
- Recorded foundations, beds, drains, manholes, etc: Treat as clause 335.
  - Contaminated earth: Remove and disinfect as required by local authority.
- 330 UNRECORDED FEATURES
- Give notice: If unrecorded foundations, beds, voids, basements, filling, tanks, pipes, cables, drains, manholes, watercourses, ditches, etc. not shown on the drawings are encountered.
- 335 NEW FOUNDATIONS CROSSING OLD FOUNDATIONS OR WALLS
- Break out: The old foundation/ wall where it crosses the new foundation/ wall:
    - Length of breaking out: Width of the new foundation/ wall plus 50 mm on either side of new foundation.
    - Depth of breaking out: As necessary to permit the construction of the new foundation to its design cross section.
  - Disturbed/ softened soil: When the formation for the old foundation/ wall is deeper than the formation of the new foundation.
    - Excavate: Soil that has been disturbed and/ or softened on either side of the old wall/ foundation, and for 100 mm into undisturbed ground on either side.
  - Step up: The formation for the new foundation as necessary on either side of the old foundation/ wall until the formation is at its design level.
    - Size of steps: Minimum distance between steps 600 mm and maximum height of step 200 mm.
  - Backfilling beneath design formation level: Lean mix concrete.
- 360 EXCESS EXCAVATION
- Excavation taken wider than required:
    - Backfill: As instructed.
  - Excavation taken deeper than required:
    - Backfill: With well graded granular material or lean mix concrete.

## 370 UNDERGROUND STRUCTURES IN LANDSCAPE AREAS

- Generally: Remove walls, roads, foundations, disused services, drains, manholes and the like to minimum depth.
- Minimum depth below finished levels:
  - Grass, ground cover and perennial planting: 500 mm.
  - Shrub planting: 750 mm.
  - Within 2 m of tree planting: 1000 mm.
- Walls and slabs remaining: In every 10 m<sup>2</sup> of wall or slab, make a drainage hole at least 600 mm diameter.

**DISPOSAL OF MATERIALS**

## 450 WATER

- Generally: Keep all excavations free from water until:
  - Formations are covered.
  - Below ground constructions are completed.
  - Basement structures and retaining walls are able to resist leakage, water pressure and flotation.
- Drainage: Form surfaces of excavations and fill to provide adequate falls.
- Removal of water: Provide temporary drains, sumps and pumping as necessary. Do not pollute watercourses with silt laden water.

## 454 GROUND WATER LEVEL, SPRING OR RUNNING WATER

- Give notice: If it is considered that the excavations are below the water table.
- Springs/ Running water: Give notice immediately if encountered.

## 457 PUMPING

- General: Do not disturb excavated faces or stability of adjacent ground or structures.
- Pumped water: Discharge without flooding the site or adjoining property.
- Sumps: Construct clear of excavations. Fill on completion.
  - Locations: Contractor's choice .

## 460 PERMANENT DRAINAGE SYSTEM

- Disposal of water from the excavations through system: Scottish Water/SEPA approval will be required, and water must be passed through a petrol interceptor prior to discharge..

**FILLING**

## 500 PROPOSED FILL MATERIALS

- Details: Submit full details of proposed fill materials to demonstrate compliance with specification, including:
  - Type and source of imported fill.
  - Proposals for processing and reuse of material excavated on site.
  - Test reports as required elsewhere.
- Timing: At least 21 days before starting filling.

#### 510 HAZARDOUS, AGGRESSIVE OR UNSTABLE MATERIALS

- General: Do not use fill materials which would, either in themselves or in combination with other materials or ground water, give rise to a health hazard, damage to building structures or instability in the filling, including material that is:
  - Frozen or containing ice.
  - Organic.
  - Contaminated or noxious.
  - Susceptible to spontaneous combustion.
  - Likely to erode or decay and cause voids.
  - With excessive moisture content, slurry, mud or from marshes or bogs.
  - Clay of liquid limit exceeding 80 and/or plasticity index exceeding 55.
  - Unacceptable, class U2 as defined in the Highways Agency 'Specification for highway works', clause 601.

#### 512 LIMITATION OF SULFATE CONTENT IN FILL MATERIALS

- Test specification: To BS 1377-3.
- Sulfate content: Expressed as SO<sub>4</sub>.
  - Water soluble sulfate (maximum): 1500 mg/L in 2:1 water/ soil extract.
  - Total potential sulfate (maximum): 0.6%.
  - Oxidizable sulfides (maximum): 0.3% of total potential sulfate.
- Certificates of test result: Submit.

#### 520 FROST SUSCEPTIBILITY

- General: Except as allowed below, fill must be non frost-susceptible as defined in Highways Agency 'Specification for Highway Works', clause 801.8.
- Test reports: If the following fill materials are proposed, submit a laboratory report confirming they are non frost- susceptible:
  - Fine grained soil with a plasticity index less than 20%.
  - Coarse grained soil or crushed granite with more than 10% retained on a 0.063 mm sieve.
  - Crushed chalk.
  - Crushed limestone fill with average saturation moisture content in excess of 3%.
  - Burnt colliery shale.
- Frost-susceptible fill: May only be used:
  - At depths below the finished ground surface greater than: 450 mm.
  - Within the external walls of buildings below spaces that will be heated. Protect from frost during construction.
  - Where frost heave will not affect structural elements.

#### 525 TESTING OF SUITABILITY OF FILL MATERIALS BEFORE START OF FILLING

- Laboratory: UKAS/ NAMAS accredited laboratory.
- Submit report to: Structural engineer (two copies).
  - Timing: 21 days before starting filling.
- Samples: Deliver to laboratory as required.
  - Additional requirements: None.
- Tests: As directed.
- Frequency: Submit with tender proposed rate and frequency of testing to demonstrate continuing compliance of imported or reprocessed fill with specified properties.

- 530 **PLACING FILL**
- Surfaces of excavations and areas to be filled: Free from loose soil, topsoil, organic material, rubbish and standing water.
  - Freezing conditions: Do not place fill on frozen surfaces. Remove material affected by frost. Replace and recompact if not damaged after thawing.
  - Adjacent structures, membranes and buried services:
    - Do not overload, destabilise or damage.
    - Submit proposals for temporary support necessary to ensure stability during filling.
    - Allow 14 days (minimum) before backfilling against in situ concrete structures.
  - Layers: Place so that only one type of material occurs in each layer.
  - Earthmoving equipment: Vary route to avoid rutting.
- 535 **COMPACTION GENERALLY**
- General: Compact fill not specified to be left loose as soon as possible after placing.
  - After compaction: Surface of each layer must be well closed, showing no movement under compaction plant, and without cracks, holes, ridges, loose material and the like.
  - Defective areas: Remove and recompact to full thickness of layer using new material.
- 540 **BENCHING IN FILL**
- Adjacent areas: If, during filling the difference in level between adjacent areas of filling exceeds 600 mm, cut into edge of higher filling to form benches 600 mm minimum width and height equivalent to depth of a layer of compacted filling.
  - New filling: Spread and compact to ensure maximum continuity with previous filling.
- 610 **COMPACTED FILLING FOR LANDSCAPE AREAS**
- Fill: Material capable of compaction by light earthmoving plant.
  - Filling: Layers not more than 200 mm thick. Lightly compact each layer to produce a stable soil structure.
- 615 **LOOSE TIP FILLING FOR LANDSCAPE AREAS**
- Filling: Do not firm, consolidate or compact when laying. Tip and grade to approximate levels in one operation with minimum of trafficking by plant.
- 617 **HIGHWAYS AGENCY TYPE 1 UNBOUND MIXTURE**
- Fill: To Highways Agency 'Specification for highway works', clauses 801 and 803:
    - Crushed rock (other than argillaceous rock).
    - Crushed concrete.
    - Recycled aggregates.
    - Crushed non-expansive slag.
    - Well-burned non-plastic colliery shale.
  - Amendments to requirements in Highways Agency 'Specification for highway works': None.
  - Filling: To Highways Agency 'Specification for highway works', clause 802.
- 618 **HIGHWAYS AGENCY TYPE 2 UNBOUND MIXTURE**
- Fill: To Highways Agency 'Specification for highway works', clauses 801 and 804:
    - Crushed rock (other than argillaceous rock).
    - Crushed concrete.
    - Crushed non-expansive slag.
    - Well-burned non-plastic colliery shale.
    - Natural gravel.
    - Natural sand.
  - Amendments to requirements in Highways Agency 'Specification for highway works': None.
  - Filling: To Highways Agency 'Specification for highway works', clause 802.

- 620 SUBGRADE IMPROVEMENT LAYER (CAPPING)
- Fill: To Highways Agency 'Specification for highway works', Table 6/1, Class 6F1 or 6F2.
  - Filling: Place and compact to Highways Agency Specification for highway works, Table 6/1, clause 612 and clause 613.3, 613.9 and 613.10.
- 650 PROTECTION OF COMPACTED FILLING
- Temporary protective filling: Before allowing construction traffic, raise level of compacted cohesive soil filling at least 150 mm above formation level using properly compacted temporary filling.
  - Removal: Remove temporary protective filling from site before permanent construction.
- 700 BACKFILLING AROUND FOUNDATIONS
- Under oversite concrete and pavings: Hardcore as clause 710.
  - Under grassed or soil areas: Material excavated from the trench, laid and compacted in 300 mm maximum layers.
- 710 HARDCORE FILLING
- Fill: Granular material, 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, 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.
    - Crushed non-expansive slag.
    - Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay.
    - Well-burned non-plastic colliery shale.
    - Natural gravel.
    - Natural sand.
  - Filling: Spread and level in 150 mm maximum layers. Thoroughly compact each layer.
- 715 VENTING HARDCORE LAYER
- Fill: Clean granular material, well graded, passing a 75 mm BS sieve but retained on a 20 mm BS sieve. In each layer only one of the following:
    - Crushed hard rock.
    - Crushed concrete, crushed brick or tile, free from plaster, timber and metal.
    - Gravel.
  - Filling: Spread and level in 150 mm maximum layers. Thoroughly compact each layer whilst maintaining enough voids to allow efficient venting.
- 730 BLINDING
- Surfaces to receive sheet overlays or concrete:
    - Blind with:
      - Concrete where shown on drawings; or
      - Sand, fine gravel, or other approved fine material applied to fill interstices. Moisten as necessary before final rolling to provide a flat, closed, smooth surface.
    - Sand for blinding: To BS EN 12620, grade 0/4 or 0/2 (MP).
    - Permissible deviations on surface level: +0 -25 mm.

**D**  
**Groundwork**

**D30  
Piling**

**D30 Piling**

To be read with Preliminaries/ General conditions.

**TENDERING****GENERAL**

- 110 **PILING SPECIFICATION**
- Standard: Comply with the current edition of 'Specification for piling and embedded retaining walls' (SPERW).
  - Substitution of British Standard for SPERW requirements: None.
  - References to Engineer in SPERW: For the purpose of this contract, interpret such references as being to the person named in section A10 as administering the contract on behalf of the Employer.
  - Design working life category: 4.
- 130 **PILES**
- Standard: To SPERW, sections B2-B6, as appropriate to the pile type.
  - Permitted types: Any type of bored pile.
  - Project specification: Submit proposals to cover the SPERW requirements in clause B1.2 and listed under this heading for the chosen pile type.
  - Other requirements: None.
- 170A **BORED CAST-IN-PLACE PILES Tension Piles - Refer to Contract Drawings**
- Standard: To SPERW, section B3.
  - Filling material: Contractor's choice.
  - Pile group designation: 220mm Diameter Tension Mini Piles.
    - Diameter: 220mm.
    - Length: Length will vary. Rocket socket into bedrock to achieve loads as detailed on contract drawings.
    - Reinforcement:
      - Quantity: Submit proposals.
      - Extent: Submit proposals.
    - Other requirements: None.
- 170B **BORED CAST-IN-PLACE PILES Compression only piles - Refer to Contract Drawings**
- Standard: To SPERW, section B3.
  - Filling material: Contractor's choice.
  - Pile group designation: 600mm Diameter Bored End Bearing pile.
    - Diameter: 220mm.
    - Length: Length will vary. .
    - Reinforcement:
      - Quantity: Submit proposals.
      - Extent: Submit proposals.
    - Other requirements: None.

- 195 PROTECTION AGAINST AGGRESSIVE GROUND/ GROUND WATER
- Purpose: To provide protection against hydrocarbon attack. Refer to land assessment (SI) for contamination details .
  - Method: Appropriate concrete grade and cover to reinforcement shall be adopted. .
  - Piles to be treated: All.
  - Aggressive strata/ source of attack: Hydrocarbons in ground water.
  - Extent of treatment: Full length of pile.

#### SYSTEM PERFORMANCE

- 210 CONTRACTOR DESIGN
- Standard: To BS 8004.
  - Design responsibility:
    - Piles: Complete design in accordance with SPERW, clause B1.4, option 2.
    - Other: None.
  - Pile layout: As contract drawings.
  - Site investigation: Confirm as adequate or propose further investigation as considered necessary.
  - Performance criteria for piles: Refer contract drawings.
  - Other requirements: None.
  - Submission of information: As required by SPERW, table B1.1 and elsewhere, as appropriate for the pile type, materials and tests specified.
    - Amendments to requirements specified in SPERW for information required:
      - Prior to commencing design: None.
      - Prior to commencing the works: Confirmation that installation of piles will not damage adjacent structures/ services.
- 230 GROUND INVESTIGATION
- Report: Refer MacLeod Consulting land Assessment Report.
    - Datum for borehole logs: As site datum.
  - Obstructions/ voids: As described in the ground investigation report.
- 280 PERFORMANCE SPECIFICATION CRITERIA FOR PILES
- Pile group designation: 220mm Diameter Mini piles - Refer Contract Drawings.
  - References for piles to be load tested:
    - Preliminary test: Not required.
    - Proof test: Not required.
  - Requirements for test piles: As for working piles.
  - Criteria:
    - Specified working load
      - Axial (SWL): 525 kN compression, Tension 275 kN.
      - Other: None.
    - Design verification load (DVL): Submit proposals.
    - Required factor of safety (minimum): 1.5.
    - Permitted settlement at DVL: To be agreed.
    - Permitted settlement at DVL + ½ SWL: To be agreed.

**280A PERFORMANCE SPECIFICATION CRITERIA FOR PILES**

- Pile group designation: 600mm Diameter piles - Refer Contract Drawings.
- References for piles to be load tested:
  - Preliminary test: Not required.
  - Proof test: Not required.
- Requirements for test piles: As for working piles.
- Criteria:
  - Specified working load  
Axial (SWL): 2800 kN compression.  
Other: None.
  - Design verification load (DVL): Submit proposals.
  - Required factor of safety (minimum): Submit proposals.
  - Permitted settlement at DVL: To be agreed.
  - Permitted settlement at DVL + ½ SWL: To be agreed.

**285 DAMAGE TO ADJACENT STRUCTURES AND SERVICES**

- Permissible damage criteria:
  - Structures: No damage permitted.
  - Services: No damage permitted.

**290 BASIS FOR SETTING OUT**

- Site datum: Local datum .
- Site grid: Refer contract drawings.

**300 COMMENCING SURFACE**

- Level: From agreed working platform.

**310 PILE LENGTH – PENETRATION**

- Pile group designation: All piles.
- Pile cut-off level: 75 mm above underside of pile cap.
  - Stratum: Locate pile in bedrock.
  - Penetration of pile into stratum (minimum): Contractor's choice to meet required loading requirements.
  - Other requirements: None.

**PRODUCTS****470 CONCRETE GENERALLY**

- Standards: To BS 8500-2 and SPERW, section B19.
- Project compressive strength testing of concrete: Required as SPERW, clause B19.8.
- Exchange of information: Provide concrete producer with information required by BS 8500-1, clauses 4 and 5.

**530 REINFORCEMENT GENERALLY**

- Steel reinforcement: To BS 4482.
  - Type/ Strength grade: Ribbed bar, grade B500B.
- Supplier: Firm holding a valid certificate of approval issued under a product certification scheme operated by a third party certification body with appropriate Category 2 accreditation from the United Kingdom Accreditation Service (UKAS).
- Other requirements: none.

**540 COVER TO REINFORCEMENT**

- Cover (nominal): 75 mm.
- Method of ensuring correct cover: Submit details.

- 550 LAPS IN REINFORCEMENT
- Length (minimum): 40 x bar diameter.

#### EXECUTION

- 610 METHOD STATEMENT
- Requirement: Submit proposed method of installation to achieve the design parameters, including:
    - Details of equipment.
    - Programme showing sequence and resources.
    - Confirmation that performance requirements for load and settlement will be achieved.
- 615 RECORDS AND SUBMISSION OF INFORMATION DURING THE WORKS
- Generally: As required in SPERW, tables B1.1, B1.6 and elsewhere, as appropriate for the pile types, materials and tests specified.
  - Amendments to requirements: Report integrity test results and findings within 5 days of testing.
- 650 PERFORMANCE OF WORKING PILES
- Substandard performance: Give notice if the performance of any pile will be less than that of a similar pile whose test behaviour has been accepted.
- 680 PROHIBITION OF SUPPORT FLUID
- Usage: Not permitted.
- 685 EXCAVATED MATERIAL
- Disposal: Contractor's responsibility.
- 690 DISPOSAL OF PILE HEADS
- Cutting down and disposal: Contractor's responsibility.
- 696 METHOD OF PLACING PILE FILLING
- Designation: All.
    - Requirement: Contractor to submit proposals.
- 755 PREPARATION OF PILE HEADS FOR INTEGRITY TESTING
- Preparation: To suit test method.
  - Inconsistencies: Submit report on inconsistencies which could inhibit execution or interpretation of test.
- 760 PILE INTEGRITY TESTING - GENERAL
- Method: Submit proposals.
    - Satisfactory evidence in support of proposals: Submit.
  - Period between casting and testing (minimum): 14 days.
  - Piles to be tested:
    - Pile group designation: All.
    - Number of piles to be tested: All.
    - Locations: As contract drawings.
  - Programme: To be agreed.
  - Other requirements: None.

- 785     **AXIAL MAINTAINED LOAD PROOF TESTING OF WORKING PILES**
- Type of test: Compression.
  - Pile group designation: 600mm Diameter Bored Piles.
    - Number of tests: 2.
    - Test pile construction: As for working piles.
    - Test load (maximum): 1.5 times working load.
  - Special requirements: None.
- 785A    **AXIAL MAINTAINED LOAD PROOF TESTING OF WORKING PILES**
- Type of test: Tension and Compression.
  - Pile group designation: 220mm Diameter mini piles for tension and compression.
    - Number of tests: 2.
    - Test pile construction: As for working piles.
    - Test load (maximum): 1.5 times working load.
  - Special requirements: None.
- 810     **TIMING OF PILE TESTING**
- Period between installation and load testing (minimum): Until concrete achieves sufficient strength to avoid damage when tested.
- 815     **REMOVAL OF TEMPORARY WORKS USED FOR TESTING**
- Period between completion of piles and removal of temporary works: 14 days.
- 825     **WORK TO PILE HEADS AFTER TESTING**
- Preliminary/ anchor piles: Not applicable .
  - Working piles: Cut out damaged concrete and Cut back concrete to expose reinforcement to provide full lap between pile reinforcement and pile cap starter bars .
- COMPLETION**
- 910     **HEALTH AND SAFETY FILE**
- Piling completion report: Collate and submit a full set of pile records for inclusion in the health and safety file.
  - Content and date for submission: As SPERW, clause B1.12.2.
    - Record plan: Give the number of each pile and its final location relative to nearest grid line.
    - Additional requirements: When sectional completion of piling is agreed, submit completion report for each section within two weeks of installation of final pile in section.
- 920     **PILING GUARANTEE**
- Type: Insurance backed. Administered by an independent insurance protection company.
    - Guarantee period (minimum): 12 years from completion .
    - Documentation: Provide certificates/ guarantees at completion of piling works.

**E**

**In situ concrete/Large precast concrete**

**E05**

**In situ concrete construction generally**

## E05 In situ concrete construction generally

To be read with Preliminaries/General conditions.

### 215 CONTRACTOR DETAILING OF REINFORCEMENT

- Extent: All Insitu Concrete as defined on latest Engineers drawings 101, 102, 105, 106 .
- Requirement: Complete the detailing and scheduling of the reinforcement.
- Standards:
  - Design: To BS 8007 and BS 8110-1.
  - Drawings: To BS EN ISO 3766.
  - Reinforcement schedules: To BS 8666.
- Design information:
  - Designed reinforcement: Marked up general arrangement drawings and Schedule.
  - Additional reinforcement:
    - Control of cracking: Provide additional reinforcement and adjust spacing of reinforcement as design standard requirements for the control of cracking.
    - Other: Refer drawings noted above for information on reinforcement requirements.
- Reinforcement:
  - Order of priority when clashes occur: Refer Engineer.
  - Other detailing requirements: None.
- Finished product: To comply with the requirements of design standard.

### DESIGN OF CONCRETE PLINTHS

The contractor will be responsible for the detailed design of such plinths as are required for the specialist services contractors (ref Pool Plant Room Layout, Boiler Room Layout, 2nd Floor Plant Room Layout and Roof Layout),

### 225 TEMPERATURE RECORDS

- Requirement: Throughout period of concrete construction record:
  - Daily: Temperature at intervals of four hours (maximum).
  - Under adverse temperature conditions: Temperature at commencement and end of placing.
- Equipment: Contractor's choice .
  - Location: In the shade, close to the structure.

### 235 OPENINGS, INSERTS AND FIXINGS

- Requirement: Collate all information.
- Submit: Details where openings, inserts and fixings can only be accommodated by adjustments to reinforcement.
- Locate reinforcement: To ensure specified minimum cover at openings and inserts and to be clear of fixing positions.

### 290 ACCURACY OF CONSTRUCTION

- Reference system: To BS 5964-1
- Element shape and position: To Section 7 of the 'National Structural Concrete Specification for Building Construction'.
  - Substitution of alternative requirements: None.

### 300 LEVELS OF STRUCTURAL CONCRETE FLOORS

- Tolerances (maximum):
  - Level of floor: As Preliminaries section A33.
  - 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.
- 315 SURFACE REGULARITY OF CONCRETE FLOORS TO BS 8204 - TOLERANCE CLASS R1
- Location: All surfaces.
  - Abrupt changes: Not permitted.

E

**In situ concrete/Large precast concrete**

**E10**

**Mixing/casting/curing in situ concrete**

## E10 Mixing/casting/curing in situ concrete

To be read with Preliminaries/General conditions.

### CONCRETE

- 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.
- 105 DESIGNATED CONCRETE All Insitu Concrete. Refer latest drawing 101 for location plan
- Designation: RC40/50.
  - Fibres: Not required.
  - Aggregates:
    - Size (maximum): 20 mm.
    - Coarse recycled aggregates: No special requirements.
    - Additional aggregate requirements: None.
  - Special requirements for cement/ combinations: None.
  - Consistence class: Contractor's choice.
  - Chloride class: Normal.
  - Admixtures: Concrete producer's choice.
  - Additional mix requirements: None.

### MATERIALS, BATCHING AND MIXING

- 215 READY-MIXED CONCRETE
- Production plant: Currently certified by a body accredited by UKAS to BS EN 45011 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 .
- 221 INFORMATION ABOUT PROPOSED CONCRETES
- Submit when requested:
    - Details listed in BS 8500-1, clause 5.2.
    - Additional information: Data concerning the anticipated rate of strength gain.
- 225 CHANGES TO SPECIFICATION
- Changes to specification of fresh concrete (outside concrete producer's responsibility): Submit proposals.
- 230 INTERRUPTION OF SUPPLY DURING CONCRETING
- Elements without joints: Where elements are detailed to be cast in a single pour without joints, make prior arrangements for a back-up supply of concrete.
  - Elsewhere:
    - Preparation: Manage pour to have a full face, and have materials available to form an emergency construction joint while concrete can still be worked.
    - Before pour is completed: Submit location and details of joint, make proposals for joint preparation.

## 415 ADMIXTURES

- Calcium chloride and admixtures containing calcium chloride: Do not use .

## 490 PROPERTIES OF FRESH CONCRETE

- Adjustments to suit construction process: Determine with concrete producer . Maintain conformity to the specification .

**PROJECT TESTING/ CERTIFICATION**

## 505 PROJECT TESTING OF CONCRETE - GENERAL

- Testing: To BS 8500-1, 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.

## 508 REGULAR PROJECT TESTING OF CONCRETE

- Tests: Compressive strength.
- Sampling:
  - Point: At point of placing.
  - Rate: One sample per 60 m<sup>3</sup> .
- Other requirements: none.

## 520 TESTING LABORATORY

- Laboratory: Accredited by UKAS or other national equivalent.
  - Name and UKAS reference number: Submit well in advance of making trial mixes or concrete for use in the works.

## 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.

## 550 BROKEN CUBES FROM FAILED STRENGTH TESTS

- Nonconformity: Keep separately the pieces of each cube which fail to meet the conformity requirements for individual results.
- Period for keeping cubes: Obtain instructions.

**PLACING/ COMPACTING/ CURING AND PROTECTING**

## 610 CONSTRUCTION/ SEQUENCE/ TIMING REQUIREMENTS

- Hit and miss casting of walls / slabs is not permitted. Refer Engineer for clarification .

## 620 TEMPERATURE OF CONCRETE

- Application: Concrete slabs with thickness greater than 500mm.
- Objective: Limit maximum temperature of concrete to minimize cracking during placing, compaction and curing. Take account of:
  - High temperatures and steep temperature gradients: Prevent build-up during first 24 hours after casting. Prevent coincidence of maximum heat gain from cement hydration with high air temperature and/ or solar gain.
  - Rapid changes in temperature: Prevent during the first seven days after casting.
- Proposals for meeting objective: Submit.

**640 CONSTRUCTION JOINTS**

- Location of joints: Submit proposals when not shown on drawings.
- Preparation of joint surfaces: Remove surface laitance and expose aggregate by lightly brushing and spraying. Joint surface to be clean and damp immediately before placing fresh concrete.

**648 ADVERSE TEMPERATURE CONDITIONS**

- Requirement: Submit proposals for protecting concrete when predicted ambient temperatures indicate risk of concrete freezing or overheating.

**650 SURFACES TO RECEIVE CONCRETE**

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

**660 INSPECTION OF SURFACES**

- Notice: Give notice to allow inspections of reinforcement and surfaces before each pour of concrete.
  - Period of notice: Obtain instructions.
- Timing of inspections: To be agreed.

**670 TRANSPORTING**

- General: Avoid contamination, segregation, loss of ingredients, excessive evaporation and loss of workability . Protect from heavy rain .
- Entrained air: Anticipate effects of transport and placing methods in order to achieve specified air content .

**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.

## 720 VIBRATORS

- General: Maintain sufficient numbers and types of vibrator to suit pouring rate, consistency and location of concrete .
- External vibrators: Obtain approval for use .

## 730 PLASTIC SETTLEMENT

- Settlement cracking: Inspect fresh concrete closely and continuously wherever cracking is likely to occur, including the top of deep sections and at significant changes in the depth of concrete sections .
  - Timing: During the first few hours after placing and whilst concrete is still capable of being fluidized by the vibrator .
- Removal of cracks: Revibrate concrete .

## 810 CURING GENERALLY

- Requirement: Keep surface layers of concrete moist throughout curing period, including perimeters and abutments, by either restricting evaporation or continuously wetting surfaces of concrete.
  - Surfaces covered by formwork: Retain formwork in position and, where necessary to satisfy curing period, cover surfaces immediately after striking.
  - Top surfaces: Cover immediately after placing and compacting. 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 .

## 812 PREVENTING EARLY AGE THERMAL CRACKING

- Deep lifts or large volume pours: Submit proposals for curing to prevent early age thermal cracking, taking account of:
  - Temperature differentials across sections .
  - Coefficient of thermal expansion of the concrete .
  - Strain capacity of the concrete mix (aggregate dependent) .
  - Restraint .

## 818 CURING PERIODS GENERALLY

- Minimum periods: When not otherwise indicated to BS 8110-1, table 6.1.

## 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 .

**E**

**In situ concrete/Large precast concrete**

**E20**

**Formwork for in situ concrete**

## 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.
- 132    **PROPPING**
- General: Prevent deflection and damage to the structure. Carry down props to bearings strong enough to provide adequate support throughout concreting operations.
  - Method statement: Submit proposals for prop bearings and sequence of propping/ repropping and backpropping.
    - Timing of submission: To be agreed between the permanent works designer and the temporary works coordinator .
- 170    **WORK BELOW GROUND - PILE CAPS and - RETAINING WALLS**
- Casting vertical faces against faces of excavation: Permitted.
    - Requirements:
      - Increase width of section to give nominal cover to reinforcement of 75 mm;
      - Prevent contamination of concrete by loose soil; and
      - 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.
- 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.

## 350 FORM TIES

- Metal associated with form ties/ devices: Prohibited within cover to reinforcement. Compatible with reinforcement metal.

## 380 VOID FORMERS

- Manufacturer: Contractor's choice .
- Product reference: Contractor's choice .

## 470 RELEASE AGENTS

- Use: All formwork.
- General: Achieve a clean release of forms without disfiguring the concrete surface.
- Product types: Compatible with formwork materials, specified formed finishes and subsequent applied finishes. Use the same product throughout the entire area of any one finish.
- Protection: Prevent contact with reinforcement, hardened concrete, other materials not part of the form face, and permanent forms.

## 480 SURFACE RETARDERS

- Use: Obtain approval.
- Reinforcement: Prevent contact with retarder.

**STRIKING**

## 510 STRIKING FORMWORK

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

## 521 MINIMUM PERIOD FOR RETAINING FORMWORK/ TEMPORARY SUPPORTS IN POSITION

- Concrete strength at time of formwork removal (minimum): As BS 8110, clause 6.2.6.3.
- Assumptions: None.
  - Before removing formwork: Submit proposals if assumptions will not be realised.
- Method to be used in assessing early age strength of concrete: Submit proposals.

**FORMED FINISHES**

## 600 SAMPLES OF FINISHES AVAILABLE FOR INSPECTION

- Samples available for inspection:  
Finish E20/640: ??? .

## 610 BASIC FINISH

- Requirements: Face fully compacted and to tolerance, otherwise no particular requirements.
- Use: Faces below ground level.

**640 ROUGH BOARD FINISH**

- Forms or form linings: Rough textured softwood boards with smooth planed joint faces.
  - Width of boards: 100 mm .
  - Moisture content at time of casting: 18-25%.
- Arrangement of boards: Vary textures to give uniform overall effect.
  - Orientation of boards: Horizontal .
  - End joints: Randomly staggered .
  - Nail heads: Flush with surface.
- Surface blemishes: Penetration of grout between boards not permitted. Wet pre-assembled forms with clean water before erecting and keep damp until concrete is placed.
- Formwork tie holes: In a regular pattern and filled with matching mortar.

**750 ARRISES, MARGINS AND JUNCTIONS**

- Requirements:  
As drawings.

E

**In situ concrete/Large precast concrete**

**E30**

**Reinforcement for in situ concrete**

## E30 Reinforcement for in situ concrete

To be read with Preliminaries/ General conditions.

### REINFORCEMENT

#### 110 QUALITY ASSURANCE OF REINFORCEMENT

- Standards:
  - Reinforcement: To BS 4449, BS 4482, BS 4483 or BS 6744.
  - Cutting and bending: To BS 8666.
- Source of reinforcement: Companies holding valid certificates of approval for product conformity issued by the UK Certification Authority for Reinforcing Steels (CARES).

#### 150 RIBBED BAR REINFORCEMENT

- Standard: To BS 4449.
- Strength grade: B500B.

#### 210 STANDARD FABRIC REINFORCEMENT

- Standard: To BS 4483.
- Strength grade: B500B.

### WORKMANSHIP

#### 310 CUTTING AND BENDING REINFORCEMENT

- General: To schedules and to BS 8666.
- Bending on site, including minor adjustments: Obtain instructions.

#### 320 PROTECTION OF REINFORCEMENT

- Dropping from height, mechanical damage and shock loading: Prevent.
- Cleanliness of reinforcement at time of pouring concrete: Free from corrosive pitting, loose millscale, loose rust and contaminants which may adversely affect the reinforcement, concrete, or bond between the two.

#### 410 LAPS OR SPLICES

- Details not shown on drawings: Obtain instructions.

#### 451 FIXING REINFORCEMENT

- Standard: To BS 7973-1 and -2.
- Installation: In addition to any spacers and chairs shown on drawings or schedules, provide adequate support, tie securely and maintain the specified cover.
- Tying:
  - Wire type: 16 gauge black annealed. Use stainless steel wire for stainless steel reinforcement.
  - Ends of tying wire: Prevent intrusion into the concrete cover. Remove loose ends.
- Compatibility of metals: Prevent contact between ordinary carbon steel and stainless or galvanized reinforcement.

#### 470 TOLERANCES ON COVER

- Tolerance (maximum): Refer drawings and BS 8110-1 .
- Checking specified cover dimensions: Before concreting check that cover dimensions will be achieved.

## 510 RUST STAINING

- Staining of surfaces of concrete which will be exposed to view in the finished work: Prevent.

## 520 COVER METER SURVEY

- Purpose of survey: To check positions of reinforcement and that the specified cover has been achieved.
- Type of cover meter: A magnetic induction digital display type selected to suit arrangement and type of reinforcement.
  - Use: In accordance with recommendations of BS 1881-204 and manufacturer as appropriate to yield accurate results.
  - Surveyor: Experienced with cover meter surveys.
  - Calibration: At the outset and thereafter regularly at 45 minute (maximum) intervals.
- Locations for checking: Include columns, beams, cantilevers, slab soffits and all faces exposed to the weather in the finished structure.
- Timing: As soon as practicable after casting.
  - Notification: Give adequate notice.
- Results: Submit. Notify immediately where specified cover has not been achieved.

**E**

**In situ concrete/Large precast concrete**

**E40**  
**Designed joints in in situ concrete**

**E40 Designed joints in in situ concrete**

To be read with Preliminaries/General conditions.

- 120    **CONSTRUCTION/ MOVEMENT JOINTS GENERALLY**
- Accuracy: Position and form joints accurately, straight, well-aligned and truly vertical or horizontal or parallel with setting out lines of the building.
  - Modifications to joint design or location: Submit proposals.
  - Placing concrete to form movement joints:
    - Maintain effectiveness of joints. Prevent concrete entering joints or penetrating or impregnating compressible joint fillers.
    - Do not place concrete simultaneously on both sides of movement joints.
- 132    **ADDITIONAL CONSTRUCTION JOINTS**
- Joints additional to those required by designer: Permitted, but subject to restrictions in section E10 .
  - Approval of additional joints: Submit proposals.
- 210    **FORMED JOINTS**
- Forms/ stop ends generally: Rigid and grout-tight.
  - Forms/ stop ends for projecting continuity reinforcement: To accommodate bars or fabric without temporary bending or displacement.
- 211    **FORMED JOINTS IN CONCRETE WEARING SURFACES**
- Temporary forms: Square edged with a steel top surface.
  - Placing concrete: Compact thoroughly at edges to give level, closely abutted joints with no lipping.
- 230    **PREPARATION OF CONSTRUCTION JOINTS**
- Roughening of joint surfaces: Select from:
    - Brushing and spraying: Remove surface laitance and expose aggregate finish while concrete is still green.
    - Other methods: Submit proposals.
  - Condition of joint surfaces immediately before placing fresh concrete: Clean and damp.
- 260    **SAWN CRACK INDUCING GROOVES**
- Groove dimensions:
    - Depth: Not less than one quarter the depth of the slab .
    - Width: As narrow as practicable.
  - Sawing: Sufficiently early to prevent random cracking (within 24 hours of casting slab) and to produce strong, well defined arrises.
  - Groove filling: Sealant.
- 310    **FLEXIBLE WATERSTOPS**
- Manufacturer: Refer Contract Drawings.
    - Product reference: Refer Contract Drawings.
  - Junctions and angles: Use factory formed junction pieces.
  - Placing concrete: Fully compact concrete around waterstops with no voids or porous areas.

- 320     **HYDROPHILIC WATERSTOPS**
- Manufacturer: Fosroc Limited, Drayton manor Business Park, Coleshill Road, Tamworth, Staffordshire, B78 3TL.
    - Product reference: Supercast SW20.
  - Location: Refer Contract Drawings.
  - Method of fixing: On smooth surface, Supercast SW Adhesive, on uneven surfaces Supercast SWX.
  - Condition of concrete surface at time of fixing: Clean and free from ponded or running water.
  - Protection: Prevent wetting of exposed sections of waterstop.
- 530     **SEALANT At construction joints**
- Manufacturer: Contractor's choice.
    - Product reference: Agree with Engineer.
    - Colour of surfaces exposed to view: Agree with CA.
  - Preparation and application: As section Z22.
- 545     **COMPRESSIBLE SEALING STRIP SYSTEM Between wallhead and underside of Steel Beams**
- Manufacturer: As clause 545A.
    - Product reference: Firepro Intumescent Expansion Joint.
    - Colour: TBC.
- 545A    **COMPRESSIBLE SEALING STRIP SYSTEM**
- Manufacturer: Rockwool Ltd.
    - Web: [www.rockwool.co.uk](http://www.rockwool.co.uk).
    - Email: [info@rockwool.co.uk](mailto:info@rockwool.co.uk).
    - Product reference: FirePro intumescent expansion joint
  - Size: 32 x 50 mm.

**E**

**In situ concrete/Large precast concrete**

**E41**

**Worked finishes to in situ concrete**

**E41 Worked finishes to in situ concrete**

To be read with Preliminaries/ General conditions.

- 145    **CONTROL SAMPLES**
- Sample areas that are part of finished work: scored finish, 2 m<sup>2</sup>.
  - Location: To be agreed.
  - Approval of appearance: Obtain before proceeding with remainder of the work.
- 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.
- 220    **SCORED FINISH**
- Surface on completion: Roughened, irregular pattern.
    - Scoring tool: Stiff brush.
- 520    **SURFACE SEALER**
- Manufacturer: As Clause 520A.
    - Product reference: Nitoflor Cureseal.
  - Substrate:
    - Moisture content: As recommended by sealer manufacturer. Test relative humidity to BS 8203, Annex A where required to verify suitability.
    - Condition prior to application: Cured, clean and free from contaminants.
  - Primer: Not required.
  - Application: Evenly to dry surfaces to form an effective seal but without a glossy finish.
- 520A    **SURFACE SEALER**
- Manufacturer: Fosroc Ltd.
    - Web: [www.fosroc.com](http://www.fosroc.com).
    - Email: [uk@fosroc.com](mailto:uk@fosroc.com).
    - Product reference: Nitoflor Cureseal
  - Coats: Two.
- 530    **SLIP RESISTANCE TESTING OF WEARING SURFACES**
- Test: To BS 7976-2 using a Transport Research Laboratory (TRL) Pendulum.
    - Timing: Give adequate notice.
    - Test results: Submit, inclusive of slip resistance values (pendulum test value [PTV]), in the wet and dry states.

E

In situ concrete/Large precast concrete

E42

Accessories cast into in situ concrete

**E42 Accessories cast into in situ concrete**

**To be read with Preliminaries/ General conditions.**

**GENERAL****110 ACCESSORIES SPECIFIED ELSEWHERE**

- Item/ location: Pipe Sleeves through basement slab / basement retaining walls.

**PRODUCTS****310 HOLDING DOWN SYSTEMS**

- Bolts: Straight Holding Down Bolts to BS 7419.
  - Specification: Hexagonal headed to BS 7419.
  - Grade: 8.8.
  - Diameter: As Contract drawing.
  - Coating: Galvanized.
- Bolt box: As Contract drawings .
- Anchorage: As detailed.
- Other requirements: None.

**330 ANCHOR BOLTS**

- Material: As specified on Contract drawings.
- Manufacturer: Hilti (refer Contract drawings).
  - Product reference: Refer Contract drawings.

**380 DUCTS THROUGH SLABS THROUGH RETAINING WALLS**

- Material: Contractor's choice.
- Shape Circular..
  - Size: As detailed.
- Location: As detailed.
- Other requirements: None.

**390 GALVANIZED COATINGS**

- Standard: To BS 7371-6 and BS EN ISO 1461.
- Galvanizing: Applied and passivated by component manufacturer. Threaded items tapped after galvanizing.

**EXECUTION****610 HOLLOW ACCESSORIES**

- Filling/ sealing: Temporally fill or seal accessory to prevent ingress of grout during concreting. Leave filling/ seals in position until accessory is used.

**620 TEMPORARY SUPPORTS**

- Location: Provide to hold accessories for casting into unshuttered surface of concrete, set at a level that will not adversely affect finish of concrete surface remote from accessory.
- Rigidity: Sufficiently robust and well anchored to prevent lateral movement or rotation of accessory during concreting.

**630 PROTECTIVE COATINGS**

- Inspect: Immediately prior to casting concrete.
- Damage to coatings:
  - Minor: Submit proposals for coating repair.
  - Significant: Replace accessory.

**640 INSTALLATION**

- Cleanliness: At time of casting, surfaces in contact with concrete to be free from contaminants which may adversely affect accessory, reinforcement, concrete, or bond between accessory and concrete.
- Position: Hold accessory firmly in position at right angles or other specified angle to concrete surface, preventing displacement during concreting.
- Other requirements: Day following casting, check that bolts in sockets are free to move.

**E**

**In situ concrete/Large precast concrete**

**E60**

**Precast/ composite concrete floors/ roof decks**

## E60 Precast/ composite concrete floors/ roof decks

To be read with Preliminaries/ General conditions.

### PROPRIETARY FLOORS/ ROOF DECKS

- 130 PRECAST SLAB As detailed on Contract drawings
- Manufacturer: Submit proposals
    - Product reference: Submit proposals.
  - Slab type: Hollow.
  - Slab depth: 250 mm.
  - Finish:
    - Soffit: Manufacturer's standard.
    - Top surface: Manufacturer's standard.
  - In situ continuity reinforcement: As detailed on Contract drawings.
  - Other requirements: Concrete cover to underside of reinforcement strands must be minimum of 30mm, this is not a standard from manufacturers.
- 140 PRECAST SLAB COMPOSITE As detailed on Contract drawings
- Precast slab:
    - Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
  - Slab type: Hollow.
  - Slab depth: 250 mm.
  - Finish:
    - Soffit: Manufacturer's standard.
    - Top surface: Manufacturer's standard.
  - In situ continuity reinforcement: As detailed on Contract drawings.
  - Void formers: Not required.
  - Other requirements: Concrete cover to underside of reinforcement strands must be minimum of 30mm, this is not a standard from manufacturers.
- 180 PRECAST STAIRS Support points as detailed on Contract drawings
- Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
  - Parameters: Refer Contract drawings.
  - Finish:
    - Exposed faces: Manufacturer's standard.
    - Treads and risers: Manufacturer's standard.
  - Other requirements: Concrete cover to reinforcement strands must be minimum of 30mm, this is not a standard from manufacturers.

### GENERAL/ PERFORMANCE

- 240 DETAILING OF PROPRIETARY SYSTEM
- Installation details: Submit location and assembly drawings showing every aspect of the construction, incorporated components and features, trimming for voids, holes for services, and related work by others.
    - Purpose: To allow checking of compatibility with surrounding structure and coordination of services.
  - Method statement and risk assessment for installation: Submit.
  - Programme: Submit well in advance of construction.

## 250 CONTRACTOR DESIGN

- Standard: Complete the design in accordance with BS 8110.
  - Composite construction: Fully continuous over supports.
  - Fully precast construction: As Contract drawing .

## 255 STAIR FLIGHTS AND PRECAST CONCRETE UNITS

The contractor will be responsible for the detailed structural design of the precast concrete stair units (in accordance with EN 14843 : 2007(E)) and their connections at landings. This will be in accordance with the Architects drawings (dwg refs 400A, 403A) which show the intent and required dimensions to accord with the requirements of the Building Regulations. For structural performance specification, refer to Structural Engineer.

**FLOORS-:PRECAST UNITS**

## 265 STRUCTURAL PERFORMANCE OF FLOOR To Accommodation or Service Block

- Loads: The floors must safely support the maximum combination of dead and imposed loads both in the finished building and during construction.
- Dead loads:
  - Distributed loads of finishes/ fixtures: Screed Allowance 1.8 kN/m<sup>2</sup>  
Ceiling / Services 0.5 kN/m<sup>2</sup>
  - Concentrated loads: These will be shown on Contract drawings if any exist.
- Imposed loads:
  - Distributed loads: Gym Area 5 kN/m<sup>2</sup>, Plant Areas 7.5 kN/m<sup>2</sup>  
Other areas 4.0 kN/m<sup>2</sup>  
Allowance for Block Wall Partitions 3.75 kN/m<sup>2</sup> kN/m<sup>2</sup>.
  - Concentrated loads: These will be shown on Contract drawings if any exist.
- Deflection (maximum): Span/250.
- Diaphragm/ tie action: All floors must act as a diaphragm.

## 270 STRUCTURAL PERFORMANCE OF ROOF DECK To Accommodation or Service Block

- Loads: The roof decks must safely support the maximum combination of dead and imposed/ wind loads both in the finished building and during construction.
- Dead loads:
  - Distributed load of finishes: Screed Allowance 1.8 kN/m<sup>2</sup>  
Ceiling /Services 0.5 kN/m<sup>2</sup>.
  - Concentrated dead loads: These will be shown on Contract drawings if any exist.
- Imposed loads:
  - Distributed loads for access/ maintenance: Plant may be sited on roof, adopt Plant 7.5 kN/m<sup>2</sup>.
  - Concentrated loads: These will be shown on Contract drawings if any exist.
  - Basic snow load: 0.6 kN/m<sup>2</sup>.
- Wind loads: Calculate to BS 6399-2, Standard Method.
  - Basic wind speed (Vb): 24 m/s.
  - Altitude factor (Sa): 1.025.
  - Direction factor (Sd): 1.
  - Seasonal factor (Ss): 1
  - Probability factor (Sp): 1
  - Terrain and building factor (Sb): 1.742.
  - Size effect factor: 1.
- Deflection (maximum): Span/250.
- Diaphragm/ tie action: Roof deck must act as a diaphragm.

## 280 BASIC FIRE RESISTANCE

- Duration: Loadbearing capacity: 60 minutes.
- Method of determination: To BS 8110-2, section 4 or by testing to BS 476-21 or BS EN 1365-2.
  - Finishes: Determine fire resistance without regard to applied finishes.
  - Data: Submit certificates, tabulated data or calculations.

**INSTALLATION**

## 320 CONCRETE INFILL

- Designated concrete: To BS 8500-2.
  - Designation: Refer Contract drawings.
  - Aggregate size (maximum): 20 mm generally.
- Preparation: Thoroughly clean and wet surfaces of precast units.
- Placing: Avoid segregation and compact thoroughly to eliminate voids.
  - Extent: Fill troughs and other holes.
  - Finish: Flush with top of precast units.
- Protection: Prevent movement of units until concrete has gained sufficient strength.

## 350 LEVELS OF STRUCTURAL CONCRETE FLOORS

- Tolerances: See Preliminaries section A33.

**F**  
**Masonry**

**F10**

**Brick/ block walling**

**F10 Brick/ block walling**

To be read with Preliminaries/ General conditions.

**36A CONCRETE BLOCKS TO BLOCKWORK PARTITIONS ABOVE GROUND**

- Manufacturer: Fyfestone Architectural Masonry, Div of Aggregate Industries UK Ltd.
  - Web: [www.fyfestone.com](http://www.fyfestone.com).
  - Email: [masonry@aggregate.com](mailto:masonry@aggregate.com).
  - Product reference: Masterblock Enviroblock
- Product: EV11.
- Width: 100 mm.
- Compressive strength: 7.3 N/mm<sup>2</sup>.

**36B CONCRETE BLOCKS TO BLOCKWORK PARTITIONS BELOW GROUND**

- Manufacturer: Fyfestone Architectural Masonry, Div of Aggregate Industries UK Ltd.
  - Web: [www.fyfestone.com](http://www.fyfestone.com).
  - Email: [masonry@aggregate.com](mailto:masonry@aggregate.com).
  - Product reference: Masterblock Enviroblock
- Product: EV11.
- Width: 100 mm.
- Compressive strength: 10.4 N/mm<sup>2</sup>.

**TYPES OF WALLING****110 CLAY FACING BRICKWORK TO EXTERNAL WALLS BETWEEN DPC BRICKWORK AND CAPPING**

- Bricks: To BS EN 771-1.
  - Manufacturer: Ibstock.
  - Product reference: IBSTOCK BRICK Ltd Colour T.B.C glazed -Header & Stretcher.
  - Recycled content: Submit proposals.
  - Special shapes: To BS 4729, types as shown on drawings.
- Mortar: As section Z21.
  - Standard: To BS EN 998-2.
  - Mix: 1:1:6 cement:lime:sand.
  - Additional requirements: Coloured mortar to match bricks .
- Bond: Half lap stretcher.
- Joints: Approved.
- Features: Brick capping as detailed.

## 260 CONCRETE FACING BLOCKWORK TO INTERNAL EXPOSED WALLS

- Blocks: To BS EN 771-3.
  - Manufacturer: Fyfestone Masonry Co. Kemnay Quarry, Aquithie Road, Kemnay, Scotland. AB51 9PD Tel; 01467 651000 Fax 01467 642 342.
  - Product reference: Premier Fairfaced concrete blockwork.
  - Configuration: Solid.
  - Compressive strength:
    - Mean value: 7.3 N/mm<sup>2</sup>.
    - Characteristic value: Not applicable.
    - Category: I.
  - Freeze/ Thaw resistance: Not applicable.
  - Recycled content: Submit proposals.
  - Work sizes (length x width x height): 440 x 100 x 215 mm.
  - Finish/ Colour: Colour T.B.C. refer to architects drawings for detail of layout of finishes/coloursl.
  - Special shapes: As shown on drawings.
  - Additional requirements: None.
- Mortar: As section Z21.
  - Standard: To BS EN 998-2.
  - Mix: 1:1:6 cement:lime:sand.
  - Additional requirements: Coloured mortar to match bricks.
- Bond: Half lap stretcher.
- Joints: Flush.
- Features: None.

## 355 CONCRETE COMMON BLOCKWORK Below ground dpc

- Blocks: To BS EN 771-3.
  - Manufacturer: Fyfestone Masonry Co. Kemnay Quarry, Aquithe Road ,Kemnay, Scotland.
  - Product reference: EnviroMasonry.
  - Configuration: Solid.
  - Compressive strength:
    - Mean value: 10 N/mm<sup>2</sup>.
    - Characteristic value: Not applicable.
    - Category: II.
  - Freeze/ Thaw resistance: Frost resistant.
  - Thermal properties: Thermal resistance: 0.79 m<sup>2</sup>K/W.
  - Recycled content: Submit proposals.
  - Work sizes (length x width x height): 440 x 100 x 215 mm.
  - Special shapes: As shown on drawings.
  - Additional requirements: None.
- Mortar: As section Z21.
  - Standard: To BS EN 998-2.
  - Mix: 1:1:6 cement:lime:sand.
  - Additional requirements: Durability: Freeze/ thaw resistance: Frost resistant.
- Bond: Half lap stretcher.

**356 CONCRETE COMMON BLOCKWORK IN PARTITIONS TO BE TILED / LINED, INNER FACE OF CAVITY WALLS WHERE NOT VISUALLY EXPOSED**

- Blocks: To BS EN 771-3.
  - Manufacturer: As Clause 356A.
  - Product reference: Enviroblock.
  - Configuration: Solid.
  - Compressive strength:
    - Mean value: 7 N/mm<sup>2</sup>.
    - Characteristic value: Not applicable.
  - Category: II.
  - Freeze/ Thaw resistance: Not to be left exposed.
  - Thermal properties: Thermal conductivity: 1.27 W/mK.
  - Recycled content: Submit proposals.
  - Work sizes (length x width x height): 440 x 100 x 215 mm.
  - Special shapes: As shown on drawings.
  - Additional requirements: None.
- Mortar: As section Z21.
  - Standard: To BS EN 998-2.
  - Mix: 1:1:6 cement:lime:sand.
  - Additional requirements: None.
- Bond: Half lap stretcher.

**356A CONCRETE BLOCKS TO ALL ABOVE GROUND BLOCKWORK PARTITIONS**

- Manufacturer: Fyfestone Architectural Masonry, Div of Aggregate Industries UK Ltd.
  - Web: [www.fyfestone.com](http://www.fyfestone.com).
  - Email: [masonry@aggregate.com](mailto:masonry@aggregate.com).
  - Product reference: Masterblock Enviroblock
- Product: EV11.
- Width: 100 mm.
- Compressive strength: 7.3 N/mm<sup>2</sup>.

**357 CONCRETE COMMON BLOCKWORK TO INNER LEAF EXTERNAL CAVITY WALLS**

- Blocks: To BS EN 771-3.
  - Manufacturer: As Clause 356A.
  - Product reference: Enviroblock.
  - Configuration: Solid.
  - Compressive strength:
    - Mean value: 10.4 N/mm<sup>2</sup>.
    - Characteristic value: Not applicable.
  - Category: II.
  - Freeze/ Thaw resistance: Frost resistant.
  - Thermal properties: Thermal resistance: 0.179 m<sup>2</sup>K/W.
  - Recycled content: Submit proposals.
  - Work sizes (length x width x height): 440 x 140 x 215 mm.
  - Special shapes: As shown on drawings.
  - Additional requirements: None.
- Mortar: As section Z21.
  - Standard: To BS EN 998-2.
  - Mix: 1:1:6 cement:lime:sand.
  - Additional requirements: None.
- Bond: Half lap stretcher.

**TESTING**

**WORKMANSHIP GENERALLY**

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.

460 MORTAR GROUPS

- Mix proportions: For a specified group select a mix design from the following:

Group	1	2	3	4
PC*:lime:sand with or without air entraining additive	1:0-0.25:3	1:0.5:4-5	1:1:5-6	1:2:8-9
Masonry cement:sand containing PC* and lime in approx ratio 1:1, and an air entraining additive	-	1:3	1:3.5-4	1:4.5
Masonry cement:sand containing PC* and inorganic materials other than lime and air entraining additive	-	1:2.5-3.5	1:4-5	1:5.5-6.5
PC*:sand and air entraining additive	1:3	1:3-4	1:5-6	1:7-8

PC\* = Portland cement

- Batching: Mix proportions by volume.
- Mortar type: Continuous throughout any one type of masonry work.

500 LAYING GENERALLY

- Mortar joints: Fill vertical joints. Lay bricks, solid and cellular blocks on a full bed.
- Bond where not specified: Half lap stretcher.
- Vertical joints in facework: Even widths. Plumb at every fifth cross joint.

## 520 ACCURACY

- Courses: Level and true to line.
- Faces, angles and features: Plumb.
- Permissible deviations:
  - Position in plan of any point in relation to the specified building reference line and/ or point at the same level ± 10 mm.
  - Straightness in any 5 m length ± 5 mm.
  - Verticality up to 3 m height ± 10 mm.
  - Verticality up to 7 m height ± 14 mm.
  - Overall thickness of walls ± 10 mm.
  - Level of bed joints up to 5 m (brick masonry) ± 11 mm.
  - Level of bed joints up to 5 m (block masonry) ± 13 mm.

## 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.

## 540 HEIGHT OF LIFTS IN WALLING USING THIN JOINT MORTAR GLUE

- Quoins and advance work: Rack back.
- Lift height (maximum): 1.3 m above any other part of work at any time.

## 545 LEVELLING OF SEPARATE LEAVES

- 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.

## 595 LINTELS

- Bearing: Ensure full length masonry units occur immediately under lintel ends.

## 610 SUPPORT OF EXISTING WORK

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

## 615 BRICKWORK TO RECEIVE ASPHALT DPC

- Substrate: Mortar bed finished flush, smooth and level.

## 635 JOINTING

- Profile: Consistent in appearance.

## 645 ACCESSIBLE JOINTS NOT EXPOSED TO VIEW

- Jointing: Struck flush as work proceeds.

## 665 POINTING TO ALL WALLING

- Joint preparation: Remove debris. Dampen surface.
- Mortar: As section Z21.
  - Standard: To BS EN 998-2.
  - Mix: A Clause 110.
  - Additional requirements: None.
- Profile: Bucket handle.

## 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 brick/ block walling finished fair.
  - Painted facework: The only requirement to be waived is that relating to colour.

## 730 BRICK/ CONCRETE BLOCK SAMPLES

- General: Before placing orders with suppliers submit for approval of appearance labelled samples of the following: None .
- Selection of samples: Representative of the range in variation of appearance.

## 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 of masonry units: Reasonably representative of the average quality of the whole order to be delivered .
- Panel types:
  - Walling type: F10/110 .
  - Location: East Whale Lane Elevation .
  - Size: 1.5 x 1.5 m .
  - Other requirements: Ventilation duct as clause F30/171A .

## 745 MASONRY SAMPLE PANELS

- Sampling frequency: A panel for each type and delivery of masonry unit.
- Selection of masonry units: Reasonably representative of the average quality of the whole order to be delivered .
- Panel types: As clause 740.

**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.

**790 PUTLOG SCAFFOLDING**

- Use: Not permitted in facework.

**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.

**F**  
**Masonry**

**F11**

**Glass block walling**

## F11 Glass block walling

To be read with Preliminaries/General conditions.

### TYPES OF GLASS BLOCK WALLING

- 131 MORTAR JOINTED GLASS BLOCK WALLING to reception screen wall
- Method of assembly: In situ .
  - Glass blocks: To BS EN 1051-1.
    - Manufacturer: Glass Block Technology Ltd, 170 Lodge lane, Hyde, Cheshire SK14 4LB .
    - Product reference: Turquoise frost to be confirmed by Architect .
    - Pattern: straight bond, coursing .
    - Colour: Natural .
    - Face dimensions (l x b): 190 x190 mm .
    - Thickness (h): 80 mm .
    - Special shapes: Caps / End blocks .
  - Mortar: As section Z21.
    - Jointing mix: proprietary glass block mortar as recommended by block manufacturer .
    - Colour: To match blocks .
    - Pointing mix: Not applicable .
    - Colour: Not applicable .
  - Bond: Stack .
  - Mortar joints:
    - Width: 10 mm .
    - Profile: 3 mm recessed .
  - Perimeter head and jamb joints/ expansion joints: Sealant.

### GENERAL REQUIREMENTS

- 210 DESIGN
- Walling: Complete the detailed design of the glass block walling and associated features.
- 215 GLASS BLOCK SAMPLES
- General: Before commencing walling, submit for approval of appearance two labelled units of each type of block specified or proposed.
- 216 ACCESSORIES SAMPLES
- General: Before commencing walling submit labelled samples of: Restraint/ anchor fixings .

### DESIGN AND PERFORMANCE REQUIREMENTS

- 235 INTERNAL WALLING INTEGRITY
- Requirement: Determine locations of reinforcement, restraint/ anchor fixings and other structural requirements to ensure glass block walling will resist all factored dead loads and design live loads, and accommodate all deflections and movements without damage.

**LAYING AND JOINTING****350 SUITABILITY OF SURROUNDS**

- Surrounding fabric: Before commencement of walling carry out a geometric survey of the surrounds to verify required accuracy and security of walling.
  - Give notice: If surrounds will not allow the required accuracy or security.

**360 PREPARATION OF SURROUNDS**

- Separating layer to areas of base or sill to receive walling, select from:
  - A thick application of bituminous emulsion paint applied to avoid the areas near jambs, which would result in contact with perimeter sealant. Allow emulsion to dry before placing mortar bed.
  - A strip of bitumen felt to BS 747 Type 3B, 5B or 5U.
  - A strip of polyethylene damp proof course to BS 6515.

**370 ADVERSE WEATHER**

- General: Do not use frozen materials or lay on frozen surfaces.
- Air temperature requirements: Do not lay blocks in mortar or apply sealant when at or below 3°C and falling or unless it is at least 1°C and rising.
- Temperature of walling during curing: Above freezing until hardened.
- Newly erected walling: Protect at all times from:
  - Rain and snow.
  - Drying out too rapidly in hot conditions and in drying winds.

**380 LAYING GLASS BLOCKS WITH MORTAR JOINTS**

- Joints: Uniform with full vertical and bed joints.
- Perimeter/ Expansion joints: Clear of mortar.
- Patterned blocks: Aligned to give a consistent overall appearance.
- Setting out: Achieve satisfactory junctions with surrounds, built in elements and components.
- Accuracy: Courses to be level and true to line. Faces, angles and features to be plumb.

**430 MORTAR JOINTING**

- Joints: Set back 2 mm (nominal) from face of glass blocks.
- Cleanliness: Remove surplus mortar from glass block faces as jointing proceeds. Leave no mortar residue on face of blocks.

**F**  
**Masonry**

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

### 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 206-1 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.
- 131 BED JOINT WEEP HOLES
- Form: Open 10 mm diameter hole.
  - 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.
- 132 PERPEND JOINT PLASTICS WEEP HOLES
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
  - 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.
- 155 PARTIAL FILL CAVITY INSULATION
- Insulation: Phenolic Foam with foil facings.
  - Standard: BS EN 13166.
  - Product certification: British Board of Agreement (BBA) Certificate number ???.
  - Manufacturer: Kingspan.
  - Product reference: Kooltherm K15 rainscreen board.
  - Recycled content: Submit proposals.
  - Face size (length x width): 1200 x 2400mm.
  - Thickness (nominal): 90 mm.
  - Thermal conductivity: 0.024 W/mK.
  - Reaction to fire class: F.
  - Additional requirements: None.
  - Placement: Secure against face of inner leaf.
  - Residual cavity: Clear and unobstructed.
  - Joints between boards, at closures and penetrations: No gaps and free from mortar and debris.

- 165 GRATINGS/ VENTILATORS IN INTERNAL WALLING
- Standard: To BS 493, class 2.
  - Manufacturer: As clause 165A .
    - Product reference: HFMR85F .
  - Apertures: Square hole .
  - Work sizes: 215 x 140 mm .
  - Material/ Colour: Plastics .
  - Other requirements: Include 'hit or miss' slider .
  - Placement: Built in with no gaps at joints.
- 165A GRATINGS/ VENTILATORS IN INTERNAL WALLING
- Manufacturer: Rytons Building Products Ltd.
    - Web: [www.vents.co.uk](http://www.vents.co.uk).
    - Email: [lit@rytons.com](mailto:lit@rytons.com).
    - Product reference: Rytons Flame-Retardant Hit & Miss Ventilator '9 x 6' Ref: HMFR85F.
- 171 VENTILATION DUCTS IN EXTERNAL WALLING
- Manufacturer: As Clause 171A .
    - Product reference: Rytons TAL4SETGR .
  - Placement: Across cavity, sloping away from inner leaf. Full mortar joints to seal cavity.
  - Protection from water penetration to inner leaf: Where barrier is not integral to duct, form stepped dpc cavity tray with stop ends above duct, extending 150 mm on each side.
- 171A VENTILATION DUCTS IN EXTERNAL WALLING
- Manufacturer: Rytons Building Products Ltd.
    - Web: [www.vents.co.uk](http://www.vents.co.uk).
    - Email: [lit@rytons.com](mailto:lit@rytons.com).
    - Product reference: Rytons '9 x 3' Acoustic AirLiner® Set with Flush Louvre (38 dB) Grey Ref: TAL4SETGR.
  - Accessories: Not required.
- 180 CAVITY CLOSERS To stone cladding cavity walls
- Manufacturer: As Clause 180A .
    - Product reference: C450 Cavity Firestop .
  - Accessories: To include integral insulation .
- 180A CAVITY CLOSERS
- Manufacturer: PFC Corofil Fire Stop Products.
    - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
    - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
    - Product reference: C450 Cavity Fire Stop
  - Accessories: C450 multi-purpose brackets and C144 Fire Stop Blocks.
- 180B FIRE RESISTING MOVEMENT JOINTS WITHOUT SEALANT
- Manufacturer: PFC Corofil Fire Stop Products.
    - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
    - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
    - Product reference: C500X2.

**REINFORCING/ FIXING ACCESSORIES**

- 211A CAVITY WALL TIES USED WITH PARTIAL FILL INSULATION
- Manufacturer: Ancon Building Products.
    - Web: [www.ancon.co.uk](http://www.ancon.co.uk).
    - Email: [info@ancon.co.uk](mailto:info@ancon.co.uk).
    - Product reference: ST1 Wall tie
  - Length: 275 mm.
  - Material: Stainless steel grade 1.4301 (304).
- 215 CAVITY WALL TIES USED WITH PARTIAL FILL INSULATION FOR ALL CAVITY WALLS USING PARTIAL FILL INSULATION
- Standard: To BS EN 845-1.
    - Type: 1 (Masonry heavy duty) .
  - Manufacturer: As clause 211A .
    - Product reference: ST1 wall tie .
  - Material/ finish: Austenitic stainless steel .
  - Sizes: 255 mm .
  - End types: Symmetrical pierced non deformed plate .
  - Design embedment length (minimum): 50 mm .
  - Movement: Non tolerant .
  - Additional requirements: Minimum mortar joint thickness: 10 mm .
  - Tie mounted insulation retaining clips: As recommended by tie manufacturer.
- 215A INSULATION RETAINING DISCS
- Manufacturer: Manthorpe Building Products Ltd.
    - Web: [www.manthorpebuildingproducts.com](http://www.manthorpebuildingproducts.com).
    - Email: [sales@manthorpe.co.uk](mailto:sales@manthorpe.co.uk).
    - Product reference: GID760.
- 225 FIXING TIES IN MASONRY CAVITY WALLS
- 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: 900 mm .
    - Vertical centres: 450 mm .
  - Additional ties: Provide within 225 mm of reveals of unbonded openings.
    - Spacing: At not more than 300 mm centres vertically .
- 245 SLOT TIES Internal walls to concrete.
- Standard: To BS EN 845-1.
  - Manufacturer: Contractor's choice.
    - Product reference: Contractor's choice.
  - Material/ finish: Austenitic stainless steel.
  - Sizes: Refer manufacturers.
  - Slot fixing: Embedded.
  - End types: Asymmetrical dovetail slot end with twisted plate surface end.
  - Design embedment length (minimum): 50 mm.
  - Additional requirements: None.

- 250 SLIDING ANCHOR RESTRAINT SLIP TIES To restrain head of internal walls to underside of precast concrete floor slab
- Manufacturer: Ancon CCL Limited, President Way, president park, Sheffield S4 7UR .
  - Product reference: Ancon FHR .
  - Material/ finish: Austenitic stainless steel grade 1.4301 (304) .
  - Sizes: Refer manufacturer .
- 250A SLIDING ANCHOR RESTRAINT SLIP TIES To restrain head of internal walls to underside of steel beam
- Manufacturer: Ancon CCL Limited, President Way, president park, Sheffield S4 7UR .
  - Product reference: Ancon FHR .
  - Material/ finish: Austenitic stainless steel grade 1.4301 (304) .
  - Sizes: Refer manufacturer .
- 255A WIND POSTS Adopt hot rolled steel to all internal Block Walls as defined on the contract drawings
- Manufacturer:
    - Web:
    - Email:
    - Product reference:
  - Size: Refer contract drawings.
  - Ties: Refer contract drawings.
- 260 ANGLE SUPPORTS For supporting outer leaf at every floor level refer to contract drawings
- Manufacturer: Halfen .
  - Product reference: HMA-G-HM38/17-110-5.2-0 .
  - Material: Austenitic stainless steel .
  - Size: See product reference .
  - Fixings (complete with washers and shims): See manufacturer .
- 260A MASONRY SUPPORT SYSTEM For supporting outer leaf of stonework at every floor level. Design to be confirmed with Halfen. Design requirements as per contract drawings. The following for guidance only.
- Manufacturer: Halfen Ltd.
    - Web: [www.halfen.co.uk](http://www.halfen.co.uk).
    - Email: [info@halfen.co.uk](mailto:info@halfen.co.uk).
    - Product reference: Bracket/ angle system
  - Supporting structure: Steel beam.
  - Channel: HTA 38/17.
    - Fixing to supporting structure: Both sides of channel welded with fillets 30 mm long at 150 mm centres.
  - Brackets: Type HMA.
    - Spacing: To be agreed with Halfen (nominally 600mm centres) .
  - Angle:
    - Section size: Halfen to confirm .
    - Section thickness: Halfen to conform.
    - Lengths: As schedule
  - Accessories: Packing shims, stainless steel.

- 270A PROPRIETARY MESHWORK JOINT REINFORCEMENT
- Required to lower five courses of all internal block work walls built from slab Manufacturer: BRC Special Products.
    - Web: [www.brc-special-products.co.uk](http://www.brc-special-products.co.uk).
    - Email: [enquiries@brcsp.co.uk](mailto:enquiries@brcsp.co.uk).
    - Product reference: Brickforce Masonry Reinforcement
  - Location: Internal walls.
  - Wall thickness: 140mm / 100mm Block.
  - Reinforcement:
  - Material: Stainless steel.
    - Wire gauge equivalent: 5 mm, 3.5mm for collar jointed wall.
    - Shape: Straight, 2.7 m.

- 281A LATERAL RESTRAINT PROPRIETARY SLIP TIES FOR MOVEMENT JOINTS Refer contract drawings for details
- Manufacturer: Ancon Building Products.
    - Web: [www.ancon.co.uk](http://www.ancon.co.uk).
    - Email: [info@ancon.co.uk](mailto:info@ancon.co.uk).
    - Product reference: Lateral Restraint Slip Ties
  - Type: Ancon PPV wall tie.
  - Length: 125 mm .
  - Material: Stainless steel grade 1.4401 (316).

#### **FLEXIBLE DAMP PROOF COURSES/ CAVITY TRAYS**

- 320 DAMP PROOF COURSE - POLYETHYLENE
- Standard: To BS 6515.
  - Manufacturer: As clause 320A .
    - Product reference: Caviroll Premium DPC .
- 320A DAMP PROOF COURSE - POLYETHYLENE
- Manufacturer: Cavity Trays Ltd.
    - Web: [www.cavitytrays.com](http://www.cavitytrays.com).
    - Email: [enquiries@cavitytrays.co.uk](mailto:enquiries@cavitytrays.co.uk).
    - Product reference: Caviroll Premium DPC
  - Width: 375 mm.
- 345 SITE FORMED FLEXIBLE SHEET CAVITY TRAYS
- Material: Polypropylene .
  - Manufacturer: As clause 345A .
    - Product reference: Zedex CPT .
- 345A SITE FORMED FLEXIBLE SHEET CAVITY TRAYS
- Manufacturer: Visqueen Building Products.
    - Web: [www.visqueenbuilding.co.uk](http://www.visqueenbuilding.co.uk).
    - Email: [riba@visqueenbuilding.co.uk](mailto:riba@visqueenbuilding.co.uk).
    - Product reference: Zedex CPT
  - Width: 355.
  - Accessories: ZXCT???
- 370 PREFORMED CAVITY TRAYS
- Manufacturer: As clause 370A .
    - Product references and locations: Above Foyer Roof to Car Park Elevation .
  - Placement: To provide a free draining and watertight installation.

**370A PREFORMED CAVITY TRAYS**

- **Manufacturer:** Cavity Trays Ltd.
  - **Web:** www.cavitytrays.com.
  - **Email:** enquiries@cavitytrays.co.uk.
  - **Product reference:** Type Q Arresting Barrier
- **Location:** As drawing ???.
- **Cavity width:** 140 mm.
- **Profile:**
  - **Masonry leaf base length:** As drawing ???.
  - **Cavity upstand:** 150 mm.
- **Return angle trays:**
  - **Internal angle:** Required.
  - **External angle:** Not required.

**380 PREFORMED DPC/ CAVITY TRAY JUNCTION CLOAKS/ STOP ENDS**

- **Manufacturer:** As .
  - **Product references and locations:** Type G Cavity tray over Foyer/Glazed Link .
- **Placement:** To provide a free draining and watertight installation. Seal laps with dpcs and/ or cavity trays.

**380A 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 Cavity tray
- **Location:** As drawing ???.
- **Lintel type/ profile:** As drawing ???.
- **Cavity width:** 140 mm.
- **Opening width:** As drawing ???.
- **Lintel length:** As drawing ???.
- **Dpc thickness:** 1.5 mm.
- **Inner skin return:** Required.

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

- **Manufacturer:** Cavity Trays Ltd. .
  - **Product references and locations:** As shown on drawings.
- **Placement:** Seal laps with dpcs and/ or cavity trays.

**390 SITE FORMED DPC/ CAVITY TRAY JUNCTIONS/ STOP ENDS**

- **Three dimensional changes in shape:** Form to provide a free draining and watertight installation. Seal laps.
- **Alternative use of preformed junction cloaks/ stop ends:** Submit proposals.

**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.
- 435 STEPPED DPCS IN EXTERNAL WALLS
- External walls on sloping ground: Install dpcs not less than 150 mm above adjoining finished ground level.
- 445 SILL DPCS
- Form and placement: In one piece and turned up at back when sill is in contact with inner leaf.
- 455 COPING/ CAPPING DPCS
- Placement: Bed in one operation to ensure maximum bond between masonry units, mortar and dpc.
  - Dpcs crossing cavity: Provide rigid support to prevent sagging.
- 465 SEALING DPCS PARAPET WALLS
- Overlaps and junctions: Seal with Adhesive recommended by dpc manufacturer .
- 475 SITE FORMED CAVITY TRAYS
- Requirements to prevent downward ingress of water:
    - Profiles: To match those shown on drawings. Firmly secured.
    - Joint treatment: Use unjointed wherever possible, otherwise lap at least 100 mm and seal to produce a free draining and watertight installation.
    - Horizontal cavity trays: Support using cavity closer.
    - Sloping cavity trays: Prevent sagging.
    - Cleanliness: Free from debris and mortar droppings.
- 485 CAVITY TRAYS OVER OPENINGS AND OTHER CAVITY BRIDGINGS
- Length: To extend not less than 150 mm beyond ends of lintels/ bridgings.
- 495 GAS RESISTANT DPCS/ CAVITY TRAYS
- Joint treatment: Use unjointed wherever possible, otherwise lap at least 150 mm and seal to form a gas and watertight installation.
  - Joint with damp proof membrane: Overlap dpc/ cavity tray not less than 150 mm.
- 515 DPC/ CAVITY TRAY LEADING EDGE IN FACEWORK - FLUSH
- Treatment at face of masonry: Finish flush and clear of mortar at the following locations: To roof abutments .
- 525 DPC/ CAVITY TRAY LEADING EDGE IN FACEWORK - SET BACK
- Treatment at face of masonry: Set back 5 mm from face of wall with recessed mortar joint to expose edge at the following locations: Generally .
- 535 DPC/ CAVITY TRAY LEADING EDGE IN FACEWORK - PROJECTING
- Treatment at face of masonry: Projecting 5 mm from face of wall at the following locations: / t window and door heads .
- 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.

- 580 JAMB DPCS TO BUILT IN TIMBER FRAMES
- Fixing: Securely fastened to back of frame.
    - Fasteners: Galvanized clout nails or staples.

#### JOINTS

- 610A FILLER:
- Manufacturer: Fosroc Ltd.
    - Web: [www.fosroc.com](http://www.fosroc.com).
    - Email: [uk@fosroc.com](mailto:uk@fosroc.com).
    - Product reference: Hydrocell XL
- 610B FILLER AND/ OR SEALANT At all Fire Compartment Walls
- Manufacturer: Fosroc Ltd.
    - Web: [www.fosroc.com](http://www.fosroc.com).
    - Email: [uk@fosroc.com](mailto:uk@fosroc.com).
    - Product reference: Flamex Two
- 610C SEALANT
- Manufacturer: Fosroc Ltd.
    - Web: [www.fosroc.com](http://www.fosroc.com).
    - Email: [uk@fosroc.com](mailto:uk@fosroc.com).
    - Product reference: Thioflex One
  - Accessories: Bond breaker: Self adhesive bond breaking tape.
- 630 UNEXPOSED CONTRACTION JOINTS
- Formation: Close butt as work proceeds.
- 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.
- 670A TOPS OF NONLOADBEARING WALLS
- Manufacturer: PFC Corofil Fire Stop Products.
    - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
    - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
    - Product reference: C144 Firestop Blocks
  - Fire resistance period: 1 hour.
  - Profile sheet reference/ profile dimensions: Key Deck D158 A.

- 670B TOPS OF NONLOADBEARING WALLS
- Manufacturer: PFC Corofil Fire Stop Products.
    - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
    - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
    - Product reference: C144 Firestop Strip
  - Strip thickness: To suit joint 20 mm thick.
  - Strip width: 100 mm.

- 670C TOPS OF NONLOADBEARING WALLS
- Manufacturer: PFC Corofil Fire Stop Products.
    - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
    - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
    - Product reference: C500X1.

#### PROPRIETARY SILLS/ LINTELS/ COPINGS/ DRESSINGS

- 720 SILLS
- Standard: To BS 5642-1.
  - Material: Precast concrete .
  - Manufacturer: Contractor's choice .
    - Product reference: Refer suppliers Data Sheets .
  - Dimensions: As shown on drawings SK 124 .
  - Finish: Faced .
  - Mortar for bedding/ jointing: Cement gauged as section Z21.
    - Standard: To BS EN 998-2 .
    - Mix: 1:3 masonry cement:sand .
    - Additional requirements: None .
  - Joints: Flush.
  - Bedding one piece sills: Leave bed joints open except under end bearings and masonry mullions. On completion, point to match adjacent work.
- 745 PRESTRESSED CONCRETE LINTELS
- Standard: To BS EN 845-2.
  - Manufacturer: Robeslee .
    - Product reference: Refer schedule .
  - Types: Single .
  - Sizes: As schedule .
  - Additional requirements: As schedule .
  - Placement: Bed on mortar used for adjacent work. Prop at not more than 1.2 m centres to prevent displacement during construction. Retain props in position for not less than 14 days or until mortar has matured, whichever is longer.
    - Bearing length (minimum): 150 mm .
- 755 PREFABRICATED STEEL LINTELS
- Standard: To BS EN 845-2.
  - Manufacturer: Catnic Steel Lintels .
    - Product reference: Refer contract drawings .
  - Types: As schedule .
  - Material/ finish: Austenitic stainless steel to BS EN 10088 .
  - Sizes: As schedule .
  - Additional requirements: As schedule .
  - Placement: Bed on mortar used for adjacent work.
    - Bearing length (minimum): 150 mm .

## 760 COPING UNITS

- Standard: To BS 5642-2.
- Material: Precast concrete .
- Manufacturer: Contractor's choice .
  - Product reference: Refer Supplier Data Sheets .
- Dimensions: As shown on drawings.
- Finish: To match sample .
- Mortar for bedding/ jointing: Cement gauged as section Z21.
  - Standard: To BS EN 998-2 .
  - Mix: As clause F10/???
  - Additional requirements: None .
- Joints: Full and finished flush.
- Placement: Lay on a full bed of mortar to line and level.

**MISCELLANEOUS ITEMS**

## 850 WALL PLATES

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

**F**  
**Masonry**

**F31**

**Precast concrete sills/ lintels/ copings/ features**

**F31 Precast concrete sills/ lintels/ copings/ features**

To be read with Preliminaries/ General conditions.

**TYPES OF COMPONENT**

- 105    **PRECAST COPINGS**
- Concrete: Components manufacturer's 'proprietary' concrete.
    - Identity: Manufacturer's mix reference .
  - Conformity: To BS 8500-2 and the recommendations of BS 8500-1 Annex A5 for the specified exposure class.
    - Evidence: Submit third party certification from a UKAS accredited laboratory.
  - Exposure class: XF3 .
    - Strength class (cylinder/ cube): Manufacturer's choice .
  - Reinforced components: Submit proposals for type of reinforcement and cover.
  - Matching sample for finish to visible faces: As reference sample .
  - Other requirements: Fixing inserts .
- 112    **DESIGNATED CONCRETE PRECAST LINTELS and SILLS**
- Concrete: Designated to BS 8500-2: RC30 .
  - Reinforcement type/ strength grade: As drawings .
    - Cover to reinforcement (nominal): Minimum cover 25mm plus ???mm fixing tolerance .
  - Aggregates:
    - Size (maximum): Contractor's choice .
    - Coarse recycled aggregate: Not permitted .
  - Matching sample for finish to visible faces: As reference sample .
  - Other requirements: None .
- 125    **SUBSTITUTION OF PROPRIETARY CONCRETE FOR DESIGNATED CONCRETE**
- Concrete: Component manufacturer's 'proprietary' concrete.
  - Substitution: Submit proposals for each substitution, including:
    - Identity of concrete: Manufacturer's mix reference .
    - Performance: Limiting values for w/c ratio, cement/ combination content or, alternatively the Exposure class to BS 8500, to which concrete conforms.
    - Reinforcement: Type and cover.
    - Evidence of performance: Third party certification by body from a UKAS accredited laboratory.
- 130    **CONCEALED PRECAST LINTELS**
- Standard: To BS EN 845-2.
    - Verification of performance: Submit calculations or test certificates.

- 140 CONCEALED PRECAST LINTELS
- Concrete: Designated to BS 8500-2: Minimum RC30.
  - Aggregate (maximum): size: 20 mm.
  - Reinforcement provision for spans up to 1800 mm

Clear span	Section	Bearing	Reinforcement
Up to 140 mm deep 900 mm wall	150 mm at x width of each 105 mm of wall thickness.	150 mm at both ends each 105 mm of wall thickness.	One. 12 mm mild steel bar for
900 to 1800 mm wall	215 mm deep x width of each 105 mm of wall thickness.	225 mm at both ends each 105 mm of wall thickness.	One. 16 mm mild steel bar for

- Cover to reinforcement (nominal): 20 mm minimum.

- 150 CONCEALED PRECAST PADSTONES .
- Concrete: Designated to BS 8500-2: Minimum RC30.
  - Aggregate size (maximum): 20 mm.
  - Other requirements: Cast-in fixings .

#### GENERAL REQUIREMENTS

- 210 MOULDS
- Permissible fabrication and operating tolerances: Length 0 to +6 mm, other dimensions  $\pm 3$  mm.
- 220 CONCRETE GENERALLY
- Specification: To BS 8500-2 and BS EN 206-1.
  - Producer: Currently certified by a body accredited by UKAS to BS EN 45011 for product conformity certification of ready-mixed concrete.
  - Chloride class of concrete:
    - Excluding SRPC: C1 0.40.
    - Using SRPC: C1 0.20.
    - Reinforced and heat cured: C1 0.10.
    - Prestressed: C1 0.10.
  - Admixtures containing calcium chloride: Not allowed.
- 250 REINFORCEMENT
- Carbon steel reinforcement: As appropriate to BS 4449, BS 4482 and BS 4483.
    - Cutting and bending: To BS 8666.
  - Galvanized reinforcement: Galvanized to BS EN ISO 1461 after cutting. Chromate treated.
  - Stainless steel reinforcement: To BS 6744.
    - Designation 1,4301.
    - Cutting and bending: To BS 8666.
  - Non structural reinforcement: Include to resist shrinkage and handling stresses.
  - Bimetallic corrosion and staining: Prevent by appropriate selection and use of materials.
  - Condition at time of placement: Clean, free of corrosive pitting, loose materials and substances that adversely affect reinforcement, concrete, or bond between the two.
  - Fixing: Accurate and secure.
    - Method: Wire tying, approved steel clips or tack welding if permitted.
    - Concrete cover: Maintain free of all tying wire or clips.

- 255 **QUALITY ASSURANCE OF REINFORCEMENT**  
Reinforcement to BS 4449, BS 4483, BS 6744: Obtain valid certificates of approval for product conformity issued by the UK Certification Authority for Reinforcing Steels.
- 260 **CASTING AND CURING**
- Placing of concrete: Thoroughly compact.
  - Protection against drying out: Methods and duration to BS EN 13369 clause 4.2.1.3.
  - Immature components: Avoid movement, vibration, overloading, physical shock, rapid cooling and thermal shock.
  - Delivery to site: Not until at least 14 days after casting.
- 261 **CUTTING**
- Cutting of precast concrete components: Not permitted.
- 262 **RECORDS**
- Records for each type of component: Maintain details including:
    - Unique identification number.
    - Identification of the producer.
    - Identification of the place of production.
    - Correlation with records of mixes, including batch numbers.
    - Date of each stage of manufacture.
    - Dates and results of all tests, checks and inspections.
    - Dimensions related to specified levels of accuracy.
    - Specific location in the finished work.
    - Weight of the unit.
    - Damage and making good.
    - Any other pertinent data, e.g. if unit is a production control unit.
  - Availability of records for inspection: On request.
- FAIR FACED COMPONENTS**
- 310 **CONTROL SAMPLES**
- Required samples: After finalization of design, one each of the following components: Parapet Coping.
  - Approval of appearance: Obtain before manufacture of remaining units.
  - Identification and storage location: Clearly label and retain at factory for comparison with production units.
- 320 **DETAILS OF SAMPLES**
- Submittals after approval of appearance and before manufacture of production units:
    - Aggregates: Confirm type, maximum size, grading and source.
  - Conformity of designed concrete: Evidence of compliance for compressive strength class and limiting values of composition.
- 330 **MIXES FOR VISIBLE FACED COMPONENTS**
- Constituent materials and mix design for each finish type: To remain constant.
  - Colour and appearance of each finish type: To remain constant.
  - Aggregates: To BS EN 12620.
    - Origin: Single source for each finish type, having sufficient quantity for whole contract.

- 341    **CONDITIONS FOR SEPARATE FACING AND BACKING MIXES**
- Difference in cement content: Not greater than 80 kg/m<sup>3</sup>.
  - Thickness of facing mix: 10 mm greater than maximum aggregate size, minimum 25 mm.
  - Location of reinforcement: Minimum 20 mm away from the interface between mixes.
  - Compaction of facing and backing mix: Carry out to create monolithic construction.
- 350    **QUALITY OF FINISHES**
- Appearance standard: As established by samples.
- 365    **COVER ON EXPOSED AGGREGATE FACES**
- Nominal cover: Exclusive of aggregate projection.
- 370    **COVER ON VISIBLE FACES**
- Spacers: Not permitted.
  - Proposed method statement: Submit.
- 380    **CONSISTENCY OF PRODUCTION METHODS**
- Production methods: To remain consistent for each matching type of finish.
    - Finish appearance: To remain within the range of variation indicated by the samples submitted.
  - Changes to production methods: If variations are proposed for components of the same finish, submit evidence that there will be no difference in appearance.
- 390    **INSPECTION**
- Completed components: Give notice when ready to be inspected at factory.

## **INSTALLATION**

- 420    **LAYING**
- Mortar for bedding and jointing: As section Z21.
    - Mix: As used for adjacent work .
    - Packing: If required use slate.
  - Bedding components: On full bed of mortar
  - Removal of marks, stains and extraneous mortar on visible faces: Rubbing not permitted.
- 430    **SUPPORT OF EXISTING WORK OVER NEW LINTELS**
- Joint above lintels: Fully fill and compact with semidry mortar.
- 440    **ONE PIECE SILLS/ THRESHOLDS**
- Bed joints: Leave clear of mortar except at end bearings and beneath masonry mullions.
    - On completion: Point with mortar to match adjacent work.

**G**

**Structural/Carcassing metal/timber**

**G10**  
**Structural steel framing**

## G10 Structural steel framing

To be read with Preliminaries/ General conditions.

### GENERAL REQUIREMENTS/ INFORMATION

- 110 **DESIGN Steel to Steel Connections to be Contractor Designed.**
- Design concept: Beams have been designed as simply supported. Lateral stability achieved through diaphragm action of the slab transferring lateral loads to vertical braced bays. Connections must also accept tie forces as defined on Contract drawings.
  - Design standard: The structural steelwork has been designed to BS 5950.
    - Supplementary requirements: Full End Plates are required for all beam to beam, beam to column connections to assist torsional rigidity, particularly on long span beams.
  - Completion of design: Detail steelwork and design and detail joints to BS 5950.
    - Loading requirements: Refer Contract drawings for vertical shear forces and tie loads.
  - Design parameters: Bolts category A.
  - Fixings to foundations/ walls: Refer Contract drawings.
  - Other requirements: None.
- 115 **DESIGN CONSTRAINTS - GENERAL**
- Members forming bracing systems or girders of lattice construction: Unless detailed or instructed otherwise, position so that their lines of action intersect at a point.
  - Bolts:
    - Diameter (minimum): 12 mm.
    - Number per connection (minimum): Two, unless otherwise indicated.
    - Other requirements: None.
  - Punching of bolt holes: Not permitted.
  - Welds: Full profile.
  - Other constraints: None.
- 116 **DESIGN CONSTRAINTS - STEELWORK TO BE GALVANIZED**
- Steel grades: Do not use steel downgraded from a higher specification.
  - Detail design: Avoid details that will increase the risk of initiating liquid metal assisted cracking (LMAC).
    - Particular restrictions: Use full end plates and stiffeners.
  - Other requirements: Seal vent and drainage holes in hollow sections using non-ferrous plugs.
- 120 **DRAWINGS AND CALCULATIONS**
- Information required: Fabrication drawings and calculations for Engineers review in advance of site works.
  - Requirement: Before preparing detailed fabrication drawings, submit:
    - General arrangement drawings with individual steel members clearly identified.
    - Calculations for major connections.
- 125 **SPECIFICATION STANDARD**
- Standard: Comply with latest edition of National Structural Steelwork Specification (NSSS).
    - Additional requirements: None.
    - Document availability: For the duration of the work, at fabrication shop and on site.
  - References to Engineer in NSSS: For the purpose of this contract, interpret such references as being to the person named in section A10 as Consulting Structural Engineer.
    - Exceptions: None.

- 130 **GENERAL STEEL SECTIONS AND PLATES** All non-hollow sections unless noted differently on contract drawings
- Standard: To BS EN 10025-2.
  - Grade: S355J0.
    - Options: 2 and 5.
  - Source: Obtain steel from a source accredited to a national or internationally accepted quality standard.
  - Other requirements: None.
- 135 **HOLLOW STEEL SECTIONS** All Hollow Sections unless noted differently on contract drawings
- Standard: To BS EN 10210-1.
  - Grade: S355J0H.
    - Options: Generally 2 and 5; steel to be galvanized, 1.1 and 1.4.
  - Source: Obtain steel from a source accredited to a national or internationally accepted quality standard.
  - Other requirements: None.

### **COLD FORMED MATERIALS**

- 170 **COLD-FORMED GALVANIZED STEEL** Purlins
- Manufacturer: Contractor's choice.
    - Product reference: Contractor's choice.
  - Material: Galvanized steel sheet to BS EN 10326.
    - Thickness: At least equivalent to that shown on drawings.
    - Designation: As shown on drawings.
- 178 **FIXING PROFILE SHEET TO STEELWORK**
- End supports:
    - Length of sheet bearing onto support ( minimum): 50 mm.
    - Fixing type/ size: ??? mm diameter self drilling screws .
    - Coating applied by manufacturer: None.
    - Location: In trough of sheet.
    - Number/ centres of fixings: 4 No. fixings per trough at support position..
    - Distance from end of sheet (minimum): 20 mm.
    - Distance from edge of support (minimum): 50 mm.
  - Side supports:
    - Width of sheet bearing onto support (minimum): 50 mm.
    - Fixing type/ size: SX3/10 5.5 x 28 mm diameter self drilling screws .
    - Coating applied by manufacturer: None.
    - Centres of fixings (maximum): As per Manufacturers Specification.
    - Distance from edge of sheet (minimum): 20 mm
    - Distance from edge of support (minimum): 20 mm.
  - Other requirements: Install temporary supports before fixing sheets to permanent supports.

### **FABRICATION**

- 180 **NOTIFICATION OF COMMENCEMENT**
- Notice: Give notice before fabrication is due to start.
    - Period of notice (minimum): Five working days .

- 190     **MARKING**
- Identifying and recording materials and components: Submit details of proposed methods.
  - Location of marks:
    - Generally: Visible for checking after erection.
    - Weathering steel: On surfaces not exposed to open view in the completed work.
  - Steel to be blast cleaned, pickled, metal sprayed or galvanized: Marked so that subsequent treatment cannot obliterate the marking.

- 195     **HARD STAMPING**
- Usage: Not permitted except as indicated on drawings.

- 215     **HOLLOW SECTIONS**
- Insides of sections: Debris and moisture removed before sealing ends and openings.

- 220     **ACCESS/ VENTILATION HOLES IN BASE PLATES**
- Base plates larger than 1 m<sup>2</sup>: Make 25 mm diameter holes as necessary for pressure grouting, escape of entrapped air or direct compaction of filling/ bedding material.

- 225     **STEELWORK TO BE GALVANIZED**
- Cutting, drilling and shop welding: Complete before galvanizing.
  - Vent and drain holes: Provide as necessary.
    - Locations: Submit proposals.
    - Sealing: Submit proposals .

#### **WELDING**

- 255     **SITE WELDING**
- Usage: Permitted only where indicated on drawings.
  - Working conditions: Suitable and safe. Do not weld when surfaces are wet or when ambient temperature is below 0°C.

- 270     **ADDITIONAL WELDS**
- Welds (including tack welds) not indicated on drawings: Not permitted without approval.

- 280     **SHEAR CONNECTORS**
- Connector type: Headed stud shear connectors (SD).
    - Size/ spacing: Refer contract drawings.
  - Welding method: Drawn arc stud welding.
  - Procedure trials: Not required.
  - Other requirements: Studs must be shop welded as noted on contract drawings

#### **BOLT ASSEMBLIES**

- 302     **NON-PRELOADED BOLT ASSEMBLIES**
- Designation: Black bolts to BS 4190, grade 8.8 .
    - Threading: Full length.
  - Nuts and washers: To suit grade of bolt, as NSSS, clause 2.3.
  - Coating applied by manufacturer: Galvanized.
  - Other requirements: None.

## 305A PROPRIETARY ANCHORS To Concrete

- Manufacturer: Hilti.
  - Product reference: Hilti HVA HVU resin Anchors or as noted on contract drawings.
- Anchor type: Bonded anchor .
- Material: Stainless steel.

## 315 HOLDING DOWN SYSTEMS

- Bolts:
  - Standard: To BS 7419.
  - Type: Hexagonal headed.
  - Grade: 8.8.
  - Diameter: As shown on drawings.
  - Coating: Galvanized.
- Bolt boxes: Expanded metal tube.
- Anchorage: As detailed on contract drawings.
- Other requirements: None.

## 370 GALVANIZED COATING TO BOLT ASSEMBLIES

- Standard: To BS 7371-6.
- Galvanizing: Applied by fastener manufacturer. Passivated and lubricated if no additional coatings are specified. Nuts tapped after galvanizing.
- Use/location: All shop and site connections in shop painted steelwork.

## 390 SEALED HOLLOW SECTIONS

- Holes: Sealed to prevent access of moisture.
  - Method of sealing: Submit proposals.

**ERECTION**

## 405 OUTLINE METHOD OF ERECTION

- Submit proposals.

## 410 PRE-ERECTION CHECKS

- Scope: At least 7 days before proposed erection start date, check the following:
  - Foundations and other structures to which steelwork will be attached: Accuracy of setting out.
  - Holding down bolts: Position, protruding length, slackness and condition.
- Inaccuracies and defects: Report without delay.
- Permission to commence erection: Obtain.

## 420 SETTING OUT

- Permissible deviations: In addition to the requirements of the NSSS, comply with the following:
 

Type of dimension and location	Permissible Deviation
Comply with NSSS .	Comply with NSSS .

## 425 MODIFICATIONS

- Steelwork: Do not modify without approval.
- Temporary fabrication/ erection attachments: Remove

## 432 TEMPORARY SUPPORT

- Permanent bracing system:
  - Vertical: Steel wall bracing as detailed.
  - Horizontal: Composite action floors.
- Temporary bracing/ restraints: Provide as necessary until permanent bracing system is complete and sufficiently mature to carry loads and all connections have been made to the permanent system.
- Elements to be supported: Steelwork erection sequence must consider temporary stability of frame, in particular the erection and stability of the inverted delta trusses..
- Forces and moments in temporary supports: Make an independent assessment.

## 440 COLUMN BASES

- Levels: Adjust using steel shims or folding wedges no larger than necessary.
- Location of shims/ wedges: Position symmetrically around perimeter of base plate. Do not use a single central pack.
- Give notice: If space beneath any column base is outside specified limits for bedding thickness.
- Accuracy of erection: Check, and correct errors before filling and bedding beneath bases and carrying out other adjacent work.

## 443 PROPRIETARY FILLING/ BEDDING OF COLUMN BASES

Bedding thickness range: Refer contract drawings (maximum 50mm).

- Preparation: Concrete surfaces scarified to provide a good mechanical key.
- Bolt pockets and spaces beneath base plates: Completely filled with Non-shrink High Flow Cementitious grout.

## 447 BONDED ANCHORS

- Holes: Clean and free from dust at time of installing anchor.
- Permeable sleeves: Use in conditions where otherwise the loss of bonding agent would be unacceptably high.
- Other requirements: Install in strict accordance with manufacturers published recommendations as required.

## 475 PRODUCTS

- Steel: Submit test certificates.

**PROTECTIVE COATINGS**

## 521 ALTERNATIVE MANUFACTURERS

- Short list of manufacturers: Obtain coating materials from one only of the following: Contractor to Submit Proposals.
- Selected manufacturer: Submit details before ordering materials.

## 523 COMPATIBILITY OF SHOP PRIMER WITH SITE APPLIED INTUMESCENT COATING

- Intumescent coating: M61/ Nullifire or Equal.
- Primer: Compatible with coating under general and fire conditions.
- Manufacturer's recommendations and test evidence: Submit before priming. Include fire test data to BS 476-20 and -21, or BS EN 1363-1 and BS EN 1365-2, -3, and/or -4 as appropriate.

## 535 INSPECTION OF COATING WORK

- Work in progress: Permit coating manufacturer to inspect and take samples of products.
- Notice: Give notice of dates for:
  - Start of surface preparation and coating.
  - Coated members or components leaving the works.
  - Period of notice (minimum): 5 working days.

## 550 POST-GALVANIZING INSPECTION

- Inspector: Submit, on request, evidence of training and competence in visual inspection for liquid metal assisted cracking.
- Components for which visual inspection is not required (procedure PGI-0): Not applicable.
- Components requiring additional inspection:
  - Procedure PGI-2A: None.
  - Procedure PGI-2B: None.
- Timing: Before erection of steelwork or application of other coatings.
- Action in event of non compliance:
  - Submit: Full records of all post-galvanising inspections, drawing attention to any erected components that are required to be quarantined.
  - Procedure PGI-3: Carry out on all quarantined components, and submit report.
  - Sites of suspected defects: Remove zinc coating by grinding back to bright metal for a distance of not less than 50 mm around each defect and from a similar area on opposite face of member and inspect.
  - Remedial actions: Submit proposals.

**PROTECTIVE COATING SYSTEMS**

## 620 GALVANIZING TO BLAST CLEANED STEEL

- Use/ location: All steel in Service/Accommodation block to be galvanised as per contract drawings.
- Preparation: Blast cleaning to BS EN ISO 8501-1, preparation grade Sa2½ using chilled angular iron grit grade G24 to give a coarse surface profile, followed by chemical cleaning.
- Galvanizing: To BS EN ISO 1461.
  - Minimum mean coating thickness: 140 micrometres.

- 660A SHOP PLUS SITE PAINTING WITH POLYURETHANE OVER EPOXY MIO
- Use/ location: All steelwork within Pool Area.  
Steelwork Protection System to be chosen by the Contractor and agreed with Structural Engineer for protective performance required.  
.Refer to the Special Requirements noted below.Other information provided in this clause is for guidance only.
  - Paint manufacturer: Akzo Nobel.
  - Shop preparation:
    - Generally: Blast clean to BS EN ISO 8501-1, preparation grade Sa 2½.
    - Welds/ edges/ areas with surface imperfections: To BS EN ISO 8501-3, preparation grade P3.
  - Shop primer: As per manufacturers recommendations.
    - Dry film thickness: As per manufacturers recommendations.
  - Shop intermediate coat: As manufacturers recommendations.
    - Dry film thickness: As per manufacturers recommendations.
  - Shop top coat: As per manufacturers recommendations.
    - Dry film thickness: As per manufacturers recommendations.
  - Site intermediate coat: As per manufacturers recommendations.
    - Dry film thickness: As per manufacturers recommendations.
  - Site top coat: High Performance Gloss finish paint system to conform to special requirements listed below. .
    - Dry film thickness: As Per Manufacturers Recommendations.
    - Colour: White.
  - Special requirements: Stripe intermediate coat to external angles  
Environmental Category C4 (in line with BS EN 12944-Part 2)  
Durability Range: High (in line with BS EN ISO 12944-Part 1)  
System number to be Contractor's choice (system numbers as per BS EN ISO 12944-Part 5)  
Compatibility with priming system to be verified by manufacturer.  
Required lifespan to first maintenance finishing coat to be 20 years minimum.  
Submit sub-contractors Paint System proposals for approval. .

#### PREPARATION FOR PAINTING

- 710 OFFSITE PREPARATION AND PAINTING
- Working area: Covered and properly lit, heated and ventilated.
  - Sequence of working: Select from the following and submit proposals:
    - Fabricate, blast clean, prime.
    - Blast clean, fabricate, remove flash rust with a light overall sweep blast, prime.
    - Blast clean, apply weldable prefabrication primer, fabricate, prime.
  - Prefabrication primer (option 3): Type recommended by manufacturer of post fabrication primer.
    - Thickness of post fabrication primer coat: May be reduced if and as recommended by manufacturer.
  - Surfaces inaccessible after assembly: Apply full treatment and coating system including, if necessary, local application of site coatings.
- 725 MANUAL CLEANING OF NEW STEELWORK
- Preparation: Remove fins, burrs, sharp edges, weld spatter, loose rust and loose scale.
  - Surface finish: Clean but unpolished to BS EN ISO 8501-1, grade St 2.
  - Finishing: Thoroughly degrease and clean down. Remove any consequent rusting back to grade St 2. Prime without delay.

- 730 **PREPARATION FOR SITE WELDING OF SHOP PAINTED STEELWORK**
- Method: Select from the following:
    - Mask weld areas immediately after blast cleaning and before coating steelwork. If paint system comprises more than one coat, step each coat 30 mm back from edge of preceding coat and away from masked areas. Remove masking immediately before welding.
    - Prepare and paint steelwork including weld areas. Grind off to bare steel around each weld area immediately before welding.
- 735 **TREATMENT OF SITE WELDED JOINTS IN PAINTED STEELWORK**
- Preparation: After welding, and without delay, remove scale and weld spatter from weld areas. Remove traces of rust. Wash with clean water and allow to dry. Prime without delay.
  - Protective/ Decorative coatings: Apply to weld areas to match surrounding painted areas.
- 736 **TREATMENT OF SITE WELDED JOINTS IN GALVANIZED STEELWORK**
- Preparation: After welding, and without delay, remove scale and weld spatter from weld areas. Remove traces of rust. Wash with clean water and allow to dry.
  - Coating: Reinstate using one of the methods given in BS EN ISO 1461, clause 6.3.
- 740 **BOLTED JOINTS (OTHER THAN FRICTION GRIP JOINTS)**
- Steelwork to be shop painted: Apply full shop specification to joint faces.
  - Steelwork to be erected with mill finish then site painted: Before erection, prepare and prime joint faces and allow to dry.
  - Bolted joints in externally exposed steelwork:
    - Immediately before assembling, apply a further coat of primer and bring surfaces together while still wet.
    - After assembling and before applying site coatings, seal crevices to bolts and joint perimeters with a compatible sealant.
- 745 **FAYING SURFACES OF FRICTION GRIP JOINTS**
- Protection: Immediately after blast cleaning and before coating surrounding areas, mask faying surfaces to protect from contamination and deterioration.
    - Paint systems comprising more than one coat: Step each coat 30 mm back from edge of preceding coat and away from masked areas.
  - Removal of protection: Immediately before bolting, remove masking. Check faying surfaces are free from adhesive. Clean with solvent if necessary.
- 755 **UNCOATED FASTENERS**
- Treatment: After steelwork erection and before applying site coatings, thoroughly degrease and clean. Without delay, coat to match adjacent shop painted areas.
- 760 **GALVANIZED FASTENERS**
- Treatment: After steelwork erection and before applying site coatings, thoroughly degrease and clean. Etch prime.
- 765 **SITE PREPARATION OF SHOP PAINTED STEELWORK**
- Preparation: Touch in shop coats, as necessary, and allow to dry. Before applying site coats (when specified), abrade surfaces or wash down or both, as recommended by paint manufacturer.
- 770 **SITE PREPARATION OF GALVANIZED SURFACES FOR PAINTING**
- Preparation: Thoroughly degrease. Remove white corrosion products. Wash off and allow to dry before applying etching wash or primer.

**PAINTING****810 ENVIRONMENTAL CONDITIONS**

- General requirements prior to starting coating work:
  - Surfaces: Unaffected by moisture or frost.
  - Steel temperature: At least 3°C above dew point, with conditions stable or improving, and not high enough to cause blistering or wrinkling of the coating.
  - Relative humidity: Below 85%.

**815 COATINGS**

- Surfaces to be coated: Clean, dust free and suitably dry. Previous coats to be adequately cured.
- Multiple coats of same material: Use different tints to assist checking of complete coverage.
- Penultimate coat: Colour recommended by paint manufacturer to suit top coat colour.
- Finish required: Smooth and even, of uniform thickness and colour, free from defects.

**820 FILM THICKNESS**

- Wet film thickness: During application, check thickness of each coat with a wheel or comb gauge used in accordance with BS EN ISO 2808.
- Accumulated dry film thickness: After each coat has dried, check total accumulated film thickness.
  - Method: Magnetic or electromagnetic meter.
  - Number and position of measurements: As directed.
  - Validation: Measurements to be independently witnessed.
  - Meter calibration: Check against standard shims and recalibrate regularly against a smooth steel reference plate.
- Average dry film thickness:
  - At least specified thickness over any square metre.
  - No reading to be less than 75% of specified thickness.
- Top coat dry film thickness: Sufficient to give an even, solid, opaque appearance.

**825 STRIPE COAT**

- External angles, nuts, bolt heads, rough weld seams, and areas difficult to coat: Apply an additional stripe coat of undercoat and finishing coat .

**850 JUNCTIONS WITH CONCRETE**

- Exposed steelwork partially embedded or encased in concrete: Apply two coats of bituminous coating locally to the steel/concrete junction.
- Bituminous coating: To BS 6949, type 1, class A.

**G**

**Structural/Carcassing metal/timber**

**G12**

**Isolated structural metal members**

## G12 Isolated structural metal members

To be read with Preliminaries/ General conditions.

### PRODUCTS

- 320     **STEEL**
- Steel: To BS EN 10025-2.
    - Grade: S275J0.
    - Section properties and dimensions:
      - To BS 4-1 ;
      - To BS EN 10055 ;
      - To BS EN 10056 ; and
      - To BS EN 10210-2.
    - 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: M12 Mimimum.
  - Nuts and washers: Material grade and finish to suit bolts.
  - Coating applied by manufacturer: Galvanized.
  - Other requirements: Diameter of washers in contact with timber faces to be minimum 3 times bolt diameter, with a thickness not less than 0.25 times bolt diameter.
- 350     **PROPRIETARY ANCHORS To Concrete and block work**
- Manufacturer: Hilti.
    - Product reference: As contract drawings.
  - Anchor type: Bonded anchor .
  - Material: Carbon steel
  - Coating applied by manufacturer: Galvanized.

### 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 As contract drawings if required.

### 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.

- 620 **BONDED ANCHORS**
- Holes: Clean and free from dust at time of installing anchor.
  - Permeable sleeves: Use in conditions where otherwise the loss of bonding agent would be unacceptably high.
  - Other requirements: Install in strict accordance with manufacturers published recommendations.
- 630 **SITE TESTING OF ANCHORS TO MASONRY**
- Standard: To BS 5080.
  - Preliminary tests: Not required.
  - Proof tests: Not required.
  - Test results: Report failures and seek instructions.
- 640 **PREPARATION AND PRIMING**
- Sequence of working: Fabricate, prepare, prime.
  - Surfaces inaccessible after assembly: Apply full treatment and coating system including, if necessary, local application of site coatings.
  - Galvanized/ sheradized fasteners: After steelwork erection and before applying site coatings, thoroughly degrease and clean. Etch prime.
- 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: High build zinc phosphate epoxy.
    - Number of coats: Two.
    - Dry film thickness (minimum): 80 micrometres per coat.
    - Application: To BS EN ISO 12944-7.
  - Other requirements: Confirm that proposed primer is suitable for use on hand cleaned steel..

## **COMPLETION**

- 910 **STEEL TO TIMBER JOINTS**
- General: Inspect accessible bolted and coach screwed joints and tighten fasteners if necessary.
    - Timing: Immediately prior to installation of finishes, on Completion, and at end of Defects Rectification or Liability Period.
    - Confirmation: Give notice when inspections and adjustments have been made.

**H**  
**Cladding/Covering**

**H11  
Curtain walling**

## H11 Curtain walling

To be read with Preliminaries/ General conditions.

### 9 CURTAIN WALLING DESIGN

The contractor will be responsible for the detailed design of all curtain walling, glazing and external doors (in accordance with EN 13830 : 2003(E) and the referenced standards in clauses 2.1 and 2.2). This will be in accordance with the Architect's drawings of intent (dwg refs 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456), the NBS Clauses H11, H13, which states the performance required for thermal performance and light transmittance. This will be inclusive of structural design, interfaces, thermal shock and verification of the glazing specification to retain the relevant standards specified. The Contractor will be responsible for all interfaces to the curtain walling and external doors and the co-ordination with adjacent elements and materials.

### TENDERING

### 10 INFORMATION TO BE PROVIDED WITH TENDER

- Submit the following curtain walling particulars:
  - Typical plan, section and elevation drawings at suitable scales.
  - Typical detailed drawings at large scales, including head, base and column/supporting structure junctions .
  - Technical information and certification demonstrating compliance with specification of proposed incorporated products and finishes, including glazing units .
  - Certification, reports and calculations demonstrating compliance with specification of proposed curtain walling.
  - Proposals for connections to and support from the building structure and building components.
  - Proposals for amendments to primary supporting structure and for secondary supporting structure additional to that shown on preliminary design drawings.
  - Schedule of builder's work, special provisions and special attendance by others.
  - Examples of standard documentation from which project quality plan will be prepared.
  - Preliminary fabrication and installation method statements and programme.
  - Schedule of products and finishes with a design life expectancy less than that specified in clause 440, with proposals for frequencies and methods of replacement.
  - Proposals for replacing damaged or failed products.
  - Areas of non-compliance with the specification.

## TYPES OF CURTAIN WALLING

### 110A CURTAIN WALLING TO POOL HALL

- Supporting structure: Secondary steel off structural steel columns with 9m grid layout .
- Curtain walling system: Metal Technology Latitude Curtainwalling system
  - Manufacturer: Metal Technology or Equal .
  - Product reference: Metal Technology System 17 latitude(vertical) curtain walling) .
  - Type: Stick system, pressure equalized .
- Internal framing member:
  - Material: Aluminium .
  - Finish: Powder coating .
  - Colour/ texture: White .
  - Minimum film thickness: 60 micrometres suitable for marine and swimming pool environments. .
- External cover cap: combination of standard rectangular caps, aerofoil caps and silicone glass to glass joints - refer to Architects elevation drawings for locations
  - Material: Aluminium .
  - Finish: Powder coating .
  - Colour/ texture: Silver? .
  - Minimum film thickness: 60 micrometres .
- Glazing: 32mm Insulating glass units .
  - Inner pane: 6.4 Laminated glass - Pilkington Optilam I white with K, refer to section L40 for further detail .
  - Outer pane: 6mm Thermally toughened solar control glass - Pilkington Eclipse Advantage grey, refer to section L40 for further detail .
- Glazing system: Gaskets, cover plate fixed .
- Panel/ facing type: Composite infill panels, external cover plate fixed .
  - External material: Aluminium .
  - External finish: polyester powder coated .
  - Internal material: Aluminium .
  - Internal finish: polyester powder coated where visible .
  - Core insulation: As clause ??? .
- Accessories: Perimeter flashings .
- Incorporated components: Doors as drawing ---- , perforated aluminium sheet facing with acoustic insulation to locations as indicated on the Architects drawing .
- Other requirements: vertical aerofoils applied to mullion caps - refer to drawings for detail .

### 110B CURTAIN WALLING SYSTEM To Foyer Glazed Roof

- Manufacturer: Metal Technology Ltd.
  - Web: [www.metaltechnology.com](http://www.metaltechnology.com).
  - Email: [sales@metaltechnology.com](mailto:sales@metaltechnology.com).
  - Product reference: System 17 Sloped Roofing Curtain Walling
- Internal framing member:
  - Material: Extruded aluminium
  - Finish: Powder organic coated, colour ???.
  - Minimum film thickness: 60 micrometres.
- External cover cap:
  - Material: Extruded aluminium. CW??? horizontally
  - Finish: Powder organic coated, colour ???.
  - Minimum film thickness: 60 micrometres.
- Glazing: Insulating glass units, 32 mm thick
- Glazing system: Dry glazed gasket system. Vertical mullion joints silicone pointed externally
- Panel/ facing type: As manufacturers details.

- 110C CURTAIN WALLING SYSTEM To Fitness-suite / Pool Area
- Manufacturer: Metal Technology Ltd.
    - Web: [www.metaltechnology.com](http://www.metaltechnology.com).
    - Email: [sales@metaltechnology.com](mailto:sales@metaltechnology.com).
    - Product reference: System 8 Low-Rise Curtain Walling
  - Internal framing member:
    - Material: Extruded aluminium
    - Finish: Powder organic coated, colour ???.
    - Minimum film thickness: 60 micrometres.
  - External cover cap:
    - Material: Extruded aluminium. CW05 horizontally with CW09 vertically
    - Finish: Powder organic coated, colour ???.
    - Minimum film thickness: 60 micrometres.
    - Glazing: Insulating glass units, ??? mm thick, Manifestation as per Architects drawings.
  - Glazing system: Dry glazed gasket system
  - Panel/ facing type: As manufacturers details.
- 110D CURTAIN WALLING EAST WHALE LANE ELEVATION.
- Supporting structure: Secondary steel off structural steel columns with 9m grid layout .
  - Curtain walling system: Metal Technology Latitude Curtainwalling system
    - Manufacturer: Metal Technology or Equal .
    - Product reference: Metal Technology System 17 latitude(vertical) curtain walling) .
    - Type: Stick system, pressure equalized .
  - Internal framing member:
    - Material: Aluminium .
    - Finish: Powder coating .
    - Colour/ texture: White .
    - Minimum film thickness: 60 micrometres suitable for marine and swimming pool environments. .
  - External cover cap: Standard rectangular caps - refer to Architects elevation drawings for locations
    - Material: Aluminium .
    - Finish: Powder coating .
    - Colour/ texture: T.B.C. .
    - Minimum film thickness: 60 micrometres .
  - Glazing: 32mm Insulating glass units .
    - Inner pane: 6mm Laminated glass - Pilkington Clear Float with K, refer to section L40 for further detail .
    - Outer pane: 6mm Thermally toughened solar control glass - Pilkington Eclipse Clear Float, refer to section L40 for further detail .
  - Glazing system: Gaskets, cover plate fixed .
  - Panel/ facing type: Composite infill panels, external cover plate fixed .
    - External material: Aluminium .
    - External finish: polyester powder coated .
    - Internal material: Aluminium .
    - Internal finish: polyester powder coated where visible .
    - Core insulation: As clause ??? .
  - Accessories: Perimeter flashings .
  - Incorporated components: Doors as drawing 454,455 , perforated aluminium sheet facing with acoustic insulation to locations as indicated on the Architects drawing .
  - Other requirements: vertical aerofoils applied to mullion caps - refer to drawings for detail .

- 135A DOORS WITHIN CURTAIN WALLING SYSTEM
- Manufacturer: Metal Technology Ltd. Steeple Road Industrial Estate ,Steeple Road, Antrim, Co.Antrim,Northern Ireland,BT41 1AB or Equal .
    - Product reference: System 10 Commercial Door Suite .
  - Material: Aluminium .
  - Finish: Polyester powder coated .
    - Colour/ texture: standard RAL colour .
    - Minimum film thickness: 60 microns suitable for marine and swimming pool environments .
  - Fixing: to be agreed .
  - Other requirements: refer to Section L20 for full detail .
- 136 DOORS REVOLVING WEST ENTRANCE DOOR
- Manufacturer: Boon Edam Ltd, Holland House, Crowbridge Rd, Orbital Park, Kent TN24 0GR tel: 01233 505900 .
    - Product reference: Duotour 4200 AC break out .
  - Material: Doors: Extruded aluminium with horsehair weatherstrips and tempered safety glass Drum Walls: glazed walls - laminate glass in slim line aluminium sections .
  - Finish: Polyester Powder coating .
    - Colour/ texture: standard RAL colour .
    - Minimum film thickness: 60 micrometres .
  - Fixing: to manufacturers recommendations .
  - Other requirements: watertight roof, push button for temporary low speed (disabled access) refer to Section L20 clause 495 for further detail .
- 137 DOORS SLIDING EAST ENTRANCE
- Manufacturer: Kaba Door Systems Ltd, Halesfield 4, Telford, Shropshire TF7 4AP .
    - Product reference: Kaba SLX/PSX Bi-Parting Automatic sliding door system .
  - Material: Aluminium .
  - Finish: Polyester Powder coating .
    - Colour/ texture: Standard RAL colour to match adjacent curtain walling .
    - Minimum film thickness: 60 micrometres .
  - Fixing: Paired leaf top hung .
  - Other requirements: refer to Section L20 Clause 520 for further detail .
- 138 DOORS MANUAL DOOR WEST ENTRANCE
- Manufacturer: Metal Technology Ltd. Steeple Road Industrial Estate,Steeple Road, Antrim ,Co. Antrim, northern Ireland BT41 1 AB .
    - Product reference: System 10 Commercial Door Suite .
  - Material: Aluminium .
  - Finish: Polyester powder coated .
    - Colour/ texture: standard RAL colour .
    - Minimum film thickness: 60 micrometres .
  - Fixing: to be agreed .
  - Other requirements: None .
- 139 DOORS POOL HALL FIRE ESCAPES
- Manufacturer: Metal Technology Ltd. .
    - Product reference: System 10 Commercial Door suite .
  - Material: Aluminium .
  - Finish: polyester powder coating .
    - Colour/ texture: standard RAL colour .
    - Minimum film thickness: 60 micrometres .
  - Fixing: to be agreed .
  - Other requirements: Performance criteria as curtain walling? .

**GENERAL REQUIREMENTS/ PREPARATORY WORK**

- 210     **DESIGN**
- Curtain walling and associated features: Complete the detailed design. Submit before commencement of fabrication.
  - Related works: Coordinate in the detailed design.
- 215     **DESIGN PROPOSALS**
- Submission of alternative proposals: Preliminary design drawings indicate intent. Other reasonable proposals will be considered.
- 220     **SPECIFICATION**
- Compliance standard: The Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes'.
  - Reference information: For the duration of the contract, keep available at the design office, workshop and on site copies of:
    - The CWCT 'Standard for systemised building envelopes'.
    - Publications invoked by the CWCT 'Standard for systemised building envelopes'.
- 230     **INFORMATION TO BE PROVIDED DURING DETAILED DESIGN STAGE**
- Submit the following curtain walling particulars:
    - A schedule of detailed drawings and dates for submission for comment.
    - A schedule of loads that will be transmitted from the curtain walling to the structure.
    - Proposed fixing anchor details relevant to structural design and construction.
    - A detailed testing programme in compliance with the Main Contract master programme.
    - A detailed fabrication and installation programme in compliance with the Main Contract master programme.
    - Proposals to support outstanding applications for Building Regulation consents or relaxations.
- 232     **QUALITY PLAN**
- Requirement: Submit during detailed design.
  - Content: In accordance with BS 5750, BS EN ISO 9001 and including the following:
    - Name of the quality manager.
    - Quality assessment procedures.
    - Inspection procedures to be adopted in checking the work.
    - Stages at which check lists will be used and samples of the lists.
    - List of work procedures on the correct use of materials or components, both off site and on site.
    - List of product information with latest revisions.
    - Subcontractors involved in the work.
    - Subcontractors' quality plans.
    - Storage, handling, transport and protection procedures.
    - Procedure for registering and reporting non compliances.
    - Maintenance procedures and calibration records.
    - Certification that completed work complies with specification.
    - Check list register to ensure all items have been inspected and non compliances discharged.

- 235 INFORMATION TO BE PROVIDED BEFORE COMMENCEMENT TESTING OR FABRICATION OF CURTAIN WALLING
- Submit the following curtain walling particulars:
    - Detailed drawings to fully describe fabrication and installation.
    - Detailed calculations to prove compliance with design/ performance requirements.
    - Project specific fabrication, handling and installation method statements.
    - Certification for incorporated components manufactured by others confirming their suitability for proposed locations in the curtain walling.
    - Recommendations for spare parts for future repairs or replacements.
  - Recommendations for safe dismantling and recycling or disposal of products.
- 240 INFORMATION TO BE PROVIDED BEFORE COMMENCEMENT OF STRUCTURAL SEALANT GLAZING
- Submit structural bonding sealant manufacturer's project specific approval for:
    - Compatibility and adhesion of products and finishes.
    - Full details of structural sealant glazing design.
    - Structural sealant dimensions.
    - Project specific sealant application method statement.
- 250 PRODUCT SAMPLES
- General: Before commencing detailed design, submit labelled samples of: cruciform samples of different joint types .
- 260 SAMPLES OF FIXINGS
- General: During detailed design, submit labelled samples of each type of fixing anchor, including casting-in restraints and shims, together with manufacturers' recommended torque figures.
- 280 MOCK-UP
- General: Construct during detailed design work in an approved location. Obtain approval of appearance before proceeding. Retain undisturbed until completion of curtain walling installation.
  - Extent: sufficient size to represent units/system .
  - Purpose: To serve as an installation reference panel .

#### **DESIGN/ PERFORMANCE REQUIREMENTS**

- 305 CWCT 'STANDARD FOR SYSTEMISED BUILDING ENVELOPES'
- General: Unless specified or agreed otherwise comply with:
    - Part 2 - Loads, fixings and movement.
    - Part 3 - Air, water and wind resistance.
    - Part 4 - Operable components, additional elements and means of access.
    - Part 5 - Thermal, moisture and acoustic performance.
    - Part 6 - Fire performance
    - Part 7 - Robustness, durability, tolerances and workmanship.
  - Project performance requirements specified in this subsection: Read in conjunction with CWCT performance criteria.

## 312 INTEGRITY

- Requirement: The curtain walling must resist wind loads, dead loads and design live loads, and accommodate deflections and movements without damage.
- Design wind pressure: Calculate in accordance with BS 6399-2, Standard Method:
  - Basic wind speed ( $V_b$ ): 24 m/s.
  - Altitude factor ( $S_a$ ): 1.025.
  - Direction factor ( $S_d$ ): 1.
  - Seasonal factor ( $S_s$ ): 1.
  - Probability factor ( $S_p$ ): 1.
  - Terrain and building factor ( $S_b$ ): 1.742.
  - Size effect factor ( $C_a$ ): 1.
  - External pressure coefficients ( $C_{pe}$ ): varies max 3.2.
  - Internal pressure coefficients ( $C_{pi}$ ): +0.3 / -0.2.
  - Dominant opening: No.
- Hard body impact loads: To BS 8200:
  - Location and category: category B.
- Soft body impact loads - curtain walling to BS EN 14019:
  - Location and classification: class E1.
- Soft body impact loads - glass to BS EN 12600:
  - Location and classification: 1 (B) 1.
- Permanent imposed loads: Self weight and wind.
- Temporary imposed loads: cladding to take cognisance of construction method and sequence (refer main contractor).

## 320 DEFLECTION UNDER DEAD LOADS

- Requirement: Framing members parallel to the curtain walling plane must not:
  - Reduce glass bite to less than 75% of design dimension.
  - Reduce edge clearance to less than 3 mm between members and immediately adjacent glazing units, panel/ facing units or other fixed units.
  - Reduce clearance to less than 2 mm between members and movable components such as doors and windows.

## 325 DEFLECTION UNDER WIND LOAD

- Requirement: To CWCT 'Standard for systemised building envelopes' clause 3.5 2 and the following additional requirements: None.
- Additional stiffness to CWCT 'Standard for systemised building envelopes' clause 3.5 4.2: Not allowed.

## 330 GENERAL MOVEMENT

- Requirement: Curtain walling must accommodate anticipated building movements as follows: Thermally .

- 332 APPEARANCE AND FIT
- Requirement: Design curtain walling system:
    - To ensure position and alignment of all parts and features as shown on preliminary design drawings.
    - To accommodate deviations in the primary support structure.
  - Primary support structure: Before commencing installation of curtain walling system, carry out survey sufficient to verify that required accuracy of erection can be achieved.
    - Give notice: If the structure will not allow the required accuracy or security of erection.
    - Design tolerances: as section G10 and F10.
  - Curtain wall envelope zone tolerances:
    - Width: 300mm.

Critical reference location: fixing tolerance to head and cill Detail Drgs 442-444.
  - Maximum permitted component and installation tolerances:
    - Panel length  $\pm 2$  mm.
    - Panel width  $\pm 1$  mm.
    - Panel tolerance  $\pm 2$  mm, installation tolerance  $\pm 2$  mm, overall =  $\pm 4$  mm.
- 335 THERMAL MOVEMENT - SERVICE TEMPERATURE RANGES
- Requirement: To CWCT 'Standard for systemised building envelopes' clause 2.7.2 amended and/ or with the addition of the following: as standard clause.
- 340 AIR PERMEABILITY
- Requirement: Permissible air leakage rates of  $1.5\text{m}^3/\text{hr}/\text{m}^2$  for fixed lights and  $2.0\text{m}^3/\text{hr}/\text{lin.m}$  for opening lights must not be exceeded when the curtain walling is subjected to the peak test pressure.
  - Permeability class to BS EN 12152: A4.
    - Peak test pressure: 600 Pa.
- 345 AIR PERMEABILITY EXFILTRATION
- Requirement: The maximum permissible air exfiltration rate through the curtain walling system must not exceed: All external walls:  $4\text{m}^3/(\text{h.m}^2)$  at a test pressure of 50 Pa.
- 350 WATER PENETRATION
- Watertightness class to BS EN 12154: R7.
    - Peak test pressure: 600 Pa.
  - Additional requirements: Underside of any transom not to be wetted at peak test pressure.
- 370 THERMAL PROPERTIES
- Method of calculating the thermal transmittance (U-value) of curtain walling/ each zone of curtain walling: Weighted U-value.
  - Average U-value of curtain walling:  $1.2\text{W}/\text{m}^2\text{K}$  to walling Type A and  $1.2\text{W}/\text{m}^2\text{K}$  to walling Type B..
  - Curtain wall zone interfaces: Co-ordinate to achieve required average U-value.
  - Method for assessing thermal transmittance (U-value) of assemblies: By calculation.
- 380 SOLAR AND LIGHT CONTROL
- Total solar energy transmission:
    - Maximum g-value - glazing only: Not applicable.
    - Maximum effective g-value - glazing with shading devices: Not applicable.
  - Visible light transmission:
    - Minimum light transmission - glazing only: 20%.
    - Minimum effective light transmission - glazing with shading devices: Not applicable.

- 385 THERMAL STRESS IN GLAZING
- Glass panes/ units: Must have adequate resistance to thermal stress generated by orientation, shading, solar control and construction.
- 390 AVOIDANCE OF CONDENSATION
- Requirement: Notional psychrometric conditions under which condensation must not form on building interior surfaces of framing members or any part of infill panels/ facings are:
    - Notional outdoor psychrometric conditions as BS 6229, table A1.
    - Notional indoor psychrometric conditions:
      - Temperature: 30°C.
      - Relative humidity: 60%.
      - Vapour pressure: 1.63 kPa.
- 410 SOUND TRANSMITTANCE
- Minimum weighted sound reduction index ( $R_w$ ) to BS EN ISO 717-1:
    - Between internal and external surfaces of curtain walling: min 35dB .
  - Minimum weighted standardized level difference ( $D_nT_w$ ) to BS EN ISO 717-1:
    - Between adjacent floors abutting curtain walling: 45dB.
    - Between adjacent rooms on same floor abutting curtain walling: 33dB.
- 420 FIRE RESISTANCE OF CURTAIN WALLING
- Standard: To BS 476-22.
    - Minimum periods and criteria: 30 min. integrity, 30 min, insulation .
- 425 INTERNAL SURFACE SPREAD OF FLAME OF CURTAIN WALLING
- Standard: To BS 476-7.
    - Class 0.
- 430 FIRE STOPPING
- Locations: At junctions of curtain walling with compartment walls and floors.
  - Materials and methods of fixing: To ensure fire resistance not less than that specified for compartment walls and floors.
- 435 OPENING LIGHTS (WINDOWS)
- Performance criteria: To CWCT 'Standard for systemised building envelopes' Part 3.
  - Security:
    - Applicable opening lights: As schedule.
    - Security rating: To DD ENV 1627 resistance class 6.
  - Opening lights restrictive catches to CWCT 'Standard for systemised building envelopes' clause 4.2.5: To all opening lights in windows to floors above ground level.
  - Ventilation requirement: TBC.
  - Windows to be cleaned from inside of the building: As schedule.
  - Fasteners: Concealed multipoint, operated by an internal handle.
  - Integral locks: Not required.
- 436 DOORS AND OTHER ACCESS FACILITIES
- Performance criteria: To BS 6375-1 .
  - Access facilities designated for use by disabled persons: Approved Document M.
  - Strength and durability: To CWCT 'Standard for systemised building envelopes' clause 4.3.3.
    - Forces and tests: Hard body impact of 10 joules to MOAT 7 test number 6.
  - Security:
    - Applicable doors: External doors in Curtain Wall.
    - Security rating: To LPS 1175 security rating classification 6.

- 440 **DURABILITY**
- Relevant agents or degradation mechanisms: Marine environment with annual driving rain index  $4 \text{ m}^2\text{sec}^{-1}$ .
  - Design life of the curtain walling system: Not less than 30 years.
  - Secondary components: Submit details together with required maintenance regime, replacement periods and methods of replacement.
- 445 **LIGHTNING PROTECTION SYSTEM**
- Curtain wall components used as part of lightning protection system: None.
- 450 **SAFETY**
- Finished surfaces of curtain walling: Accessible internal and external areas must not:
    - Have irregularities capable of inflicting personal injury.
    - Release irritant or staining substances.
- 460 **STRUCTURAL SEALANT GLAZING REQUIREMENTS**
- Structural sealant glazing units: Installable, removable and replaceable without site application of structural bonding sealant.
  - Structural sealant glazing design: Must limit design tensile stress of sealants to 138 kPa.
- TESTING**
- 510 **COMPARISON (TYPE) TESTING**
- Requirement: To CWCT 'Standard for systemised building envelopes', Part 8.
  - Test results and reports: Before commencement of curtain walling fabrication and installation, submit proof of compliance with this specification.
- 515 **PROJECT TESTING (LABORATORY)**
- Test results and reports: Before commencement of curtain walling fabrication and installation, submit proof of compliance with this specification.
- 520 **PROJECT TESTING (SITE)**
- Test results and reports: Before installation of general areas of curtain walling, submit proof of compliance with this specification.
- 530 **TESTING AUTHORITY**
- Requirement: Project testing must be carried out by a United Kingdom Accreditation Service (UKAS) approved independent laboratory.
- 535 **TESTING AUTHORITY**
- Requirement: Project testing must be carried out by the curtain walling manufacturer/contractor and is to be witnessed and certified by approved independent laboratory.
- 540 **TEST SPECIMEN**
- Arrangement and overall dimensions: TBC.
  - Features: TBC.
- 635 **SITE HOSE TEST**
- Requirement: To CWCT 'Standard for systemised building envelopes', 'Standard test methods for building envelopes' Section 9.
    - Joints to be tested: to be agreed.

## 660 STRUCTURAL SEALANT GLAZING TESTS

- Product samples: Provide the structural bonding sealant manufacturer with framing profiles, glass, gaskets, assembly/ weathering sealants and other curtain walling products that are proposed for contact with structural bonding sealant.
- Testing: By sealant manufacturer to determine compatibility and adhesion of structural bonding sealant under specified design loadings.
- Modification of product to enable compliance with test criteria: Details must be recorded in the sealant manufacturer's project specific approval.

**PRODUCTS**

## 710 ALUMINIUM ALLOY FRAMING SECTIONS

- Standard: To relevant parts of BS EN 515, BS EN 573, BS EN 755 and BS EN 12020.
- Alloy, temper and thickness: Suitable for the application and specified finish.
- Structural members: To BS 8118.

## 712 ALUMINIUM ALLOY SHEET

- Standards: To relevant parts of BS EN 485, BS EN 515 and BS EN 573.
- Alloy, temper and thickness: Suitable for the application and specified finish.

## 715 CARBON STEEL FRAMING SECTIONS/ REINFORCEMENT

- Standards: To relevant parts of BS 7668, BS EN 10029, and BS EN 10210.
- Thickness: Suitable for the application, and for galvanizing or other protective coating.

## 730 MECHANICAL FIXINGS

- Stainless steel: To BS EN ISO 3506, grade A2 generally, grade A4 when used in severely corrosive environments.
- Carbon steel: To BS 4190 and suitable for galvanizing or other protective coating.
- Aluminium brackets, rivets and shear pins: To relevant parts of BS EN 755.

## 732 ADHESIVES

- General: Not degradable by moisture or water vapour.

## 735 FIXING ANCHORS

- Type and use: Reviewed and approved by fixing manufacturers. Submit confirmatory information on request.
- Dimensions: Not less than recommended by their manufacturers.
- Adjustment capability: Sufficient in three dimensions to accommodate building structure and curtain walling fabrication/ installation tolerances.

## 737 GLASS GENERALLY

- Standards: To BS 952 and relevant parts of:
  - BS EN 572 for basic soda lime silicate glass.
  - BS EN 1096 for coated glass.
  - BS EN 1748 for borosilicate glass.
  - BS EN 1863 for heat strengthened soda lime silicate glass.
  - BS EN 12150 for thermally toughened soda lime silicate glass.
  - BS EN 13024 for thermally toughened borosilicate glass.
  - BS EN ISO 12543 for laminated glass.
- Glass quality: Clean and free from obvious scratches, bubbles, cracks, rippings, dimples and other defects.
- Glass edges: Generally undamaged. Shells and chips not more than 2 mm deep and extending not more than 5 mm across the surface are acceptable if ground out.

## 739 DIMENSIONAL TOLERANCES ON GLASS

- Measurement of tolerances: Before any thermal toughening/ heat strengthening.
- Pane dimensions less than 1500 mm:
  - For 3 to 6 mm thick glass:  $\pm 1.0$  mm.
  - For 8 to 12 mm thick glass:  $\pm 1.5$  mm.
  - For 15 mm thick glass:  $\pm 2.0$  mm.
  - For 19 mm and 25 mm thick glass:  $\pm 2.5$  mm.
- Pane dimensions more than 1500 mm:
  - For 3 to 6 mm thick glass:  $\pm 1.5$  mm.
  - For 8 to 12 mm thick glass:  $\pm 2.0$  mm.
  - For 15 mm thick glass:  $\pm 2.5$  mm.
  - For 19 mm and 25 mm thick glass:  $\pm 3.0$  mm.
- Pane squareness: Not more than 4 mm difference in diagonal measurements.

## 741 DISTORTIONAL TOLERANCES ON GLASS

- Measurement of tolerances: After any thermal toughening/ heat strengthening.
- Maximum bow: 0.2% of pane dimension.
- Maximum roller wave:
  - For 3 to 5 mm thick glass: 0.5 mm.
  - For 6 to 10 mm thick glass: 0.3 mm.
  - For 12 mm and thicker glass: 0.15 mm.
- Maximum edge dip:
  - For 3 to 5 mm thick glass: 0.8 mm.
  - For 6 to 10 mm thick glass: 0.5 mm.
  - For 12 mm and thicker glass: 0.25 mm.

## 742 HEAT SOAKED THERMALLY TOUGHENED GLASS

- Standard: To BS EN 14179.
  - Holding period: 4 hours.
- Locations of heat soaked glass: all toughened glass.

## 745 INSULATING GLASS UNITS

- Standard and labels for hermetically sealed units: To BS EN 1279.
- Label: Each pane.
- Colour of aluminium perimeter spacers: Black.
- Perimeter taping: Not to be used.
- Perimeter seals:
  - Resistant to UV light degradation on exposed edges.
  - Compatible with structural, assembly and weather sealants.

## 747 GLASS EDGE CONDITION FOR STRUCTURAL SEALANT GLAZING

- Bonded, unframed outer edges: Flat ground with a small arris suitable for open jointing or for weatherseal jointing.

## 750 INFILL PANELS/ FACINGS

- Tolerances:
  - Deviation in size (maximum):  $\pm 1$  mm.
  - Deviation in flatness from plane per 2 m length (maximum):  $\pm 1$  mm.
- Rigidity: Adequate to comply with design/ performance requirements.

**760A GASKETS**

- Material:
  - Noncellular rubber to BS 4255-1.
  - Cellular rubber to ASTM-C509.
- Continuity: Outer gaskets of single front sealed curtain walling systems and inner gaskets of drained and ventilated or pressure equalized curtain walling systems must be formed in a complete frame with sealed joints.
- Durability: Resistant to oxidation, ozone and UV degradation.

**765 WEATHERSTRIPPING OF OPENING UNITS**

- Material:
  - Noncellular rubber to BS 4255-1.
  - Cellular rubber to ASTM-C509.
  - Polypropylene woven pile, silicone treated.
- Attachment: Fixed in undercut grooves in framing sections using preformed corners, with any joints in the length.

**770A GENERAL SEALANTS**

- Selection: In accordance with BS 6213 from:
  - Silicone.
- Classification and requirements: To BS EN ISO 11600.
- Reaction to contact products and finishes: Stable and compatible.

**770B GENERAL SEALANTS**

- Selection: In accordance with BS 6213 from:
  - Silicone.
- Classification and requirements: To BS EN ISO 11600.
- Reaction to contact products and finishes: Stable and compatible.

**772 CURTAIN WALLING JOINT ASSEMBLY SEALANTS**

- Material: One part, low modulus silicone to BS EN ISO 11600, type F or G. Neutral curing where in contact with or close proximity to other products that may be adversely affected by acetoxy curing.
- Manufacturer: Dow Corning.
  - Product reference: 791.

**780 THERMAL INSULATION**

- Material: Mineral wool boards.
  - Recycled content: Submit proposals.
  - Properties: Durable, rot and vermin proof and not degradable by moisture or water vapour.
- Fixing: Attached to or supported within the curtain walling so as not to bulge, sag, delaminate or detach during installation or in situ during the life of the curtain walling.

**785A VAPOUR CONTROL LAYER**

- Acceptable materials:
  - Reinforced membranes: Foil, plastics or rubbers, protected both sides by rigid facings/ linings.
- Location: Warm side of thermal insulation.
- Integrity: Continuous, free from gaps and sealed at joints.

**FINISHES**

- 810A PROTECTIVE COATING OF CARBON STEEL FRAMING SECTIONS/  
REINFORCEMENT
- Treatment: One of the following to all surfaces:
    - Hot dip galvanized to BS EN ISO 1461.
- 820A PROTECTIVE COATING OF CARBON STEEL MECHANICAL FIXINGS
- Treatment: One of the following to all surfaces:
    - Hot dip galvanized to BS EN ISO 1461.
- 830 POWDER COATING
- Requirement: As section Z31.

**FABRICATION AND INSTALLATION**

- 910 GENERALLY
- Electrolytic corrosion: Prevent. Submit proposed methods.
  - Fixings: Concealed unless indicated on detailed drawings. Where exposed they must match material and finish of the products fixed.
  - Fabrication: Machine cut and drill products in the workshop wherever possible.
  - Identification of products: Mark or tag to facilitate identification during assembly, handling, storage and installation. Do not mark surfaces visible in the completed installation.
- 912 METALWORK
- Requirement: As section Z11, unless specified otherwise in this section.
- 915 GLAZING
- Requirement: As section L40, unless specified otherwise in this section.
  - Directional patterned/ wired glass: Generally fix parallel to surround and align adjacent panes where seen together at close quarters.
- 917 FIXINGS/ ADHESIVES APPLICATION
- Requirement: As section Z20, unless specified otherwise in this section.
- 920 SEALANT APPLICATION
- Requirement: As section Z22, unless specified otherwise in this section.
- 925 STRUCTURAL SEALANT GLAZING
- Working conditions: Prepare for and apply structural bonding sealant in a favourable workshop environment.
  - Curing: Do not transport units until structural bonding sealant has adequately cured for the period stated in the project specific approval.
- 930 ASSEMBLY
- General: Carry out as much assembly as possible in the workshop.
  - Joints (other than movement joints): Rigidly secured, reinforced where necessary and fixed with hairline abutments.
  - Displacement of components in assembled units: Submit proposals for reassembly on site.

- 955A **FIXING ANCHOR INSTALLATION**
- Site drilling or cutting into structure: Submit proposals for positions other than shown on detailed drawings.
  - - Edge fixing distances: Not less than recommended by fixing anchor manufacturers.
  - Corrective fabrication: Minimize. Where necessary, submit proposals.
- 965 **PRELIMINARY CURTAIN WALLING INSTALLATION**
- Requirement: Complete an area for inspection and approval of appearance as follows: to be agreed .
- 970 **CURTAIN WALLING INSTALLATION**
- Securing to fixing anchors: Through holes formed during fabrication only.
  - Tightening mechanical fasteners: To manufacturer's recommended torque figures. Do not overtighten fasteners intended to permit differential movement.
  - Protective coverings: Remove only where necessary to facilitate installation and from surfaces that will be inaccessible on completion.
- 980 **INTERFACES**
- Flashings, closers, etc: Locate and form correctly to provide weathertight junctions with the curtain walling.
- 982 **IRONMONGERY**
- Assembly and fixing: Accurately, using fasteners with matching finish supplied by ironmongery manufacturer.
  - Completion: Check, adjust and lubricate as necessary to ensure correct functioning.
- 985 **MAINTENANCE**
- Maintenance manual: Incorporate details within the Building Manual in accordance with CWCT 'Standard for systemised building envelopes' clause 7.6.1.
    - Materials certification and test reports to be included: Main Contractors Operation and Maintenance Manual.

**H**  
**Cladding/Covering**

**H13**

**Structural glass assemblies**

## H13 Structural glass assemblies

To be read with Preliminaries/ General conditions.

### 7 STRUCTURAL GLAZING DESIGN

The contractor will be responsible for the detailed design of all curtain walling, glazing and external doors (in accordance with EN 13830 : 2003(E) and the referenced standards in clauses 2.1 and 2.2). This will be in accordance with the Architect's drawings of intent (dwg refs 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456), the NBS Clauses H11, H13, which states the performance required for thermal performance and light transmittance. This will be inclusive of structural design, interfaces, thermal shock and verification of the glazing specification to retain the relevant standards specified. The Contractor will be responsible for all interfaces to the curtain walling and external doors and the co-ordination with adjacent elements and materials.

### TENDERING

#### TYPES OF STRUCTURAL GLASS ASSEMBLY

- 115 STRUCTURAL GLASS ASSEMBLY to west and east entrance elevations
- Supporting structure: primary and secondary steel work.
  - System manufacturer: Submit proposals.
    - Product reference: Planar Glazing System.
    - Walls: Point fixed double glazed wall assembly.
    - Roofs: Not required.
    - Soffits: Not required.
  - Assembly supports: As drawing 447.
    - Material: Hollow section tubular steel.
    - Finish: Powder coating as section Z31.
    - Colour/ Texture: standard RAL colour.
    - Minimum film thickness: 60 micrometres.
  - Assembly fixings: Four-leg 'spider' connectors.
    - Material: Stainless steel.
    - Finish: Brushed.
  - Glass: Sealed insulating glazed units: clear toughened outer pane and clear laminated inner pane.
  - Sealant jointing: Structural silicone .
    - Nominal joint width: 12 mm.
  - Incorporated components: Boon Edam revolving door and Framed Aluminium Entrance door.
  - Fittings and ironmongery: As schedule TBC.
  - Accessories: TBC.
- 115A GLAZING TO STRUCTURAL GLASS ASSEMBLY
- Manufacturer: Pilkington Building Products UK.
    - Web: [www.pilkington.co.uk](http://www.pilkington.co.uk).
    - Email: [pilkington@respond.uk.com](mailto:pilkington@respond.uk.com).
    - Product reference: Optifloat™ Tint Glass
  - Thickness: 12 mm.
  - Coating colour: Grey.

**GENERAL REQUIREMENTS**

- 211 DESIGN
- Structural glass assembly: Complete the design.
  - Related works: Coordinate in the design.
- 225 INFORMATION TO BE PROVIDED BEFORE DETAILED DESIGN OF STRUCTURAL GLAZING
- Submittals:
    - Detailed reports and calculations to prove compliance with design and performance requirements. Reports and calculations must be based on approved laboratory testing or computer modelling.
    - Full details of structural sealant glazing design.
- 231 INFORMATION TO BE PROVIDED BEFORE FABRICATION OF STRUCTURAL GLAZING
- Submittals:
    - Detailed drawings to fully describe fabrication and installation.
    - Project specific fabrication, handling and installation method statements.
    - A schedule of loads that will be transmitted from the structural glass assembly to the structure.
    - Proposals for connections to and support from the building structure and building components.
    - Proposals for amendments to primary supporting structure and for secondary supporting structure additional to that shown on preliminary design drawings.
    - A detailed fabrication and installation programme in compliance with the Main Contract master programme.
    - Recommendations for safe dismantling and recycling or disposal of products.
- 241 LABELLED PRODUCT SAMPLES
- Timing: Submit before commencing detailed design.
  - Samples: of glazing units .
- 251 LABELLED SAMPLES OF FIXINGS
- Timing: Submit during detailed design.
  - Samples: Each type of assembly fixing, with details of methods of adjustment and tolerances.
- 261 MOCK-UP
- General: Construct during detailed design work.
  - Location: Submit proposals.
  - Extent: to be agreed.
  - Purpose: To serve as an installation reference panel.
    - Retain undisturbed until completion of structural glazing.

**DESIGN/ PERFORMANCE REQUIREMENTS**

- 321 **STRUCTURAL INTEGRITY – EXTERNAL ASSEMBLIES (PARAMETERS PROVIDED)**
- Requirement: The structural glass assembly must resist design wind loads, dead loads and design live loads, and accommodate deflections and movement without damage.
  - Design wind loads: Calculate in accordance with BS 6399-2, Standard Method.
    - Basic wind speed ( $V_b$ ): 24m/s.
    - Altitude factor ( $S_a$ ): 1.025.
    - Direction factor ( $S_d$ ): 1.
    - Seasonal factor ( $S_s$ ): 1.
    - Probability factor ( $S_p$ ): 1.
    - Terrain and building factor ( $S_b$ ): 1.742.
    - Size effect factor ( $C_a$ ): 1.
    - External pressure coefficients ( $C_{pe}$ ): varies max 3.2.
    - Internal pressure coefficients ( $C_{pi}$ ): +0.3--0.2.
  - Snow load: to BS 6399-3.
  - Permanent imposed loads: Self Weight and wind.
  - Temporary imposed loads: to take account of contractor sequence of construction refer to main contractor.
- 325 **STRUCTURAL INTEGRITY – INTERNAL ASSEMBLIES**
- Requirement: The structural glass assembly must resist dead loads and design live loads, and accommodate deflections and movement without damage.
- 331 **GENERAL MOVEMENT**
- Requirement: The structural glass assembly must accommodate anticipated building movement without damage.
    - Anticipated building movement: Thermally.
- 341 **WEATHER RESISTANCE**
- Air leakage through sealant joints: None.
  - Water leakage through the structural glass assembly and perimeter junctions: None.
- 351 **AIR PERMEABILITY**
- Air leakage:
    - Through sealant joints: None.
    - Through opening lights and perimeter junctions (maximum): 2.0 m<sup>3</sup>/h/ linear m.
  - Test: In accordance with Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes', Standard test methods - section 5.
    - Peak positive test pressure: 600 Pa.
    - Test results: Submit.
- 355 **WATER PENETRATION**
- Water leakage through the structural glass assembly: None.
  - Test: In accordance with Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes', Standard test methods - section 6.
    - Peak positive test pressure: 600 Pa.
    - Test results: Submit.
- 361 **HEAT CONSERVATION**
- Average thermal transmittance (U-value): 1.4 W/m<sup>2</sup>.K.

- 371 **VAPOUR CONTROL**
- Conditions under which condensation must not form on the internal surfaces of glass panes or units:
    - External air temperature: -5°C.
    - Internal air temperature: +20°C.
    - Internal relative humidity (maximum): 40%.
- 381 **SOLAR AND LIGHT CONTROL**
- Total solar energy transmission of normal incident solar radiation (maximum): 50% .
  - Total light transmission (minimum): 60% .
- 391 **THERMAL STRESS IN GLAZING**
- Glass panes and units: Must have adequate resistance to thermal stress generated by orientation, shading, solar control and construction.
- 401 **SOUND TRANSMITTANCE**
- Weighted sound reduction index (Rw), within 100–3150 Hz frequency range to BS 5821-3 (minimum): 35dB to west and east entrance elevations.
- 411 **ACCURACY OF ERECTION**
- Permitted deviation in glass joint width (maximum):  $\pm 3$  mm .
- 421 **SECURITY**
- Threaded assembly fixings and assembly support fixings: Locked or pinned at completion of structural glazing to prevent rotation due to building movement and unauthorized adjustment.
- 430 **ELECTRICAL CONDUCTIVITY AND EARTH BONDING**
- Standard: To BS 7671 and BS EN 62305-1 and -4.
- 440 **DURABILITY**
- Products used in the structural glass assembly: Not liable to attack by fungi, insects or vermin.
  - Schedule for maintenance and replacement of sealants and secondary components: Submit.

## **TESTING**

- 520 **PROJECT TESTING – SITE**
- Test sample: A section of the structural glass assembly.
    - Location: to be agreed.
  - Tests: Air permeability water penetration .
    - Timing: Submit proposals.
  - Testing authority: UKAS approved laboratory.
  - Test results and reports: Submit proof of compliance with this specification.
    - Timing: Before installation of general areas of structural glass assembly.

## PRODUCTS

### 610 GLASS GENERALLY

- Standards: To BS 952 and BS EN 1863 for heat strengthened soda lime silicate glass.
- Glass quality: Clean and free from obvious scratches, bubbles, cracks, rippling, dimples and other defects.
- Glass edges: Flat ground, generally undamaged.
  - Shells and chips: Permitted to maximum dimensions of 2 mm deep and 5 mm across surface. Grind out to edges.
  - Arrises: Slightly ground, suitable for sealant jointing.

### 615 DIMENSIONAL TOLERANCES ON GLASS

- Measurement of tolerances: Before thermal toughening and/ or heat strengthening.
- Panes:
  - Dimensions < 1 m:  $\pm 1$  mm.
  - Dimensions > 1 m:  $\pm 2$  mm.
  - Squareness: Maximum 4 mm difference in diagonal measurements.
- Holes:
  - Positional tolerance:  $\pm 1$  mm from single datum point.
  - Diameter tolerance:  $\pm 1$  mm.

### 617 DISTORTIONAL TOLERANCES ON GLASS

- Measurement of tolerances: After thermal toughening and/ or heat strengthening:
- Bow (maximum): 0.2% of pane dimension.
- Roller wave for glass thickness (maximum):
  - 3–5 mm: 0.5 mm.
  - 6–10 mm: 0.3 mm.
  - > 12 mm: 0.15 mm.
- Edge dip for glass thickness (maximum):
  - 3–5 mm: 0.8 mm.
  - 6–10 mm: 0.5 mm.
  - > 12 mm: 0.25 mm.

### 620 THERMALLY TOUGHENED GLASS

- Standards: To BS EN 12150 or BS EN 13024.
- Impact performance: To BS EN 12600.
- Edgework and holes: Complete before toughening.
- Toughening process: Horizontal to eliminate tong marks and minimize dimensional inaccuracies.
- Nickel sulfide inclusions: Heat soak toughened glass to BS EN 14179.
  - Holding period: 4hours.

### 630 LAMINATED GLASS

- Panes: Thermally toughened glass, combined with heat strengthened glass to BS EN 1863 and BS EN ISO 12543 or annealed glass, to form panes that retain integrity in event of breakage.
- Interlayers to glass leaves: Polyvinyl butyral (pvb) or cast in place resin. Sealed at the perimeter to prevent deterioration due to water or glass joint sealant.

- 640    **SEALED INSULATING GLASS UNITS**
- Standards: To BS 5713 and/ or BS EN 1279.
  - Colour of aluminium perimeter spacers: Black.
  - Perimeter seals:
    - Resistant to UV light degradation on exposed edges.
    - Compatible with structural and weather sealants with which they come into contact.
  - Assembly fixings: Hermetically sealed through or into units.
  - Structural integrity: Fabricate units to transfer loads safely from glass panes to assembly fixings.
  - Perimeter taping: Not permitted.

- 650    **STAINLESS STEEL ASSEMBLY FIXINGS AND/ OR SUPPORTS**
- Castings and machined fittings: To BS EN 10088-1, grade 1.4401.
  - Plate and strip: To BS EN 10088-2, grade 1.4401.
  - Bars, rods and sections: To BS EN 10088-3, grade 1.4401.
  - Fasteners: Austenitic stainless steel, to BS EN ISO 3506-1 and 2, grade A4.

- 660    **ALUMINIUM ALLOY ASSEMBLY FIXINGS AND/ OR SUPPORTS**
- Extrusions: To BS EN 573-3, alloy designation EN AW-6063.
  - Plate and strip: To BS EN 485, BS EN 515 and BS EN 573.

#### **FABRICATION AND INSTALLATION**

- 710    **WORKMANSHIP GENERALLY**
- Fabrication: Machine cut and drill glass, assembly fixings and assembly supports in the workshop
- 720    **SUITABILITY OF SUPPORTING STRUCTURE**
- Pre-installation survey: Submit report.
- 730    **STRUCTURAL GLAZING**
- Setting out of glass panes and units: Orientate to ensure uniformity of appearance.
  - Assembly fixings and assembly support fixings:
    - Isolate metal surfaces to prevent direct contact with glass.
    - Isolate dissimilar metal surfaces to prevent electrolytic corrosion.
    - Tighten to manufacturer's recommended torque figures.
- 740    **SEALANT JOINTS**
- Sealant: To BS EN ISO 11600, type G silicone, neutral curing where in contact or close proximity to other products and finishes that may be adversely affected by acetoxy curing.
    - Class: 25HM.
  - Manufacturer: Contractor's choice.
    - Product reference: Contractors choice.
  - Colour: Grey.
  - Application: As section Z22.

- 750     **STRUCTURAL SEALANT JOINTS** To East and West Entrance elevations
- **Structural sealant:**
    - Silicone, neutral curing, designed and manufactured for bonding of structural sealant glazing.
    - Compatible with contact and close proximity products and finishes.
  - **Manufacturer:** Contractor's choice.
    - **Product reference:** Contractors choice.
  - **Colour:** Grey.
  - **Application:** As section Z22.
- 760     **DOORS**
- **Base supported doors:** Allow for differential movement with suspended structural glass assemblies.
  - **Setting out:** Provide head, jamb and bottom clearances required by the fittings/ ironmongery manufacturer.
  - **Fittings and ironmongery:** Use matching fasteners supplied by the manufacturer.
  - **Completion:** Check, adjust and lubricate to ensure correct functioning.

H  
Cladding/Covering

**H31**

**Metal profiled/ flat sheet cladding/ covering**

### H31 Metal profiled/ flat sheet cladding/ covering

To be read with Preliminaries/ General conditions.

#### TYPES OF CLADDING/ COVERING SYSTEM

##### 120 METAL NORTH ELEVATION PARAPET TO POOL

- Support structure: refer to structural engineers specification / layout drawings.
  - Bearing width (minimum): 100.
  - Pitch: N/A.
- External sheets: KeyBEMO 400.
  - Manufacturer: As clause 120B.  
Product reference: KeyBemo 400.
  - Material: Aluminium grade EN AW-3005.
  - Thickness (nominal): 0.9 mm.
  - Finish side 1 (outer): Natural stucco embossed .  
Colour: RAL 7012.
  - Finish side 2 (inner): Natural plain mill.  
Colour: Mill Finish.
  - Additional requirements: None.
- Accessories: As required to complete installation.
- Primary cladding/ covering sheet fasteners: Self drilling and tapping stainless steel stand off screws with assembled stainless steel.
  - Fastener profile location: Valley.
  - Number of fasteners per sheet width:  
Eaves and end laps: As cladding manufacturer spec..  
Intermediate supports: As cladding manufacturer spec..
- End laps size (minimum): 200 mm.
- Sealing laps:
  - End laps: One row of partially cross linked butyl rubber sealant tape.
  - Side laps: One row of partially cross linked butyl rubber sealant tape.
- Stitching laps:
  - End laps: Self drilling stainless steel screws with assembled stainless steel EPDM elastomer faced sealing washer and plastics cap colour BS ??? at maximum ??? mm centres.
  - Side laps: Self drilling stainless steel screws with assembled stainless steel EPDM elastomer faced sealing washer and plastics cap colour BS ??? at maximum ??? mm centres.
- Spacers: Spacer bar system with integral thermal breaks manufactured from steel to BS EN 10326 grade ??? +Z??? with minimum thickness of ??? mm.
  - Fasteners: As cladding manufacturer spec.
- Breather membrane: As clause 280.
- Thermal insulation: As clause 271.
- Vapour control layer: As clause 261.
- Acoustic insulation: None.
- Lining sheets: As clause 241.
- Additional requirements: Guided fall arrest system as clause N25/210.

## 120A METAL STANDING SEAM ROOF TO POOL

- Support structure: refer to structural engineers specification / layout drawings.
  - Bearing width (minimum): 100.
  - Pitch: 1.5 degree minimum.
- External sheets: KeyBEMO 400.
  - Manufacturer: As clause 120B.  
Product reference: KeyBemo 400.
  - Material: Aluminium grade EN AW-3005.
  - Thickness (nominal): 0.9 mm.
  - Finish side 1 (outer): Natural stucco embossed .  
Colour: N/A.
  - Finish side 2 (inner): Natural plain mill.  
Colour: Mill Finish..
  - Additional requirements: None.
- Accessories: As required to complete installation.
- Primary cladding/ covering sheet fasteners: Self drilling and tapping stainless steel stand off screws with assembled stainless steel.
  - Fastener profile location: Valley.
  - Number of fasteners per sheet width:  
Eaves and end laps: As cladding manufacturer spec..  
Intermediate supports: As cladding manufacturer spec..
- End laps size (minimum): 200 mm.
- Sealing laps:
  - End laps: One row of partially cross linked butyl rubber sealant tape.
  - Side laps: One row of partially cross linked butyl rubber sealant tape.
- Stitching laps:
  - End laps: Self drilling stainless steel screws with assembled stainless steel EPDM elastomer faced sealing washer and plastics cap colour BS ??? at maximum ??? mm centres.
  - Side laps: Self drilling stainless steel screws with assembled stainless steel EPDM elastomer faced sealing washer and plastics cap colour BS ??? at maximum ??? mm centres.
- Spacers: Spacer bar system with integral thermal breaks manufactured from steel to BS EN 10326 grade ??? +Z??? with minimum thickness of ??? mm.
  - Fasteners: As cladding manufacturer spec.
- Breather membrane: As clause 280.
- Thermal insulation: As clause 271.
- Vapour control layer: As clause 261.
- Acoustic insulation: None.
- Lining sheets: As clause 241.
- Additional requirements: Guided fall arrest system as clause N25/210.

## 120B METAL STANDING SEAM ROOF TO POOL

- Manufacturer: KeyBEMO 400.
  - Web: [www.keybemo.co.uk](http://www.keybemo.co.uk).
  - Email: [keybemo@bandk.co.uk](mailto:keybemo@bandk.co.uk).
  - Product reference: KeyBEMO 400 Aluminium Standing Seam System
- Width: 400 mm.
- Thickness: 0.9 mm.
- Colour: Mill Finish.

- 130 METAL CLADDING - To Pool Roof perimeter and East Whalle Lane Panels  
 Cladding system: Alucobond  
 Material Manufacturer: 3A Composites GmbH  
 UK sales office: Richard Austin Alloys Limited  
 Dunivaig Road, Easter Queenslie Industrial Estate, Glasgow, G33 4TP  
 Tel: 0141 771 8287 Fax: 0141 771 9454

- Type: bullnose, soffit and architectural flashings
- Joints tbe butt straps sealed with silicone
- To include all products, fixings and interfaces necessary tcomplete the fabrication and installation.
- Material: Alucobond aluminium composite with BBA certificate
- Thickness: 4mm thick.
- Finish/ Colour: PVdF, finish tbe selected from standard ranges.
- Note regarding metallic colours: tavoid possible reflection differences, it is recommended that all panels are installed in the same direction, as marked on the protective peel-off foil. Shade variations may occur between different production batches, stensure colour consistency, each complete area of cladding should use material from one batch.
- Secondary support/ framing system:  
 Material: Aluminium.
- Fasteners: Cladding fixed tsupport structure at centres tmeet design criteria.

#### GENERAL REQUIREMENTS

- 170 DESIGN
- Cladding/ covering system: Complete detailed design and submit before commencement of fabrication.
    - Standard: To BS 5427-1.
  - Related works: Coordinate in detailed design.
- 172 THERMAL PERFORMANCE/ BRIDGING
- Requirement: Complete the thermal design of the cladding/ covering system to avoid excessive thermal bridging.
    - Standards: MCRMA Technical Paper 14 and BRE Information Paper 1/06.
- 175 PRODUCT SAMPLES
- General: Before commencing detailed design, submit labelled samples of the following: keyBEMO 400 panel.
- 176 FASTENER SAMPLES
- General: During detailed design, submit labelled samples of each type of fastener.

#### DESIGN/ PERFORMANCE REQUIREMENTS

- 187 DEFLECTION OF METAL CLADDING/ COVERING
- Roof covering: Maximum permitted deflection under distributed loads as a multiple of span and due to:
    - Dead load: L/500.
    - Dead and imposed loads: L/200.
    - Dead and wind loads: L/90.
  - Wall cladding: Maximum permitted deflection under distributed loads as a multiple of span and due to:
    - Dead and wind loads: n\la.

## 195 INTEGRITY OF CLADDING/ COVERING

- Requirement: Determine profiles, sizes and thicknesses of sheets, the sizes, number and spacing of fixings, configuration and location of spacer systems and incorporation of other accessories and fittings to ensure cladding/ covering system will resist factored dead, imposed and design live loads, and accommodate deflections and thermal movements without damage, in accordance with BS 5427-1.
- Wind loads: Calculate to BS 6399-2, Standard Method and BS 5427-1 appropriate to location, exposure, height, building shape and size, taking account of existing and known future adjacent structures.
  - Basic wind speed ( $V_b$ ): 24.
  - Altitude factor ( $S_a$ ): 1.025.
  - Direction factor ( $S_d$ ): 1.
  - Seasonal factor ( $S_s$ ): 1.
  - Probability factor ( $S_p$ ): 1.
  - Terrain and building factor ( $S_b$ ): 1.742.
  - External and internal size effect factors ( $C_a$ ): 1.
  - External pressure coefficients ( $C_{pe}$ ): As determined from BS 6399 -2, clauses 2.4 and 2.5.
  - Internal pressure coefficients ( $C_{pi}$ ): As determined from BS 6399 -2, clause 2.6.
  - Dominant opening: n/a.
- Imposed roof load (no access): As determined from BS 6399-3 and BS 5427-1.
- Permanent imposed roof loads: 0.75.
- Temporary imposed roof loads: n/a.
- Impact loads: To BS 8200:
  - Location and category: n/a.

## 198 WATER PENETRATION

- Requirement: Under site exposure conditions, moisture must not penetrate onto internal surfaces, or into cavities not designed to be wetted.

## 200 AVOIDANCE OF INTERSTITIAL CONDENSATION

- Requirement: Determine interstitial condensation risk of cladding/ covering system using the method described in BS 5250 Appendix D. If necessary, provide a vapour control layer to ensure that damage and nuisance from interstitial condensation does not occur.
- Outdoor psychrometric conditions (notional): To BS 6229, table A.1 as follows:
 

	Winter	Summer
- Temperature	-5°C	18°C
- Relative humidity	90%	65%
- Vapour pressure	0.36 kPa	1.34 kPa
- Indoor psychrometric conditions (notional): As follows:
  - Temperature: 30°C .
  - Relative humidity: 60% .
  - Vapour pressure: 2.54 kPa .
- Calculated amount of winter interstitial condensate (maximum): 0.35 .
- Winter interstitial condensate:
  - Calculated amount (maximum): 0.35 kg/m<sup>2</sup>.
  - Calculated annual net retention: Nil.

## 202 AVOIDANCE OF SURFACE CONDENSATION

- Requirement: Determine surface condensation risk of cladding/ covering system using the method described in BS EN ISO 13788. If necessary, revise thermal insulation to provide satisfactory temperature factor ( $f_{min}$ ). ensure that damage and nuisance from surface condensation does not occur.

**FIXING CLADDING/ COVERING**

- 219 **FASTENERS**
- Unspecified fasteners: Recommended for the purpose by the cladding/ covering manufacturer.
- 221 **FITTINGS AND ACCESSORIES**
- Unspecified fittings and accessories: Recommended for the purpose by the cladding/ covering manufacturer.
- 223 **PREVENTION OF ELECTROLYTIC ACTION**
- Isolating tape: Type recommended by cladding/ covering manufacturer.
    - Location: To contact surfaces of supports and sheets of dissimilar metals.
- 234A **GUTTERS PERIMETER OVER BOUNDARY WALLHEAD**
- Manufacturer: As clause 234B.
  - Insulation: Kingspan Thermaboard TR27 g-FM rigid urethane foam roof board, tissue faced. thickness - t.b.c..
  - Internal liner sheet: 0.9mm galvanised Aluminium soffit liner.
  - Jointing method: As recommended by manufacturer.
  - Fixing method: galvanized steel support straps at centres to manufacturers instructions.
  - Accessories: Outlets.
- 234B **GUTTERS**
- Manufacturer: KeyBEMO Ltd.
    - Web: [www.keybemo.co.uk](http://www.keybemo.co.uk).
    - Email: [kalzip-uk@corusgroup.com](mailto:kalzip-uk@corusgroup.com).
    - Product reference: Kal-Form Membrane Lined Gutter System
- 241A **ALUMINIUM PROFILED SHEET DECKING MAIN SWIMMING POOL ROOF AREA**
- Manufacturer: KeyBEMO Limited , High Edge Court, Heage, Belper, Derbyshire, DE56 2BW.
    - Product reference: Key-Deck D158 A, web perforated, curved to a radius of 40,000mm..
  - Finish/ Colour: Hot-dipped zinc coated with Polyester coated finish to RR9010.
  - Primary sheet fasteners: SFS Stadler SX3/10-5.5 x 28/SX6/6-5.5 x 26/ SX12/12-5.5 x 40
  - End laps size (minimum): Standard End Lap.
  - End and side lap sealing: Standard Profile Lap.
- 254 **ACOUSTIC INSULATION**
- Manufacturer: as clause 254A.
    - Product reference: Rockwool tissue faced Acoustic slab Rockfibre..
  - Recycled content: Submit proposals.
- 254A **ACOUSTIC INSULATION**
- Manufacturer: Rockwool Limited, Pencoed , Bridgend , CF35 6NY Tel. 01656 862621.
    - Web: [www.info@rockwool.co.uk](http://www.info@rockwool.co.uk).
    - Email: [customersupport@rockwool.co.uk](mailto:customersupport@rockwool.co.uk).
    - Product reference: Rockwool Rockfibre Slab

- 261 VAPOUR CONTROL MEMBRANE
- Material: Keyfoil aluminium foil encapsulated reinforced virgin polyethylene..
    - Vapour resistance (minimum): 43,000 Mns/g.
  - Continuity: No breaks and with the minimum of joints.
    - Penetrations and abutments: Seal to vapour control membrane with tape. Achieve full bond.
    - Laps: Not less than 150 mm, seal with tape. Achieve full bond.
  - Tape: Double sided sealant with vapour resistivity not less than the vapour control membrane.
    - Size (width and thickness): 15 x 2mm thick, colour-Blue.
  - Repairs and punctures: Seal with lapped patch of vapour control membrane and continuous band of sealant tape along edges
- 270 MINERAL WOOL THERMAL INSULATION
- Standard: To BS EN 13162.
  - Material: Flexible rock wool mat.
    - Thermal conductivity (lambda D) (maximum): 0.037.
  - Recycled content: 80% (minimum) to BS EN ISO 14021.
  - Installation: Continuous and not compressed between outer and lining sheets. Secure to prevent future movement or dislodgement.
- 271A MINERAL WOOL THERMAL INSULATION
- Manufacturer: Rockwool Ltd.
    - Web: [www.rockwool.co.uk](http://www.rockwool.co.uk).
    - Email: [info@rockwool.co.uk](mailto:info@rockwool.co.uk).
    - Product reference: Cladding Roll A/F
  - Thickness: 280mm.
- 280 BREATHER MEMBRANE
- Standard: To BS 4016, type 3.
  - Manufacturer: KeyBEMO.
    - Product reference: Keyfoil.
  - Continuity: No breaks. Minimise joints.
    - Penetrations and abutments: Attach to breather membrane with tape. Achieve full bond.
    - Laps: Not less than 150 mm, bond with tape. Achieve full bond.
  - Tape: As recommended by breather membrane manufacturer.
  - Repairs: Lapped patch of breather membrane material secured with continuous band of tape on edges.
  - Junctions at flashings, sills, gutters etc. Overlap and allow free drainage to exterior.
- 300 PROFILE FILLERS GENERALLY
- Material: polyethylene foam fillers.
  - Manufacturer: Contractor's choice.
    - Product references: KeyBEMO.
  - Colour: Black.
  - Thickness: 30 mm.
  - Fixing method: Compression.
    - Requirement: To close cavities/ regulate air paths within the external envelope. Tight fit with no unintended gaps.
- 305 FIRE RESISTING PROFILE FILLERS
- Types: To accurately match sheet profile.
  - Fixing method: Adhesive recommended by profile filler manufacturer.

- 410 **FIXING SHEETS GENERALLY**
- Cut edges: Clean true lines.
  - Penetrations: Openings to minimum size necessary.
    - Edge reinforcement: Sections to details.
  - Sheet orientation: Exposed joints of side laps away from prevailing wind unless shown otherwise on drawings.
  - Sheet ends, laps and raking cut edges: Fully supported and with fixings at top of lap.
  - Fasteners: Drill holes. Position at regular intervals in straight lines, centred on support bearings.
    - Position of fasteners in oversized drilled holes: Central.
    - Fasteners torque: Sufficient to correctly compress washers.
  - Debris: Remove dust and other foreign matter before finally fixing sheets.
  - Completion: Check fixings to ensure watertightness and that sheets are secure.
  - Cut edges: Paint to match face finish.
- 470 **STRUCTURAL MOVEMENT JOINTS**
- Type: Cover flashing fixed on one side over gap between sheets.
  - Location: Coincident with structural movement joint.
  - Width of gap: To match structural movement joint requirements.
  - Requirement: Weathertight.
- 480 **FLASHINGS/ TRIMS GENERALLY**
- Lap joint treatment:
    - Vertical and sloping flashings/ trims: End laps to be same as for adjacent sheeting.
    - Horizontal flashings/ trims: End laps to be 150 mm, sealed and where possible arranged with laps away from prevailing wind.
  - Method of fixing: To structure in conjunction with adjacent sheeting. Otherwise to sheeting.
    - Fasteners: Sealed aluminium rivets, size as per manufacturers guidelines with plastics cap at centres to manufacturers instructions.
- 481 **FLASHINGS/ TRIMS**
- Locations: To upstands.
  - Fasteners: Sealed aluminium rivets with ??? mm diameter head and ??? plastics cap at ??? mm centres.
- 482 **BUTT JOINTED FLASHINGS/ TRIMS**
- Locations: All horizontal.
  - Butt straps: 300 mm wide and made from sheet of same material and finish.
  - Butt joints: Seal.
- 540 **ABUTMENTS**
- Junctions with flashings: Weathertight and neatly dressed down.
- 550 **SEALING LAPS ON EXTERNAL SHEETS**
- Sealant tape: Types recommended by sheet manufacturer.
    - Position: Below fixing positions in straight unbroken lines, parallel to and slightly back from edge of sheet.
  - Seal quality: Effective, continuous and not overcompressed.
  - End laps: Sealant tape positions:
    - Single line tape: Immediately below line of fasteners.
    - Second line tape (where specified): Slightly set back from edge of external sheet.
  - Side laps: Sealant tape positions:
    - Single line tape: Outside line of fasteners.
    - Second line tape (where specified): On other side of fasteners.

- 554 WATER VAPOUR SEALING AT LAPS AND PENETRATIONS IN METAL LININGS - SEALANT TAPE
- Sealant tape: Butyl Rubber sealant Tape.
    - Position : Below fixing positions in straight unbroken lines, parallel to and slightly back from edge of sheet.
  - Seal quality: Effective, continuous and not overcompressed.
- 555 WATER VAPOUR SEALING AT LAPS AND PENETRATIONS IN METAL LININGS - ALUMINIUM TAPE
- Aluminium foil tape: Keyfoil.
    - Position: Centrally and parallel to edge of oversheet in straight unbroken lines.
    - Joints in tape: Minimum overlap of 50 mm.
  - Seal and adhesion quality: Effective and continuous.
- 560 SAFETY SIGNS
- Fixing locations of signs: As drawings.
  - Manufacturer: KeyBEMO.
    - Product reference: Safety Signage.
  - Material: Aluminium with polyester powder coated base, screen printed graphics.
  - Signs description:
    - Hazard sign as BS 5499-5, code 8.C.0072 with supplementary text sign lettering 'DANGER fragile roof'.
    - General sign with mandatory instruction to BS 5499-5 code 44.A.0103 with supplementary text sign, lettering 'Use crawling boards'.

**H**  
**Cladding/Covering**

**H51**

**Natural stone slab cladding/ lining/ features**

## H51 Natural stone slab cladding/ lining/ features

To be read with Preliminaries/ General conditions.

### 10 INFORMATION TO BE PROVIDED WITH TENDER

- Submit the following cladding particulars:
  - Typical plan, section and elevation drawings at suitable scales.
  - Typical detailed drawings at large scales, including East Whale Lane Return Elevations .
  - Technical information and certification demonstrating compliance with specification of proposed incorporated products and finishes, including Suppliers Specification andf Certification .
  - Certification, reports and calculations demonstrating compliance with specification of proposed cladding.
  - Proposals for connections to and support from the support structure/ background.
  - Proposals for additional support structure/ background to that shown on preliminary design drawings.
  - Schedule of builder's work, special provisions and special attendance by others.
  - Examples of standard documentation from which project quality plan will be prepared.
  - Preliminary fabrication and installation method statements and programme.
  - Proposals for replacing damaged or failed products.
  - Areas of non-compliance with specification.

### TYPES OF CLADDING

#### 110B CLADDING TO To Pool Elevations.

- Support structure/ background: Proprietary steel supports/fixings.
- Stone slabs to BS EN 1469:
  - Face dimensions, length (l) x width (b): As shown on drawings.
  - Thickness (d): 75 mm.
  - Petrographic name to BS EN 12407: Calcareous Siltstone.
  - Denomination to BS EN 12440:  
Name (traditional): Caithness Flagstone.  
Petrological family: Sandstone.  
Colour: Blue grey.  
Origin: Spittal Mains Quarry, Wick, Caithness , Scotland.
  - Finish: Polished.
  - Supplier: Caithness Stone.
  - Quality: Free from vents, cracks, fissures, discolouration, or other defects deleterious to strength, durability or appearance. Before delivery to site, season thoroughly, dress and work in accordance with shop drawings prepared by supplier.
- Fixings: As determined by clauses 230 and 230A.
- Joints:
  - Type: Cement:lime:sand mortar filled as clause 585.
  - Bond pattern: As drawing.
  - Width (nominal): 3 mm.
  - Profile: Flush.
- Cavity width (nominal): 150 mm.
  - Air gap: 50 mm.
- Cavity barriers: Not required.
- Thermal insulation: As section P10.
- Vapour control layer/ Waterproofing: As section J30.
- Accessories/ Other requirements: Not required.

- 110E **CLADDING TO East Whale Lane Elevation and returns**
- Support structure/ background: Proprietary steel supports/fixings.
  - Stone slabs to BS EN 1469:
    - Face dimensions, length 700mm(l) x width (300mm): As shown on drawings.
    - Thickness (d): 75 mm.
    - Petrographic name to BS EN 12407: Millstone grit of the Carboniferous Age.
    - Denomination to BS EN 12440:
      - Name (traditional): Cullalo Sandstone.
      - Petrological family: Sandstone.
      - Colour: Honey Grey.
      - Origin: Sandy Road , off the A909 , Burntisland ,Fife..
    - Finish: Honed.
    - Supplier: Tradstocks.
    - Quality: Free from vents, cracks, fissures, discolouration, or other defects deleterious to strength, durability or appearance. Before delivery to site, season thoroughly, dress and work in accordance with shop drawings prepared by supplier.
  - Fixings: As determined by clauses 230 and 230A.
  - Joints:
    - Type: Cement:lime:sand mortar filled as clause 585.
    - Bond pattern: As drawing.
    - Width (nominal): 5 mm.
    - Profile: Flush.
  - Cavity width (nominal): 150 mm.
    - Air gap: 50 mm.
  - Cavity barriers: As section P10.
  - Thermal insulation: As section P10.
  - Vapour control layer/ Waterproofing: As section J30.
  - Accessories/ Other requirements: Not required.

#### **GENERAL REQUIREMENTS/ PREPARATORY WORK**

- 210 **DESIGN**
- Cladding: Complete detailed design.
    - Standard: To BS 8298.
  - Related works: Coordinate in detailed design.
- 220 **STONE CLADDING FIXINGS**
- The specialist stone cladding contractor will be responsible for the selection and installation of all stone cladding fixing goods. This will include interfaces to substrates and co-ordination with adjacent elements and materials. Ref NBS Clauses H.51.230 ,230A & 230B..
- 230 **FIXINGS**
- Standard: To BS 8298, clauses 2.3 and 3.10.
  - Designer/ Supplier: As clause 230A .
  - Type: Secretly fixed.
  - Material: Stainless steel to BS EN 10088 grade 1,4404 (316 S11) .
  - Dimensions: Not less than recommended by manufacturers.
  - Extent of adjustment: To accommodate support structure/ background and cladding fabrication/installation tolerances.
  - Method of fixing to backing wall: Resin bonded anchors .

## 230A SUPPORT ANCHOR

- Manufacturer: Halfen Ltd.
  - Web: [www.halfen.co.uk](http://www.halfen.co.uk).
  - Email: [info@halfen.co.uk](mailto:info@halfen.co.uk).
  - Product reference: UMA Support Anchors
- Support anchors:
  - Diameter: 12 mm.
  - Type: Design 8.
  - Length: 240 mm.
  - Accessories: NAS-W-2 corner angle.

## 230B RESTRAINTS FOR STONE CLADDING

- Manufacturer: Ancon Building Products.
  - Web: [www.ancon.co.uk](http://www.ancon.co.uk).
  - Email: [info@ancon.co.uk](mailto:info@ancon.co.uk).
  - Product reference: Austenitic Stainless Steel Fixings
- Type: MDS.
  - 3mm or 5mm diameter wire: WTD - 3mm or 5mm diameter wire.

## 245 INFORMATION TO BE PROVIDED DURING DETAILED DESIGN

- Submit the following cladding particulars:
  - A schedule of detailed drawings and dates for submission for comment.
  - A schedule of loads that will be transmitted from cladding to the support structure/ background.
  - Proposed fixing details and systems relevant to structural design and construction with methods of adjustment and tolerances.
  - A schedule of fabrication tolerances/ size tolerances.
  - A detailed testing programme in compliance with Main Contract master programme.
  - A detailed fabrication and installation programme in compliance with Main Contract master programme.
  - Proposals to support outstanding applications for Building Regulation consents or relaxations.

## 247 QUALITY PLAN

- Requirement: Submit during detailed design.
- Content: In accordance with BS 5750, BS EN ISO 9001 and including the following:
  - Name of the quality manager.
  - Quality assessment procedures.
  - Inspection procedures to be adopted in checking the work.
  - Stages at which check lists will be used and samples of the lists.
  - List of work procedures on the correct use of materials or components, both off site and on site.
  - List of product information with latest revisions.
  - Subcontractors involved in the work.
  - Subcontractors' quality plans.
  - Storage, handling, transport and protection procedures.
  - Procedure for registering and reporting non compliances.
  - Maintenance procedures and calibration records.
  - Certification that completed work complies with specification
  - Check list register to ensure all items have been inspected and non compliances discharged.

## 261 STONE SAMPLES

- General: Before commencing detailed design, submit labelled samples or arrange for samples that represent the range of variation in appearance to be inspected.

## 271 FIXING SAMPLES

- General: During detailed design, submit samples of every type. Clearly identify. Include manufacturer's recommended torque figures.
- Shims: Submit dimensions.

## 281 CONTROL SAMPLES

- General: Complete areas of finished work and obtain approval of appearance before proceeding.
- Size: 7.5 m<sup>2</sup> .
- Location: East Elevation .

**DESIGN/ PERFORMANCE REQUIREMENTS**

## 306 INTEGRITY OF CLADDING

- Requirement: Determine sizes and thickness of slabs/panels, size, number and spacing of fixings, configuration and location of support systems and incorporation of accessories to ensure the cladding system, will resist factored dead, imposed and design live loads, and accommodate deflections and thermal movements without damage.
- Wind loads: Calculate to BS 6399-2 appropriate to location, exposure, height, building shape and size, taking account of existing and known future adjacent structures.
- Hard body impact loads to BS 8200:
  - Location and category: ??? category A.
- Soft body impact loads to BS EN 14019:
  - Location and classification: ??? class E5.
- Temporary imposed loads: ???.

## 315 INTEGRITY OF LINING

- Requirement: Determine sizes and thickness of slabs/panels, size, number and spacing of fixings, configuration and location of support systems and incorporation of accessories to ensure the lining will resist factored dead, imposed and design live loads, and accommodate deflections and thermal movements without damage.

## 325 PRELIMINARY TEST INFORMATION

- Stone type: As clause 110.
  - Petrographic examination to BS EN 12407.
  - Water absorption coefficient by capillarity to BS EN 1925: 7.8%.
  - Apparent density to BS EN 1936: 2480.
  - Real density to BS EN 1936: 2178.
  - Open porosity to BS EN 1936: 4.3 -5.8%.
  - Total porosity to BS EN 1936: 14.3 to 16 %.
  - Flexural strength: to BS EN 12372: 15.8 MPa.

## 326 ADDITIONAL PRELIMINARY TEST INFORMATION

- Stone type: As clause 110 .
  - Test and result: Compressive strength to BS EN 1926: 120 MPa.

## 330 ACCURACY OF ERECTION

- Elevation joint widths: Within joint lengths, including in-line continuations across transverse joints, as follows:
  - Tolerance: Greatest width not to exceed least width by more than 10% .
  - Variations: Evenly distribute, with no sudden changes.
- Offset in elevation: Between nominally in-line edges across transverse joints not to exceed 0% width of joint.
- Offset in plan or section: Between flat faces or adjacent panels across joints not to exceed 0% width of joint.
- Sealant joints width limitations: To recommendations of sealant manufacturer.
- Finished work: Square, regular, true to line and plane with satisfactory fit at junctions.

**TESTING**

## 405 TESTING AUTHORITY

- Testing: Carried out by a United Kingdom Accreditation Service (UKAS) approved independent laboratory.

## 425 STONE PRODUCTION TESTS

- Frequency of tests: After quarrying every 15 m<sup>3</sup> of stone .
- Procedures: Water absorption co-efficient by capillarity to BS EN 1925  
Real and apparent density to BS EN 1936  
Flexural Strength to BS EN 12372 .
- Results: Submit prior to fabrication.

## 435 SITE TESTING OF FIXINGS TO DETERMINE ULTIMATE LOAD

- Number and location of test fixings: 10 fixings to East Whale Lane Elevation.
- Test method: To BS 5080-1 and Construction Fixings Association guidance note 'Procedure for site testing construction fixings'.

## 445 SITE TESTING OF FIXINGS DURING INSTALLATION

- Number and location of test fixings: 10 fixings to east Whale Lane Elevation.
- Test method: To BS 5080-1 and Construction Fixings Association guidance note 'Procedure for site testing construction fixings'.

**FABRICATION AND INSTALLATION**

## 510 GENERALLY

- Location of joints: Joints must occur only at positions indicated on final detailed drawings.
- Electrolytic corrosion: Isolate dissimilar metals.
- Prefabrication: Machine cut and drill products in workshop wherever possible.
- Identification: Mark or tag products. Do not mark surfaces visible in the complete installation.
- Natural bed: Indicate on a non exposed surface of each stone.
- Cleanliness: Keep facework clean. Rubbing to remove marks and stains not permitted.

## 520 CUTTING OF STONE

- Standard: To BS 8298 and BS EN 1469 for production generally, including permissible deviations.
- Bedding: Appropriate to position.
- Oversize stones: Leave selected stone units oversize, to accommodate deviations within building structure. Cut to precise dimensions taken on site.
  - Selected units: Clearly identify on shop drawings.

## 530 INSPECTION OF STONE UNITS

- Give notice:
  - At appropriate stages of production.
  - Before dispatch to site.

## 540 SUITABILITY OF STRUCTURE

- Contractor's survey:
  - Programme: Not less than 6 weeks weeks before commencement of cladding installation.
  - Scope: Geometric survey of supporting structure, checking line, level and fixing points.
  - Coordinate: With surveys for adjacent cladding.
  - Give notice: If the structure will not allow the required accuracy or security of erection.
- Setting out: Establish erection datum points, lines and levels for a complete elevation at a time unless otherwise agreed.

## 550 INSTALLATION OF INTERFACES

- General: Locate flashings, closers etc. correctly with neat overlaps to cladding to form weatherproof junctions.

## 560 METALWORK

- Material standards and fabrication: As section Z11.

## 570 WELDING

- In situ welding: Not permitted.

## 580 FIXING

- Torque figures and shim dimensions: Do not exceed fixing manufacturer's recommendations.
- Grouting: Secure fixings in place in cladding and support structure/ background with cement:sand, epoxy or modified polymer mix, as recommended by the stone supplier.
- External cladding: Do not use mortar spacer dabs. Keep cavity clear of debris.
- Give notice:
  - Before covering up loadbearing fixings.
  - Before proceeding with next course on completion of Not required .

## 585 CEMENT:LIME:SAND MORTAR JOINTING

- General: As section Z21.
- Mix: Cement:lime:sand 1:1:5-6.
- Special requirements: None.
- Preparation: Wet stones thoroughly.
- Laying: Full mortar bed with joints and voids filled.
  - Cavities: Clear of mortar.
- Appearance: Neat and consistent.
- Temporary distance spacers: Remove.

## 600 SEALANT JOINTING

- Sealant: Silicone .
  - Class to BS ISO 11600: F 12,5P .
  - Colour: Refer schedule .
  - Other requirements: None .
  - Application: As section Z22.

## 610 SEALANT JOINTING

- Sealant: Silicone .
  - Manufacturer: As clause 610A .
  - Product reference: 756 SMS Building Sealant .
  - Colour: Adobe Tan .
  - Application: As section Z22.

## 610A SEALANT JOINTING

- Manufacturer: Dow Corning Ltd.
  - Web: [www.dowcorning.com](http://www.dowcorning.com).
  - Email: [marie.elliott@dowcorning.com](mailto:marie.elliott@dowcorning.com).
  - Product reference: 756 SMS Building Sealant
- Colour: Adobe tan.

## 610C SEALANT

- Manufacturer: Fosroc Ltd.
  - Web: [www.fosroc.com](http://www.fosroc.com).
  - Email: [uk@fosroc.com](mailto:uk@fosroc.com).
  - Product reference: Nitoseal MS100
- Colour: Buff.
- Accessories: Joint backing: Hydrocell XL.

## 620 SEALANT MOVEMENT/OTHER JOINTS

- Sealant: Silicone .
  - Class to BS ISO 11600: F 12,5P .
  - Colour: Buff ??? .
  - Other requirements: None .
  - Application: As section Z22.
- Joint widths: Where not specified, to be as small as practicable. Allow for shrinkage, thermal and other movements in structure and cladding.

## 630 SEALANT MOVEMENT/ OTHER JOINTS

- Sealant: Silicone .
  - Manufacturer: As clause 630A .
  - Product reference: &%^ SMS Building Seal;ant .
  - Colour: Adobe Tan .
  - Application: As section Z22.
- Joint widths: Where not specified, to be as small as practicable. Allow for shrinkage, thermal and other movements in structure and cladding.

## 630A SEALANT

- Manufacturer: Dow Corning Ltd.
  - Web: [www.dowcorning.com](http://www.dowcorning.com).
  - Email: [marie.elliott@dowcorning.com](mailto:marie.elliott@dowcorning.com).
  - Product reference: 756 SMS Building Sealant
- Colour: Adobe tan.

H  
Cladding/Covering

**H90**  
**Tensile fabric coverings**

## H90 Tensile fabric coverings

To be read with Preliminaries/ General conditions.

### TENDERING

#### 10 INFORMATION TO BE PROVIDED WITH TENDER

- For each proposed fabric, submit: Proposed manufacturer and technical literature.
- Other information: Details of the proposed cable inclusive of end fittings, size and diameter of wires, thickness of protective coating and corrosion inhibitors, used to fill the cables and Method statement for the erection and tensioning of the roof and the frequency of subsequent re-tensioning.

### GENERAL

#### 110 SINGLE LAYER FABRIC COVERING SYSTEM Pool Ceiling Display

- System manufacturer: ACOUSTIS 50 .
- Fabric: Plain weave, glass fibre fabric .
  - Warp and weft: Submit proposals .
  - Strength: Submit proposals .
  - Stiffness: Submit proposals .
  - Bow: Submit proposals .
  - Coating: Submit proposals .
  - Coverage: As drawing ??? .
  - Surface quality: Submit proposals .
  - Colour: Submit proposals .
  - Fire resistance: To BS 476-6, Class 0 .
  - Translucency: 25 % minimum average transmission when tested to ASTM E424 .
- Seams: Submit proposals .
- Connection to supporting structure: Submit proposals .
- Fixings: Submit proposals .
- Supports: Submit proposals .
- Other requirements: Submit proposals .

#### 160 EVIDENCE OF PERFORMANCE

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

#### 170 TESTING FABRIC MATERIAL

- Material: Polytetrafluoroethylene (PTFE) coated glass fibre .
  - Undertake tests at following rates: Submit proposals .
- Test results: Submit.

#### 220 VERIFICATION OF PERFORMANCE

- Reports and calculations: Based on approved laboratory testing or computer modelling: Submit before commencement of work.

#### 250 FIRE RESISTANCE OF FABRIC COVERING

- Standard: To BS 476-6, Class 0 .

#### 255 INTERNAL SURFACE SPREAD OF FLAME OF FABRIC COVERING

- Standard: To BS EN 13501-1, Class B-s3, d2 .

## 290 SOLAR AND LIGHT CONTROL

- Tensile fabric coverings must have:
  - Total solar energy transmission of normal incident solar radiation (maximum): 98% .
  - Reflectivity of normal incident solar radiation (minimum): 98% .
  - Translucency (minimum) 2% .

**PRODUCTS**

## 310 PRODUCT SAMPLES

- Before commencing detailed design, submit labelled samples of: Membrane, boundary and corner details .

## 315 FIXING SAMPLES

- General: During detailed design, submit labelled samples of each type of fixing, with details of methods of adjustment and tolerances.

## 320 CLAMPING PLATES

- Type: As recommended for the purpose by covering manufacturer .
- Manufacturer: Submit proposals .
  - Product reference: Submit proposals .
- Size: As drawing ??? .
- Colour: As drawing ??? .
- Radius to corners/ edges in contact with fabric (minimum): As drawing ??? .
- Bolts: Submit proposals .
- Other requirements: Submit proposals .

## 330 STRAPS

- Type: Submit proposals .
- Manufacturer: Submit proposals .
  - Product reference: Submit proposals .
- Weave: Submit proposals .
- Size: As drawing ??? .
- Extension at break (maximum): Submit proposals .
- Attachment: Submit proposals .
- Other requirements: Submit proposals .

## 360 WIRE ROPES

- Type: Submit proposals .
- Manufacturer: Submit proposals .
  - Product reference: Submit proposals .
- Size: Submit proposals .
- Testing construction stretch (measured at 15% MBL): Submit proposals .
  - Test results: Submit.
- Accessories: Submit proposals

## 370 CORNER PLATES

- Type: As recommended for the purpose by covering manufacturer .
- Manufacturer: Submit proposals .
  - Product reference: Submit proposals .
- Size: Submit proposals .

**FABRICATION****610 SETTING OUT OF FABRIC COVERINGS**

- Centre line of panel: Along and perpendicular to the centre line of the roll.
  - Accuracy:  $\pm 3$  mm .
- Diagonal distortion of weave, faults, small tears or miscuts: Not permitted.

**630 FABRICATING PANELS**

- Accuracy:
  - Tolerance in weft direction (maximum):  $\pm 15$  mm .
  - Tolerance in position of cable and belt lines (maximum): +10-10 mm relative to the fabric system point or line .
- Testing: Submit proposals
  - Test results: Submit.

**640 FACTORY SEAMING OF PANELS**

- Junctions: Minimize number of layers to be joined.
- Method: Submit proposals .
- Seam:
  - Width: Submit proposals .
  - Number of rows/ Spacing of stitches: Submit proposals .
  - Quality: Continuous and of uniform width.
  - Distance from edge: Submit proposals .
- Seam sealing: Submit proposals .
- Seam testing: Submit proposals .
  - Frequency of testing: Submit proposals .
  - Test results: Submit.
- Integrity of coating: Maintain during joining process to exclude water and air.

**EXECUTION****720 ATTACHING FABRIC MEMBRANE: CLAMPED AND BOLTED CONNECTION**

- Width of joining seam for cuff/ pocket (minimum): Submit proposals.
- Edge beading: Submit proposals.
- Connections/ Fixings subject to vibration: Prevent loosening.
- Alignment: Accurate. Do not distort or enlarge holes or use drifts of larger diameter than the hole.
- Exposed bolt ends: 6 mm maximum or one whole thread minimum.

**730 ATTACHING FABRIC MEMBRANE: TIED CONNECTION**

- Width of joining seam for cuff/ pocket (minimum): Submit proposals .
- Eyelets: Submit proposals .
  - Centres: Submit proposals .
  - Distance from edge: Submit proposals .
- Edge beading: Submit proposals .

**740 ATTACHING FABRIC MEMBRANE: PINNED CONNECTION**

- Width of joining seam for cuff/ pocket (minimum): Submit proposals .
- Edge beading: Submit proposals .
- Solid clevis pin connections: Provide retaining system capable of resisting ???% of pin loading, laterally .
- Link plate pin connections: Provide retaining system capable of resisting ???% of pin loading, laterally .
  - Transverse movement of plates: Allow tolerance of 25% of pin diameter.

**750 ATTACHING FABRIC MEMBRANE**

- Method: Submit proposals .
- Rainwater control: Not required .
- Accessories: Not required .

**COMPLETION****910 INSPECTION**

- Interim and final covering inspections: Submit report.

**920 TESTING OF FABRIC**

- Standard: To the relevant parts of BS EN ISO 1421 .
- Timing of test: On completion of the installation .
- Test results: Submit on completion of testing.

**930 DOCUMENTATION**

- Submit:
  - Manufacturer's maintenance instructions.
  - Guarantees, warranties and test certificates.

**940 COMPLETION**

- Cables: Not damaged, crushed or kinked.
- Fabric:
  - Cable cuffs: Unwrinkled.
  - Colour and translucency: Consistent, free from discontinuities and discolouration.
  - Required prestress: Verified.
  - Surfaces: Clean and smooth, fully sealed, weathertight and free draining.
  - Rainwater outlets: Clear.
- Completed coverings: Protect against damage from adjacent or high level working.

**J**  
**Waterproofing**

**J30**

**Liquid applied tanking/ damp proofing**

## J30 Liquid applied tanking/ damp proofing

To be read with Preliminaries/General conditions

### TYPES OF TANKING/ DAMP PROOFING

#### 110 COLD APPLIED TANKING

- Substrate: Top of pile heads.
- Primer: As coating manufacturer's recommendations.
- Coating: Epoxy Resin.
  - Manufacturer: Fosroc Limited, Drayton Manor Business Park, Coleshill Road, tamworth, Staffordshire, B78 3TL.
  - Product reference: Proofex WG .
  - Application: One Coat, Coverage per coat (minimum) :10mm, typically 20mm.
- Reinforcement: Not required.
- Blinding: Apply clean dry sharp sand.

### EXECUTION

#### 205A SUITABILITY OF SUBSTRATE

- Substrates generally:
  - Smooth, even textured, clean, dry and frost free.
  - Within tolerances for level and surface regularity.
  - Vertical and horizontal surfaces: Correctly prepared and free from irregularities..
- Moisture content and stability of substrate: Must not impair integrity of finished tanking.
- Preliminary work: Complete including:
  - Chases.
  - External angles.
  - Formation of upstands and kerbs.
  - Movement joints.
  - Penetrations/ Outlets.

#### 211 COATING APPLICATION

- Adjacent surfaces exposed to view in finished work: Protect
- Coatings:
  - Apply in dry atmospheric conditions
  - Level, continuous coverage
  - Firmly adhered to substrate and free from imperfections
  - Prevent damage to finished coatings
- Penetrations: Impervious
- Formwork: Suitable to retain grout
- Final Covering: Apply as soon as possible after coating has hardened

#### 220A COLD APPLIED COATINGS

- Thinning: Not permitted
- Successive coats:
  - Allow to cure before applying next.

#### 235 MODIFIED COATINGS

- Air and surface temperatures: Do not apply if below minimum recommended by coating manufacturer.
- Curing: Keep dry until fully cured.

**260A    JUNCTIONS WITH DPCS**

- DPCs: Clean, all edges fully exposed.
- Coverage: Fully coat dpc and overlap adjacent surfaces by 100mm.

**270        BLINDING**

- Coatings: Blind whilst tacky .
- Surplus material: Remove when coatings are completely dry.

**COMPLETION****310        INSPECTION**

- Interim and final inspections: Submit reports.

**340        BACKFILLING**

- Timing: Carry out as soon as possible after tanking and protection are complete.

J  
Waterproofing

**J31**

**Liquid applied waterproof roof coatings**

## J31 Liquid applied waterproof roof coatings

To be read with Preliminaries/General Conditions.

### TYPES OF COATING

- 120 WARM DECK ROOF COATING To Accommodation Block
- Substrate: Concrete Deck.
    - Preparation: Ensure all surfaces are sound , clean and dry and free from fungal growth..
  - Vapour control layer: Liquid Plastics Control Layer foil lined as Clauses 330 & 630.
  - Insulation: Liquid Plastics Decotherm PIR insulation as clauses 335 & 640.
  - Overlay to insulation: Not required.
  - Carrier membrane: As recommended by coating manufacturer.
  - Waterproof coating: Aliphatic polyurethane.
    - System manufacturer: Liquid Plastics Ltd..
    - Primer reference: No Primer required.
    - Coating reference: Decothane Delta 25.
    - Application: Embedment coat Decothane Base Coat 1 L/m<sup>2</sup>, Top coat ??? L/m<sup>2</sup>.
    - Reinforcement: To local areas.
    - Minimum dry film thickness: 2.5 mm.
    - Colour: Grey.
  - Surface protection: Walkway protective coatings as clauses 385 & 890s.
  - Accessories: As drawing 001.

### PERFORMANCE

- 210 ROOF PERFORMANCE
- General: Firmly adhered, free draining and weathertight.
- 225 AVOIDANCE OF INTERSTITIAL CONDENSATION IN WARM AND INVERTED ROOFS
- Risk of interstitial condensation in roof construction: Assess in accordance with BS 5250, Annex D.
  - Vapour control layer: If necessary, provide a suitable membrane so that damage and nuisance from interstitial condensation do not occur.

### PRODUCTS

- 315 TIMBER TRIMS
- Quality: Planed, free from wane, pitch pockets, decay and insect attack (except ambrosia beetle damage).
  - Moisture content at time of covering (maximum): 22%.
  - Preservative treatment: As recommended for purpose by waterproof coating manufacturer.
- 330 VAPOUR CONTROL LAYER
- Type: Foil-lined.
  - Manufacturer: Liquid Plastics.
    - Product reference: Liquid Plastics Vapour Control Layer.
  - Thickness: 250 micrometres.
  - Vapour resistance: 5000 MNs/g.

- 335 WARM DECK ROOF INSULATION
- Type: PIR.
  - Manufacturer: Liquid Plastics.
    - Product reference: Liquid Plastics Decotherm.
  - Density: 32 kg/m<sup>3</sup>.
  - Thickness: 130mm to achieve 0.2 W/sq.m degreeC.
- 352 CARRIER MEMBRANE
- Type: As recommended by roof coating manufacturer.
  - Manufacturer: Liquid Plastics.
    - Product reference: Liquid Plastics Carrier Membrane SBS.
- 355 PERIMETER TRIMS
- Type: GRP.
  - Manufacturer: Liquid Plastics.
    - Product reference: Liquid Plastics Decotrim.
  - Colour: As drawing ???.
  - Size: As drawing ???.
  - Lengths (maximum): 3 m.
- 357 PIPE COLLARS
- Manufacturer: Contractor's choice.
    - Product reference: Contractor's choice.
  - Size: As drawing 493.
- 360 ROOF VENTILATORS
- Manufacturer: Contractor's choice.
    - Product reference: Contractor's choice.
  - Size: As drawing 493.
- 385 WALKWAY PROTECTIVE COATING
- Manufacturer: Liquid Plastics.
    - Product reference: Decothane.
    - Width: 1 metre.
    - Colour: Standard Range.
    - Additives: Liquid Plastics Skid Inhibiting Grit.

#### EXECUTION GENERALLY

- 410 ADVERSE WEATHER
- Do not apply coatings:
    - In wet conditions or at temperatures below 5°C, unless otherwise permitted by coating manufacturer.
    - In high winds (speeds > 7 m/s), unless adequate temporary windbreaks are erected adjacent to working area.
  - Unfinished areas of roof: Keep dry.

## 420 SUITABILITY OF SUBSTRATE

- Substrates generally:
  - Secure, clean, dry, smooth, free from frost, contaminants, loose material, voids, protrusions and organic growths.
  - Compatible with coating system.
- Preliminary work: Complete, including:
  - Formation of upstands, kerbs, box gutters, sumps, grooves, chases and expansion joints.
  - Fixing of battens, fillets and anchoring plugs/ strips.
- Moisture content and stability: Must not impair integrity of roof.

**NEW SUBSTRATES/ VAPOUR CONTROL LAYERS/ WARM DECK ROOF INSULATION**

## 610 FIXING TIMBER TRIMS

- Fasteners: Sherardized steel screws.
- Fixing centres (maximum): 500 mm.

## 630 LAYING VAPOUR CONTROL LAYER

- Membrane: Partially bond flat and without wrinkles.
- Laps: Sealed using materials and method recommended by membrane manufacturer.
- Upstands, kerbs and other penetrations: Enclose edges of insulation. Lap with coatings to form a complete seal.

## 640 LAYING WARM DECK ROOF INSULATION

- Setting out:
  - Long edges: Fully supported and run at right angles to direction of span.  
Joints: Butted together.
  - Ends: Adequately supported.  
Joints: Staggered.
- Bedding: Liquid Plastics Decostik cold fusion adhesive.
- Mechanical fixing: Liquid Plastics Fastec.
- Completion: Boards must be in good condition, well fitting and stable.

## 660 FIXING PERIMETER TRIMS

- Setting out: 3 mm clear from wall or fascia.
- Fasteners: As drawing ???.
- Fixing: 30 mm from ends and at 300 mm (maximum) centres.
- Jointing:
  - Sleeves: Fixed one side only.
  - GRP trims: Butt ends.
  - Aluminium trims: 3 mm gaps between ends.
- Corner pieces: Purpose made.

**ROOF COATING SYSTEM**

## 720 APPLYING PRIMERS/ CONDITIONERS

- Coverage per coat (minimum): ??? L/m<sup>2</sup>.
- Surface coverage: Brushed well in to ensure local or full area coverage according to type.
- Coats: Allow to dry before overcoating.

## 730 LAYING CARRIER MEMBRANE

- Bond: Partially bond using a cold applied adhesive Liquid Plastics Decostik @ 0.5 litres per sq.m..
- Mechanical fixing: In accordance with manufacturer's recommendations.

## 740 MOVEMENT JOINTS IN SUBSTRATE

- Debonding tape: Apply over movement joints.
- Reinforcement strip: Apply over debonding tape.
  - Bedding: Preliminary coating application.
  - Joints: Lap in length.
  - Bond: Continuous over whole surface, with no air pockets.
  - Condition at completion: Smooth.

## 760 APPLICATION OF ROOF COATINGS

- Thickness: Monitor by taking wet/ dry film thickness readings.
- Continuity: Maintain full thickness of coatings around angles, junctions and features.
- Rainwater outlets: Form with watertight joints.
- Drainage systems: Do not allow liquid coatings to enter piped rainwater or foul systems.
- Edge trims: Apply coatings over horizontal leg of trim and into recess.

## 770 SKIRTINGS AND UPSTANDS

- Top edges of coatings: Where not protected by flashings, apply into chases cut to a minimum depth of 10 mm.
- Completion of chases: When coatings are fully cured, prepare chase and apply sealant as section Z22.
  - Sealant: To BS EN ISO 11600.
  - Colour: Grey RAL 7015.

**SURFACING**

## 890 APPLYING WALKWAY PROTECTIVE COATING

- Coverage per coat (minimum): As Clause 385.
- Surface coverage: Even and full.

**COMPLETION**

## 910 INSPECTION

- Coating surfaces: Check when cured for discontinuities.
  - Defective areas: Apply another coating.

## 940 COMPLETION

- Roof areas: Clean.
  - Outlets: Clear.
  - Flashings: Dressed into place.
- Work necessary to provide a weathertight finish: Complete.
- Storage of materials on finished surface: Not permitted.
- Completed coatings: Protect against damage.

**J**  
**Waterproofing**

**J40**

**Flexible sheet tanking/ damp proofing**

**J40 Flexible sheet tanking/ damp proofing**

To be read with Preliminaries/ General conditions.

**111 HARDCORE BEDS**

- Preparation: Blind with stiff weak mix concrete to BS 5238, designated Mix GEN 1 or Standard Mix ST2, 50mm Thick
- Finish on Completion: Smooth, Consolidated bed free of sharp projections

**TYPES OF TANKING/ DAMP PROOFING****297 DAMP PROOFING/ TANKING**

- Substrate: Concrete blinded hardcore.
- Manufacturer: Fosroc Limited, Drayton Manor Business Park, Coleshill Road, Tamworth, Staffordshire, B78 3TL.
  - Product reference: Proofex Engage, BBA certificate (No: 03/3042).
- Number of layers: 1.
  - Thickness/ Gauge: 3.3 mm.
- Bonding: Self bonding to wet concrete.
- Joints:
  - Surfaces to be joined: Clean and dry beyond full width of joint.
  - Laps (minimum):
    - Side lap; 75mm using sheets selvedge
    - End Lap; Butt jointed incorporating Proofex Detail Strip and Profeex LM
    - Vertical joints/ laps to have additional strip of Proofex 3000MR applied .
  - Sealing: Refer manufacturer.
- Accessories:
  - Proofex Detail Strip
  - Proofex LM
  - Proofex LM Mesh
  - Proofex L Section
  - Proofex Internal and External Corners
  - Proofex WG
  - Nitocote EP403
  - Proofex Top Hat
  - Nitoseal MS50
  - Proofex Total 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.

- 320 INSPECTION
- Give notice: Before covering any part of membrane with overlying construction.
- 351 ANGLES IN FULLY BONDED CO-POLYMER GAS RETARDANT TANKING MEMBRANE
- Preformed angle pieces to internal and external angles: Proofex L section
    - Size 125mm x 125mm x 5mm
    - Bedding: Fixed with small areas of Proofex Detail Strip when necessary
  - Preformed corner pieces: Proofex Internal and External Corners
    - Size 125mm x 125mm x 125mm
    - Bedding: Fixed with small areas of Proofex Detail Strip when necessary
  - Sealing and reinforcing of angles: Proofex LM and Proofex LM Mesh
    - Size: Overseal 75mm onto proofex Engage. On all vertical joints apply an additional strip of Proofex 3000MR (refer to manufacturer)
    - Timing: Apply after main sheeting
  - Dressing of main sheeting onto adjacent surfaces: 75mm
- 352 END LAPS IN FULLY BONDED CO-POLYMER GAS RETARDANT TANKING MEMBRANE
- Sealing and reinforcing of end laps: Proofex LM, Proofex Detail Strip and Proofex 3000 MR
    - Size: Overseal 75mm onto Proofex Engage
    - Timing: Apply during main sheeting
  - Dressing of main sheeting onto Proofex Detail Strip (minimum): 80mm
- 360 JUNCTIONS WITH PROJECTING DPCS/ CAVITY TRAYS
- Adjoining surfaces: Clean and dry.
  - Dpcs/ Cavity trays: Lap and fully bond/ seal with sheeting.
    - Laps (minimum): 75mm for proofex,.
    - Bonding/ Sealing: With Proofex 3000, Proofex 3000 MR, Proofex Detail Strip or Proofex Total Tape,
- 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: With Proofex 3000, Proofex 3000 MR, Proofex Detail Strip or Proofex Total Tape.
- 371 PIPES, DUCTS, CABLES, ETC
- Preformed Collars: Proofex Top Hats
    - Sealing: Bonded to Proofex Engage with Proofex Total tape, sealed with Nitoseal MS50
  - Other penetrations: Where Top Hats are not suitable make junctions completely impervious using collars of Proofex 3000 or Proofex 3000 MR membrane fully bonded to both penetrations and sheeting. Use fillets of Proofex LM to give added security.
  - Completed junction: Impervious

J  
Waterproofing

**J42**

**Single layer polymeric sheet roof coverings**

## J42 Single layer polymeric sheet roof coverings

To be read with Preliminaries/ General conditions.

### TYPES OF ROOF COVERING

- 110A WARM DECK ROOF COVERING To Pool Roof Perimeter composite gutters.l
- Substrate: Metal deck.
    - Preparation: Not required.
  - Roof covering system: Sarnafil adhesively fixed membrane.as recommended by Sarnafil Ltd and CGL Composite Gutters Ltd..
    - Lower protection layer (loose laid): Not required.
    - Vapour control layer: Not required.
    - Insulation: 150mm Extruded polystyrene board .
    - Separating layer (loose laid): Not required.
    - Waterproof membrane: As drawing SKP100.  
Width: to Man Specification.  
Thickness: 1.2 mm.  
Colour: Grey.
    - Upper protection layer (loose laid): Not required.
  - Surface protection: Not required.
  - Accessories: refer to architects drawing no SKP100.

### PERFORMANCE

- 210 ROOF PERFORMANCE
- Roof covering: Secure, free draining and weathertight.
- 230 INSULATION
- Requirement: Determine type and thickness of insulation and integral or separate overlay to satisfy the following criteria:
    - Thermal transmittance of the roof (maximum): 0.15 W/m<sup>2</sup>K.
    - Compressive strength of insulation (minimum) at 10% compression: 350 kPa.
    - Finished surface: Suitably even, stable and robust to receive roof covering.
    - Insulation compliance: To a relevant British Standard, or Agrément certified.

### PRODUCTS

- 415 EXTRUDED POLYSTYRENE (XPS) WARM DECK ROOF INSULATION
- Standard: To BS EN 13164.
  - Manufacturer: Agrément certified.
    - Product reference: Submit Proposals.
  - Grade: As insulation manufacturer's recommendations for the traffic loading.
  - Edges: Square.
  - Thickness: 150 mm.
  - Facing: Not required.

- 425 MINERAL WOOL (MW) WARM DECK ROOF INSULATION
- Standard: Roofing grade to BS EN 13162.
  - Manufacturer: Rockwool Ltd Pencoed, Bridgend CF35 6NY tel: (01656) 862621.
    - Product reference: Hardrock dual density.
  - Grade: As insulation manufacturer's recommendations for the traffic loading.
  - Recycled content: Submit proposals.
  - Edges: Square.
  - Thickness: t.b.c.
  - Facing: Glass tissue.
- 480 PIPE COLLARS
- Manufacturer: as per membrane manufacturers recommendation.
    - Product reference: Man Spec.
  - Size: As drawing.
- 485A MEMBRANE WALKWAY
- Manufacturer: Sarnafil Ltd.
    - Web: [www.sarnafil.co.uk](http://www.sarnafil.co.uk).
    - Email: [roofing@sarnafil.co.uk](mailto:roofing@sarnafil.co.uk).
    - Product reference: Sarnatred recycled PVC walkway tiles

#### EXECUTION GENERALLY

- 510 ADVERSE WEATHER
- General: Do not lay membrane at temperatures below 5°C or in wet or damp conditions unless effective temporary cover is provided over working area.
  - Unfinished areas of roof: Keep dry and protect edges of laid membrane from wind action.
- 520 INCOMPLETE WORK
- End of working day: Provide temporary seal to prevent water infiltration.
  - On resumption of work: Cut away tail of membrane from completed area and remove from roof.
- 530 APPLYING PRIMERS
- Coverage per coat (minimum): as manufacturers guideline.
  - Surface coverage: Even and full.
  - Coats: Fully bonded. Allow volatiles to dry off thoroughly between coats.
- 550 CONTROL SAMPLES
- Type of covering: single ply.
  - Sample area (minimum): 5 m<sup>2</sup>.
    - Location: at start of laying.
    - Features: Upstands.
  - Approval of appearance: Obtain before proceeding with remaining work.

**SUBSTRATES/ VAPOUR CONTROL LAYERS/ WARM DECK ROOF INSULATION****610 SUITABILITY OF SUBSTRATES**

- Surfaces to be covered: Secure, clean, dry, smooth, free from frost, contaminants, voids and protrusions.
- Preliminary work: Complete, including
  - Grading to correct falls.
  - Formation of upstands, kerbs, box gutters, sumps, grooves, chases and expansion joints.
  - Fixing of battens, fillets and anchoring plugs/ strips.
- Moisture content and stability of substrate: Must not impair integrity of roof.

**680 LAYING WARM DECK ROOF INSULATION**

- Setting out:
  - Long edges: Fully supported and running at right angles to side laps in single ply membrane.
  - End edges: Adequately supported.
  - Joints: Butted together.
  - End joints: Staggered.
- Attachment: Full bed of cold bitumen bonding compound.
- Mechanical fixing: Not required.
- Completion: Boards must be in good condition, well fitting and secure.

**WATERPROOF MEMBRANES/ ACCESSORIES****720 ADHESIVE BONDING OF WATERPROOF MEMBRANE**

- Setting out: As roof drawing no.
- Attachment: Fully adhered on a continuous even coating of adhesive.
  - Do not wrinkle or stretch.
- Surface condition at completion: Fully sealed, smooth, weatherproof and free draining.

**730 WELDED JOINTING OF WATERPROOF MEMBRANE**

- Side and end joints:
  - Laps (minimum): as manufacturers instructions.
  - Preparation: Clean and dry surfaces beyond full width of joint.
  - Sealing: Weld together.
- Seam sealant: refer to manufacturers installation instructions.
- Condition at completion: Fully sealed, smooth, weatherproof and free draining.

**740 ADHESIVE JOINTING OF WATERPROOF MEMBRANE**

- Side and end joints:
  - Laps (minimum): as manufacturers instructions.
  - Preparation: Prime, clean and dry surfaces beyond full width of joint and lap.
  - Sealing: Apply continuous even coverage of adhesive to both surfaces. Mate and roll together. Do not wrinkle or stretch membrane.
- Seam sealant: refer to manufacturers installation instructions.
- Condition at completion: Fully sealed, smooth, weatherproof and free draining.

**760 PERIMETER OF MEMBRANE**

- General: Secure membrane at roof edge conditions, changes of plane, curb flashings, upstands to roof lights, etc. with mechanical fasteners.

**765 PERIMETER DETAILS FOR THERMOPLASTIC MEMBRANES**

- Upstands, edge trims, drips, kerbs, etc: Secure preformed metal sections to roof structure with mechanical fasteners.
- Roof membrane: Dress over perimeter profile. Overlap beyond fasteners by minimum 50 mm.
  - Sealing: Weld together.

**780 ROOF PENETRATIONS THROUGH THERMOPLASTIC MEMBRANES**

- Roof membrane: Cut around penetrations and secure to deck.
- Flanged sleeve:
  - Type: Preformed flanged sleeve.
  - Installation: Dress over and around penetration.
  - Roof membrane overlap to flange (minimum): 50 mm beyond fasteners.
  - Sealing: Weld flange to roof membrane.
  - Protection to top edge of sleeve: Flashing or weathering cravat.

**SURFACING****810 LAYING INVERTED ROOF INSULATION**

- Condition of substrate: Clean.
- Setting out: Loose lay with staggered joints.
  - Cutting: Minimize.
  - Small cut pieces: Avoid at perimeters and penetrations.
  - Joints: Butt together.
- Projections, upstands, rainwater outlets, etc: Cut insulation cleanly and fit closely around.
- Completion:
  - Insulation boards to be in good condition, well fitting and stable.
  - Cover to prevent wind uplift and flotation as soon as practicable.

**850 LAYING MEMBRANE WALKWAYS**

- Attachment: As manufacturers instructions .

**COMPLETION****910 INSPECTION**

- Interim and final roof inspections: Submit reports.

**920 ELECTRONIC ROOF INTEGRITY TEST**

- Testing authority: Submit proposals.
- Timing of test: Give notice.
- Condition of roof prior to testing:
  - Waterproof membrane complete to a stage where integrity can be tested.
  - Surface: Clean.
- Test results and warranty: Submit on completion of testing.

**940 COMPLETION**

- Roof areas: Clean.
  - Outlets: Clear.
- Work necessary to provide a weathertight finish: Complete.
- Storage of materials on finished surface: Not permitted.
- Completed membrane: Do not damage. Protect from traffic and adjacent or high level working.

**K**

**Linings/Sheathing/Dry partitioning**

**K10**

**Plasterboard dry linings/ partitions/ ceilings**

## K10 Plasterboard dry linings/ partitions/ ceilings

To be read with Preliminaries/ General conditions.

### TYPES OF DRY LINING

- 125 METAL STUD PARTITION SYSTEM (30min FIRE RATING)
- Manufacturer: XPR as clause 125A.
    - Product reference: XPR W1 partition.
  - Studs:
    - Type: 75 mm Protektor studs.
    - Centres: 600 mm.
  - Head condition: Concrete slab.
    - Deflection allowance: 10 mm.
  - Insulation: Rockwool Flexi Mineral wool to BS EN 13162. Density not less than 20 kg/m<sup>3</sup> fitted between metal studs .
    - Recycled content: Submit proposals.
    - Thickness: 60mm.
  - Resilient layer: XPR isolation strip.
  - Linings: 12.5 mm Fermacell to each side.
  - Finishing: FST by Fermacell .
    - Primer/ Sealer: Primer to painted areas.
    - Accessories: Metal beads/ stops recommended by board manufacturer .
  - Other requirements: Fixing to metal studs: Fix securely to all supports working from the centre of each board outward to the edges using the specified method of fixing at the following maximum centres: Fermacell countersunk cross-slot screws 3.9 x 30mm: 250mm. Position fixings not less than 10mm from board edges and 50mm from corners. The heads of all fixings should be sunk into the surface of the board and stopped with Fermacell joint filler.  
 Joint treatment: Square edged boards - Fermacell Jointstik max 1mm glued joint. Cut edged boards to be fixed with a gap of 5-7mm between boards. This to be filled with Fermacell joint filler in accordance with fixing instructions from manufacturer.  
 Services Penetrations: Fire stopping around services as section P12.
- 125A METAL STUD PARTITION SYSTEM To second floor as per Architects drawing.
- Manufacturer: XPR Systems.
    - Web: [www.xprsystems.co.uk](http://www.xprsystems.co.uk).
    - Email: [info@xprsystems.co.uk](mailto:info@xprsystems.co.uk).
    - Product reference: Partition Wall System
  - Location: As drawings 246-249.
  - Type: W1 .
  - Gypsum board: Square edged.

- 126 METAL STUD PARTITION SYSTEM (60min FIRE RATING)
- Manufacturer: XPR as clause 125A.
    - Product reference: XPR W1 partition.
  - Studs:
    - Type: 75 mm Protektor studs.
    - Centres: 600 mm.
  - Head condition: Concrete slab.
    - Deflection allowance: 10 mm.
  - Insulation: Rockwool Flexi Mineral wool to BS EN 13162. Density not less than 45 kg/m<sup>3</sup> fitted between metal studs .
    - Recycled content: Submit proposals.
    - Thickness: 60mm.
  - Resilient layer: XPR isolator strip.
  - Linings: 12.5 mm Fermacell to each side.
  - Finishing: FST by Fermacell.
    - Primer/ Sealer: Primer to painted areas.
    - Accessories: Metal beads/ stops recommended by board manufacturer .
  - Other requirements: Joint treatment: Fermacell Jointstik 1mm glued joint  
Services Penetrations: Fire stopping around services as section P12.
- 155 WALL LINING SYSTEM (METAL STUDS) Ground Floor Duty Officer / Interview Room
- Manufacturer: XPR Systems.
    - Product reference: XPR-WL3.
  - Studs:
    - Type: PROTEKTOR metal studs,VCD metal wall clip.
    - Centres: 600 mm.
  - Cavity between wall and studs: Not required.
  - Unbraced height (maximum): 3300 mm.
  - Head condition: Concrete slab.
    - Deflection allowance: 10 mm maximum.
  - Insulation: Rockwool Acoustic Partition Slab.
    - Recycled content: Submit proposals.
    - Thickness: 25mm.
  - Vapour control layer: Not required.
  - Resilient layer: Protektor felt separation strip.
  - Linings: 12.5 mm Fermacell plasterboard.
  - Access units: Not required.
  - Finishing: Seamless jointing .
    - Primer/ Sealer: Primer to painted areas.
    - Accessories: Metal beads/ stops recommended by board manufacturer .
  - Other requirements: Fire stopping around services as section P12.
- 155A PROPRIETARY WALL LINING SYSTEM
- Manufacturer: XPR Systems.
    - Web: [www.xprsystems.co.uk](http://www.xprsystems.co.uk).
    - Email: [info@xprsystems.co.uk](mailto:info@xprsystems.co.uk).
    - Product reference: Wall Lining System
  - Location: Duty Officer / Interview Room.
  - Type: WL3, insulated, installed thickness 42.5 mm .
  - Gypsum board: Taper edged.

- 155B PROPRIETARY WALL LINING SYSTEM To inner face of External walls
- Manufacturer: XPR Systems.
    - Web: [www.xprsystems.co.uk](http://www.xprsystems.co.uk).
    - Email: [info@xprsystems.co.uk](mailto:info@xprsystems.co.uk).
    - Product reference: Wall Lining System
  - Location: As drawing 580.
  - Type: WL5 .
  - Gypsum board: Taper edged.
- 155C PROPRIETARY CEILING SYSTEM
- Manufacturer: XPR Systems.
    - Web: [www.xprsystems.co.uk](http://www.xprsystems.co.uk).
    - Email: [info@xprsystems.co.uk](mailto:info@xprsystems.co.uk).
    - Product reference: Ceiling System
  - Location: As drawing 490.
  - Type: C1 .
- 165 WALL LINING SYSTEM (METAL FRAMING) Changing / Pool Hal , refer drawing 490I
- Manufacturer: Trespa UK Ltd..
    - Product reference: Meteon Single Skin Panels.
  - Wall: Concrete blockwork.
  - Cavity between wall and back of lining: 20 mm.
    - Framing centres: 600 mm.
    - Bracket centres (maximum): 800 mm.
  - Insulation: Not required.
    - Recycled content: Not applicable.
    - Thickness: 12mm.
  - Resilient layer: None.
  - Linings: None.
  - Access units: Not required.
  - Finishing: Seamless jointing.
    - Primer/ Sealer: Not required.
    - Accessories: Metal Furrings and Channels suitable for poolside environment, Manufacturer Protektor.
  - Other requirements: Fire stopping around services as section P12.
- 165A WALL LINING SYSTEM (METAL FRAMING) Bulkheads to Skylights and Ceilings. refer drawing 490
- Manufacturer: Fermacell, trading name of Fels-Werke GmbH.
    - Web: [www.fermacell.co.uk](http://www.fermacell.co.uk).
    - Email: [fermacell-uk@xella.com](mailto:fermacell-uk@xella.com).
    - Product reference: Fermacell 3WS11 wall lining
  - Wall: N/A.
  - Cavity between wall and back of lining: N/A.
    - Framing centres: 600 mm
    - Bracket centres: 1000 mm
  - Insulation: None.
  - Linings: 12.5 mm Fermacell Gypsum-Fibreboard
  - Access units: None.
  - Finishing: Fermacell Fine Surface Treatment (FST).
    - Joint treatment: Fermacell Jointstik 1 mm glued joint.
    - Accessories: Protektor Channels.
  - Other requirements: Hanging Straps.

165B WALL LINING SYSTEM (METAL FRAMING) To Curved Bulkhead over Reception Desk

- Manufacturer: British Gypsum.
  - Web: [www.british-gypsum.com](http://www.british-gypsum.com).
  - Email: [bgtechnical.enquiries@bpb.com](mailto:bgtechnical.enquiries@bpb.com).
  - Product reference: GypWall Curved
- Studs:
  - Type: 70 mm Gypframe 70 S 50 'C' studs.
  - Centres: 400 mm.
- Head condition: Plywood template with Gyproc steel angle and Gyproc MF 5 ceiling section, refer drawing 490.
  - Deflection allowance: 3mm.
- Linings: 1 x 6 mm Glasroc MultiBoard to each side square edged.
  - Edge: Square edged.
- Finishing: Skim coat plaster finish.
  - Primer/ Sealer: 1 coat of Gyproc Drywall Prime.
- Accessories: Rigid beads/ stops
- Other requirements: Gyproc MF 5 ceiling sections , Gyproc GA1 steel angles , plywood curved template.

255A ENCASUREMENT SYSTEM (METAL FRAMING) To columns in service Block

- Manufacturer: Fermacell, trading name of Fels-Werke GmbH.
  - Web: [www.fermacell.co.uk](http://www.fermacell.co.uk).
  - Email: [fermacell-uk@xella.com](mailto:fermacell-uk@xella.com).
  - Product reference: Fermacell beam encasement
- Structural members: As drawings.
- Extent of protection: Column exposed sides.
- Fire performance (protection to structural steel): 60mins.
- Framing system: Sizes and spacing of framing and fixings as recommended by Fermacell
- Linings: One layer of 10 mm Fermacell.
- Finishing: Fermacell Fine Surface Treatment (FST).
  - Joint treatment: Fermacell Jointstik 1 mm glued joint and Fermacell Joint Filler 5–7 mm filled joint.
- Other requirements: None.

**GENERAL/ PREPARATION**

305 COMPLIANCE WITH PERFORMANCE REQUIREMENTS

- Testing/ Assessment: Submit UKAS accredited laboratory reports for the following: Fire resistance: Partitions (including deflection heads and doorsets) and suspended ceilings (including access units). and Maximum air pressure and corresponding deflection limits: Partition types K10125,126 .
- Materials, components and details: As used in testing/ assessment reports. If discrepancies arise, give notice.

325 PREPARATION OF MASONRY TO RECEIVE WALL LININGS

- General: Suitable to receive lining system. Redundant fixtures and services removed. Cutting, chasing and making good completed.
- Holes, gaps, service penetrations, perimeter junctions and around openings: Seal.
- Adhesive fixings: Prepare substrate to achieve effective bonding.
  - Contaminants: Remove loose material, dirt, grease, oil, paper, etc.
  - Absorption: Control by dampening, priming or applying bonding agents as necessary.

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.

395 **CONTROL SAMPLES**

- General: Complete areas of finished work and obtain approval of appearance before proceeding.
- Type of dry lining: Partition K10/125, 126.
  - Location/ Size: Submit proposals.

401 **GYPSUM PLASTERBOARD**

- Type: To BS EN 520, type A .
  - Core density (minimum): 650 kg/m<sup>3</sup>.
- Exposed surface and edge profiles: Suitable to receive specified finish.

432 **METAL STUDS**

- Manufacturer: Cornercare Ltd. Tel: 01562 515200 .
  - Product reference: Protektor 0.6mm guage or greater galvanised mild steel - min 50mm fixing face .

**INSTALLATION**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.

- 455 METAL FRAMING FOR PARTITIONS/ WALL LININGS
- Setting out: Accurately aligned and plumb.
    - Frame/ Stud positions: Equal centres to suit specified linings, maintaining sequence across openings.
    - Additional studs: To support vertical edges of boards.
  - Fixing centres at perimeters (maximum): 600 mm.
  - Openings: Form accurately.
    - Doorsets: Use sleeved or boxed metal studs and/ or suitable timber framing to achieve strength grade requirements for framing assembly and adequately support weight of door.
    - Services penetrations: Allow for associated fire stopping.
- 465 STAGGERED STUD PARTITIONS
- Horizontal frame members (noggin, bearers, etc.) and boards: Fix between alternate studs and not touching adjacent offset studs.
- 505 INSTALLING MINERAL WOOL INSULATION
- Fitting insulation: Closely butted joints and no gaps. Use fasteners to prevent slumping or displacement.
  - Services:
    - Electrical cables overlaid by insulation: Sized accordingly.
    - Ceilings: Cut insulation around electrical fittings, etc.
- 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.
- 530 CAVITY FIRE BARRIERS WITHIN PARTITIONS/ WALL LININGS
- Metal framed systems:
    - Material: Wire reinforced mineral wool 50 mm (minimum) thick.
    - Installation: Form accurately and fix securely with no gaps to provide a complete barrier to smoke and flame.
  - Adhesive fixed wall lining systems:
    - Material: Adhesive compound.
    - Installation: Form in a continuous line with no gaps to provide a complete barrier to smoke and flame.
- 545 CAVITY FIRE BARRIERS WITHIN SUSPENDED CEILINGS
- Type: 50 mm mineral wool reinforced mattress with foil face to two sides.
  - Fire resistance: To BS 476-20, 30/30 minutes (Integrity/ Insulation).
  - Ceiling void subdivision: Fix barriers as drawings.
  - Fixing at perimeters and joints: Secure, stable and continuous with no gaps, to provide a complete barrier to smoke and flame.
  - Service penetrations: Cut and pack to maintain barrier integrity. Sleeve flexible materials. Adequately support services passing through barrier.
  - Ceiling systems for fire protection: Do not impair fire resisting performance of ceiling system.

- 545A FIRE BARRIER**
- Manufacturer: Rockwool Ltd.
    - Web: [www.rockwool.co.uk](http://www.rockwool.co.uk).
    - Email: [info@rockwool.co.uk](mailto:info@rockwool.co.uk).
    - Product reference: Fire barrier
  - Fire resistance: ½ hour.
  - Facing: Foil faced.
- 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.
- 590 FIXING PLASTERBOARD TO METAL FRAMING/ FURRINGS**
- Partitions/ Wall linings: Fix securely and firmly at the following centres (maximum):
    - Single layer boarding: To all framing at 300 mm centres. Reduce to 200 mm centres at external angles.
    - Multi-layer boarding: Face layer at 300 mm centres, and previous layers around perimeters at 300 mm centres.
  - Ceilings: 230 mm. Reduce to 150 mm at board ends and at lining perimeters.
  - Position of screws from edges of boards (minimum): 10 mm.
    - Screw heads: Set in a depression. Do not break paper or gypsum core.
- 595 DEFLECTION HEADS**
- Fixing boards: Do not fix to head channels.
- 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.
- 680 **SKIM COAT PLASTER FINISH**
- Plaster type As recommended by board manufacturer..
    - Thickness: 2-3 mm.
  - Joints: Fill and tape except where coincident with metal beads.
  - Finish: Tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks.
- 692 **RIGID BEADS/STOPS**
- Internal: To BS EN 13658-1.
  - External: To BS EN 13658-2.
- 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.

**K**

**Linings/Sheathing/Dry partitioning**

K11

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

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

To be read with Preliminaries/ General conditions.

**TYPES OF FLOORING/ SHEATHING/ DECKING/ SARKING/ LINING/ CASINGS****485 WALL SHEATHING TO TILED WALLS**

- Substrate: Concrete Blockwork.
  - Additional supports: Cement based flexible adhesive.
- Sheathing: Marmox board.
  - Manufacturer: Marmox (UK) Ltd.  
 Unit 3 Forwardway  
 Laker Road  
 Rochester , Kent  
 Telephone 01634 862277.  
 Product reference: Marmox Tile Backer Boards.
  - Thickness: 20mm.
  - Other requirements: Marmox flexible adhesive 6mm thick, Marmox Acrylic Sealant applied as per Manufacturers data sheets. .
- Setting out: Long edges vertical and centred on supports.
  - Expansion gap between adjacent boards: N/A.
- Fixing to supports:
  - Fasteners: N/A.
  - Fixing centres (maximum):  
 Around board edges: N/A.  
 Along intermediate supports: N/A.
  - Fixing distance from edges (minimum): N/A from bottom edge of board and N/A mm from other edges.

**880A G.R.P. ENCASMENT TO ELECTRICAL CABLE TRAY TRUNKING Around pool Perimeter as drawings SKp 120-132**

- Substrate: N/A.
  - Additional supports: 316 Stainless steel angles bolted to mullions..
- Board: To BS 4965, class N/A.
  - Manufacturer/ Supplier: T.B.C..  
 Product reference: N/A.
  - Colour/ Pattern/ Finish: White .
  - Thickness: 3 mm.
  - Edges: Square.
  - Other requirements: Metal plate cast in to moulding to take fixings as per drawing SKP 122..
- Setting out: Long edges running across supports.
  - Gap between adjacent boards: N/A.
- Fixing to supports:
  - Fasteners: Austenitic stainless steel bolts.
  - Fixing centres (maximum 900mm):  
 Around board edges: N/A.  
 Along intermediate supports: 900mm Max. along transoms.
  - Fixing distance from edges (minimum): 12 mm.
- Joint treatment: None.
- Accessories: Removable front panel.

- 880B G.R.P. ENCASURES TO COLUMNS Around pool Perimeter as drawings SKP 120-132
- Substrate: N/A.
    - Additional supports: 316 Stainless steel angles bolted to mullions..
  - Board: To BS 4965, class N/A.
    - Manufacturer/ Supplier: T.B.C..
    - Product reference: N/A.
    - Colour/ Pattern/ Finish: White .
    - Thickness: 3 mm.
    - Edges: Square.
    - Other requirements: Timber collar fixed to column to support 2 piece GRP cloak as per SKP 127..
  - Setting out: Long edges running across supports.
    - Gap between adjacent boards: N/A.
  - Fixing to supports:
    - Fasteners: Austenitic stainless steel bolts.
    - Fixing centres (maximum):
      - Around board edges: N/A.
      - Along intermediate supports: 900mm Max. along transoms.
    - Fixing distance from edges (minimum): 12 mm.
  - Joint treatment: Mastic sealant to top edge.
  - Accessories: Removable access panels as drawing SKP 125.

#### 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.
- 915 DRYNESS OF CONCRETE/ SCREED SUBSTRATES FOR FLOATING FLOORS
- Relative humidity above substrate when tested with a hygrometer to BS 8201, Appendix A (maximum): 75%.
    - Test points: All corners, around perimeter, and random points over area being tested.
    - Drying aids: Turned off for not less than 4 days before testing.
- 920 VAPOUR CONTROL LAYER IN FLOATING FLOOR CONSTRUCTION
- Location: Immediately below floating layer.
  - Installation:
    - Joints: Overlapped by minimum 150 mm and sealed with vapour resistant tape.
    - Treatment of membrane at perimeter of flooring and upstands: Turned up and sealed to top face of flooring using a method approved by the board manufacturer.
  - Excess material: Trimmed off neatly after fixing skirtings/ cover beads.
  - Condition of membrane before laying flooring: Clean and dry.
- 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.

**950 MOISTURE CONTENT TESTING**

- Test regime and equipment: Submit proposals.
- Test results: Submit record of tests and results.

**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.

**990 ACCESS PANELS**

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

**K**

**Linings/Sheathing/Dry partitioning**

**K32**  
**Panel cubicles**

## K32 Panel cubicles

To be read with Preliminaries/ General conditions.

- 113 **FULLY FRAMED PANEL CUBICLES** To Pool changing cubicles, Fitness suite changing cubicles.
- Manufacturer: Prospec Ltd.
    - Web: [www.prospec.co.uk](http://www.prospec.co.uk).
    - Email: [sales@prospec.co.uk](mailto:sales@prospec.co.uk).
    - Product reference: Marathon Classic cubicle system
  - Panels:
    - Dividers: Compact solid grade laminate.  
Colour/ Pattern: As drawing 473.
    - Front panels: Compact standard grade laminate.  
Colour/ Pattern: As drawing 473.
  - Doors: Compact standard grade laminate
    - Colour/ Pattern: As drawing 473.
    - Hinges: Inward opening.
    - Material: Stainless steel.
  - Frame: Aluminium extrusions
    - Finish: Polyester powder coated.
    - Colour: As drawing 473.
  - Fittings: Standard solid coloured nylon door furniture
    - Colour: As drawing 473.
  - Seating: Marathon bench seats.
  - Duct system: None.
    - Type: WC, full height.
    - Panels: 12 mm solid grade laminate.  
Colour: As drawing 473.
    - Accessories:
      - One coat hook per cubicle fixed to door frame;
      - Adjustable floor attachments;
      - Concealed nylon door latch set with sliding action;
      - Heavy-duty anti-vandal handle; and
      - Nylon brush buffer strip.
  - Other requirements: Modesty rails fitted horizontally above partitions.
- 125 **PANEL CUBICLES** (Refer to drawings 473 and 474) **Basement WC compartment , Ground Floor Male & Female toilets I.P.S. and Cubicles , Lifeguard Change ( I.P.S. and cubicles).** Pre-swim Showers , Post Swim Showers (I.P.S. and cubicles). Including special I.P.S. hexagonal shower column.  
First Floor Male and Female Toilets (I.P.S. & Cubicles)  
Manufacturer: LAM-ART DUNDEE Ltd  
Product reference: "Morgan" Range  
Panels/ Doors: 13mm Polyrey Compact.  
Core material: Solid Grade Laminate  
Sanitized from the 2600mm x 2050mm sheet sizes  
Finish: UK Stock Colour Range.  
Colour: Cubicle and washroom range.  
Edge treatment: Polished Black core, Eased Arris.  
Headrails: U Shaped Powder Coated Aluminium.  
Legs: LSP1/6.  
Ironmongery/ Accessories: Toilet Roll Holders Excluded.  
Other requirements: Outward/Inward opening doors.

- 130     **PRIVACY SCREENS To Changing Cubicles**
- Manufacturer: As clause 130A.
    - Product reference: Marathon Privacy Screens.
  - Frame/ Supports: Aluminium.
    - Finish: Powder coated matt.
    - Colour: RAL ???.
  - Panels: Solid phenolic laminate.
    - Core material: Plastics foam.
    - Finish: Smooth plastics laminate.
    - Colour: Gunmetal.
    - Edge treatment: Plastics trim; colour ???.
  - Accessories: Polycarbonate coat hooks.
  - Other requirements: Continuous fixing channels at wall abutments.
- 130A    **PRIVACY SCREENS**
- Manufacturer: Prospec Ltd.
    - Web: [www.prospec.co.uk](http://www.prospec.co.uk).
    - Email: [sales@prospec.co.uk](mailto:sales@prospec.co.uk).
    - Product reference: Marathon privacy screens
  - Panels: Compact solid grade laminate.
    - Colour/ Pattern: As cubicle front panels.
  - Support post: Full height aluminium extrusion.
    - Finish/ Colour: As cubicle framing.
  - Accessories: Adjustable two-part nylon floor and top attachments.
  - Other requirements: Marathon bench seats with laminate slats.
- 210     **SAMPLES**
- General: Before placing orders submit representative samples of the following: Panel and door material and colours.
  - Delivered materials/ products: To match samples.
- 220     **CONTROL SAMPLES**
- General: Complete samples as part of finished work and obtain approval of appearance before proceeding.
  - Types: Two complete cubicles, as clause 120.
    - Locations: Obtain instructions.
- 250     **INSTALLATION**
- Programming: Do not install cubicles 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 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.

**K**

**Linings/Sheathing/Dry partitioning**

**K40**

**Demountable suspended ceilings**

## K40 Demountable suspended ceilings

To be read with Preliminaries/General conditions.

### TYPES OF CEILING SYSTEM

- 110 UNIT SUSPENDED CEILING SYSTEM Below mezzanine, Multi-purpose rooms, Fitness-suite, Swimming lessons/Leisure Active Team,
- Ceiling system manufacturer: Saint Gobain Ecophon Ltd.
    - Product reference: Focus E T24.
  - Ceiling:
    - Type: Exposed grid system, tegular tile.
    - Ceiling module: 600 x 600 mm.
    - Ceiling soffit above finished floor level: 2950 mm.
  - Grid:
    - Form: Interlocking.
    - Exposure: Exposed .
  - Access: Infill units fully demountable.
  - Ancillary system components:
    - Suspension system: Required.
    - Perimeter trim: Required.
  - Accessories: None.
  - Integrated services fittings: Hangers and housings for linear luminaires.
  - Other requirements: Install primary grid using Ecophon Connect T24 main runner C1 white 010 system.
- 110A CEILING SYSTEM Acoustic Ceiling to Multi-purpose room, Fitness-suite, Cafe, Meeting rooms, Managers Office, Staff room, Swimming Lessons/Leisure Active Team.
- Manufacturer: Saint-Gobain Ecophon Ltd.
    - Web: [www.ecophon.co.uk](http://www.ecophon.co.uk).
    - Email: [marketing@ecophon.co.uk](mailto:marketing@ecophon.co.uk).
    - Product reference: Master Gamma E
  - Tile:
    - Finish: gamma.
    - Size: 600 x 600 mm mm.
  - Grid: Interlocking Connect T24 with direct fixing brackets.
    - Colour: White 010.
  - Trims: Angle.
  - Accessories: Aluminium Connect ventilation grille, ??? x ??? mm, finish ???.
- 110B CEILING SYSTEM QUADRO Beneath Mezzanine ,adjoining FOCUS E T24
- Manufacturer: Saint-Gobain Ecophon Ltd.
    - Web: [www.ecophon.co.uk](http://www.ecophon.co.uk).
    - Email: [marketing@ecophon.co.uk](mailto:marketing@ecophon.co.uk).
    - Product reference: Quadro E 450 Convex
  - Tile:
    - Finish: Ecophon white 500-Akutex FT.
    - Size: 1200 x 450 x 20 mm.
  - Grid: Interlocking Connect T24 with adjustable hangers/ wire.
    - Colour: White 010.
  - Trims: Angle.
  - Accessories: None.

- 115 UNIT SUSPENDED CEILING SYSTEM TO GROUND FLOOR FOYER AND FIRST FLOOR CAFE.
- Ceiling system manufacturer: Saint-Gobain Ecophon Ltd, Old Brick Kiln, Ramsdell, Tadley, Hampshire. RG26 5PP.
    - Product reference: Ecophon Focus Ds.
  - Ceiling:
    - Type: Decorative.
    - Ceiling module: 600 x 600 mm.
    - Soffit above finished floor level: 2950mm .
  - Grid:
    - Form: Interlocking.
    - Exposure: Concealed .
    - Spacings: 600 mm.
  - Access: Infill units fully demountable.
  - Accessories: cut edge sealant and shadow gap to perimeter.
  - Integrated services fittings: Hangers and housings for linear luminaires.
  - Other requirements: all tiles to be clipped.
- 116A CEILING SYSTEM To Basement Tea-room, Non-public staircases, Lobby, Stores and Basement Office, corridors generally as per drawings
- Manufacturer: Saint-Gobain Ecophon Ltd.
    - Web: [www.ecophon.co.uk](http://www.ecophon.co.uk).
    - Email: [marketing@ecophon.co.uk](mailto:marketing@ecophon.co.uk).
    - Product reference: Advantage A
  - Tile size: 600 x 600 mm.
  - Grid: Interlocking Connect T24 with adjustable hangers/ wire.
    - Colour: White 010.
  - Trims: Connect Angle.
- 117 UNIT SUSPENDED CEILING SYSTEM TO OFFICES, MEETING ROOMS AND CAFE TOILETS.
- Ceiling system manufacturer: Saint-Gobain Ecophon Ltd, Old Brick Kiln, Ramsdell, Tadley, Hampshire. RG26 5PP.
    - Product reference: Ecophon Focus E.
  - Ceiling:
    - Type: recessed visible grid.
    - Ceiling module: 600 x 600 mm.
    - Soffit above finished floor level: 2950mm .
  - Grid: C3 corrosion resistant grid.
    - Form: Interlocking.
    - Exposure: Exposed.
    - Spacings: Main tees at 1200 ctrs, cross tees at 600 ctrs..
  - Access: Access panels indicated on drawing .
  - Accessories: cut edge sealant and shadow gap to perimeter.
  - Integrated services fittings: None.
  - Other requirements: all tiles to be clipped with C3 Hygiene clip.

- 118 UNIT SUSPENDED CEILING SYSTEM TO KITCHEN / SERVERY.
- Ceiling system manufacturer: Saint-Gobain Ecophon Ltd, Old Brick Kiln, Ramsdell, Tadley, Hampshire. RG26 5PP.
    - Product reference: Ecophon Hygiene Foodtec A C3.
  - Ceiling:
    - Type: exposed corrosion resistant C3 grid.
    - Ceiling module: 600 x 600 mm.
    - Soffit above finished floor level: 2950 mm.
  - Grid:
    - Form: Interlocking.
    - Exposure: Exposed.
    - Spacings: main tees at 1200 ctrs, cross tees at 600 ctrs.
  - Access: Access panels indicated on drawing .
  - Accessories: cut edge sealant and shadow gap to perimeter.
  - Integrated services fittings: Hangers and housings for linear luminaires.
  - Other requirements: all tiles to be clipped - Hygiene Clip 20, service penetrations to be sealed with Connect Hygiene sealant 0691 Hygiene Lavanda T5 C3 lighting..
- 119 UNIT SUSPENDED CEILING SYSTEM WITHIN POOL CHANGING VILLAGE,SHOWERS, TOILETS,LIFEGUARD CHANGE AND TOILETS.
- Ceiling system manufacturer: Saint-Gobain Ecophon Ltd, Old Brick Kiln, Ramsdell, Tadley, Hampshire. RG26 5PP.
    - Product reference: Ecophon Focus E with C3 grid and hygienic clips.
  - Ceiling:
    - Type: exposed grid.
    - Ceiling module: 600 x 600 mm.
    - Soffit above finished floor level: 2950 mm.
  - Grid:
    - Form: Interlocking.
    - Exposure: Exposed.
    - Spacings: main tees at 1200 ctrs, cross tees at 600 ctrs.
  - Access: Access panels indicated on drawing .
  - Accessories: cut edge and shadow gap to perimeter.
  - Integrated services fittings: Hangers and housings for linear luminaires.
  - Other requirements: All cut edges of grid and trim to be resealed with Rustoleum .All hangers ,fixings.top fixings , brackets etc to be Corrosion Resistant.  
Hangers to be Rigid Angle C3.
- 119A CEILING SYSTEM TO CIRCULATION CORRIDORS , SAFE ROOM,STAIR LOBBIES.BASEMENT TEA- ROOM & OFFICE.
- Manufacturer: Saint-Gobain Ecophon Ltd.
    - Web: [www.ecophon.co.uk](http://www.ecophon.co.uk).
    - Email: [marketing@ecophon.co.uk](mailto:marketing@ecophon.co.uk).
    - Product reference:Ecophon Advantage A
  - Tile size: 600 x 600 mm.
  - Grid: Interlocking Connect T24 with adjustable hangers/ wire.
    - Colour: White 010.
  - Trims: Connect Angle.

**GENERAL/ PERFORMANCE****205 COMPLIANCE WITH PERFORMANCE REQUIREMENTS**

- Testing/ assessment: Submit UKAS accredited laboratory reports for the following: Fire performance.
- Materials, components and details: Use those used in the test and identified in the assessment reports. If discrepancies arise, give notice.

**210 ENVIRONMENT**

- Environmental classification to BS 8290-1: Severe .

**COMPONENTS****240 SAMPLES**

- General: Submit representative samples of the following: Ecophon Master E , Focus E , Advantage A and Focus Quadro E .

**245 STANDARDS**

- Components: To BS 8290-2.
  - Aluminium sheet, strip and plate: To BS EN 485.
  - Aluminium bars, tubes and sections: To relevant parts of BS EN 515, BS EN 573, BS EN 755 and BS EN 12020.

**250 SUSPENSION SYSTEM ECOPHON FOCUS ET24 Clause 117**

- Extent of system: Include all hangers, fixings, main runners, cross members, primary channels, perimeter trims, splines, noggings, clips, bracing, bridging, etc. necessary to complete the ceiling system and achieve specified performance.
- Top fixings: as per manufacturers instructions.
- Hangers: flexible hangers.
- Grid type: Connect T24 main runner 24mm wide steel T sections, T24 cross tee 15mm wide steel T sections.
  - Finish: Ecophon white 500-Akutex FT.
  - Colour: white 010.

**251 SUSPENSION SYSTEM ECOPHON FOCUS E Clause 119**

- Extent of system: Include all hangers, fixings, main runners, cross members, primary channels, perimeter trims, splines, noggings, clips, bracing, bridging, etc. necessary to complete the ceiling system and achieve specified performance.
- Top fixings: as per manufacturers instructions.
- Hangers: flexible hangers.
- Grid type: C3 grid with hygienic clips..
  - Finish: Ecophon white 500 Akutex FT.
  - Colour: white 010.

**252 SUSPENSION SYSTEM ECOPHON FOCUS Ds Clause 115**

- Extent of system: Include all hangers, fixings, main runners, cross members, primary channels, perimeter trims, splines, noggings, clips, bracing, bridging, etc. necessary to complete the ceiling system and achieve specified performance.
- Top fixings: as per manufacturers instructions.
- Hangers: flexible hangers.
- Grid type: Connect T24 main runner HD.
  - Finish: Ecophon white 500 Akutex FT.
  - Colour: white 010.

- 253      **SUSPENSION SYSTEM ECOPHON MASTER E Clause 110**
- Extent of system: Include all hangers, fixings, main runners, cross members, primary channels, perimeter trims, splines, noggings, clips, bracing, bridging, etc. necessary to complete the ceiling system and achieve specified performance.
  - Top fixings: as per manufacturers instructions.
  - Hangers: flexible hangers.
  - Grid type: T24 main runner ,white 010.
    - Finish: Ecophon white 500-Gamma-Akutex FT.
    - Colour: white 010.
- 260      **PERIMETER TRIMS FOR ECOPHON FOCUS SYSTEM E**
- Type: Ecophon steel channel trim, colour and finish to match exposed grid.
  - Manufacturer: Saint-Gobain Ecophon Ltd, Old Brick Kiln, Ramsdell, Tadley, Hampshire. RG26 5PP.
    - Product reference: Focus connect channel trim C3 3532 detail HT1-A11.
  - Fixings:
    - Fasteners: BZP raised head screws.
    - Fixing centres (maximum): 450 mm.
- 261      **PERIMETER TRIMS FOR ECOPHON ADVANTAGE A SYSTEM**
- Type: Ecophon Connect steel angle trim, colour and finish to match exposed grid.
  - Manufacturer: Saint-Gobain Ecophon Ltd, Old Brick Kiln, Ramsdell, Tadley, Hampshire. RG26 5PP.
    - Product reference: connect angle trim T1-A01.
  - Fixings:
    - Fasteners: BZP raised head screws.
    - Fixing centres (maximum): 450 mm.
- 261A     **PERIMETER TRIMS FOR ECOPHON HYGIENE FOODTEC A SYSTEM**
- Type: Ecophon Connect steel channel trim, colour and finish to match exposed grid.
  - Manufacturer: Saint-Gobain Ecophon Ltd, Old Brick Kiln, Ramsdell, Tadley, Hampshire. RG26 5PP.
    - Product reference: connect channel trim C3 3532 as detail HT1-A11.
  - Fixings:
    - Fasteners: BZP raised head screws.
    - Fixing centres (maximum): 450 mm.
- 261B     **PERIMETER TRIMS FOR ECOPHON FOCUS FROST Ds SYSTEM**
- Type: Ecophon Connect steel angle trim, colour and finish to match exposed grid.
  - Manufacturer: Saint-Gobain Ecophon Ltd, Old Brick Kiln, Ramsdell, Tadley, Hampshire. RG26 5PP.
    - Product reference: connect angle trim C1 15/22 as detail T1-D110.
  - Fixings:
    - Fasteners: BZP raised head screws.
    - Fixing centres (maximum): 450 mm.

## **EXECUTION**

- 302      **CONTROL SAMPLES**
- General: Complete areas as part of the finished work in the following locations: PUBLIC AREAS.
  - Approval: Obtain before completing areas of similar work.

## 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 unit.
- 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.

## 310 BRACING

- General: Secure, with additional bracing and stiffening to give a stable ceiling system resistant to design loads and pressures.

## 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.

## 320 TOP FIXING

- Building structure: Verify suitability.
- Structural soffit: concrete slab.
  - Suitability to receive specified fixings: Evaluate and confirm.
- Fixing to:
  - Concrete: Drill and insert suitable expanding anchors.
  - Aerated concrete: Fix through from the top of concrete units and provide a system of primary support channels.
  - Structural steel: Drill, or use suitable proprietary clips/ adaptors.
  - Metal roof decking: Fix to sides of liner tray corrugations.
  - Timber: Fix to side of joists at least 50 mm from bottom edge. If ceiling system is intended for fire protection, fix into top third of joists.
  - Hollow structural members: Submit fixing proposals.
- Cartridge or powder activated methods: Do not use.

## 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 per manufacturers instructions.

## 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 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: Refer system details.
  - Fixing centres: 600 mm.

## 340 EXPOSED GRIDS

- Grid fixings: Strap hangers.
- Main runners: Install level. Do not kink or bend hangers.
  - Spliced joints: Stagger.
  - Wire hangers passing through main runners: Use sharp bends and tightly wrapped loops.
  - Angle/ strap hangers: Do not use rivets for bottom fixing.
  - Angular displacement of long axis of one runner in relation to next runner in line with it: Not visually apparent.
- Cross members supported by main runners or other cross members: Install perpendicular to intersecting runners.
- Cross tees: Flat and coplanar with flanges of main runners after panel insertion.
  - Cross tees over 600 mm long, cut and resting on perimeter trim: Provide an additional hanger.
- Holding down clips: Locate to manufacturer's recommendations.
  - Fire protecting/ resisting ceiling systems: Use clip type featured in the fire test/ assessment.

## 355 INSTALLING INFILL UNITS

- General:
  - Perimeter infill units: Trimmed, as necessary, to fully fill space between last grid member and perimeter trim. Prevent subsequent movement.
  - Deeply textured infill units: Minimize variations in apparent texture and colour. In particular, avoid patchiness.
- Concealed grids: Install infill units uniformly, straight and aligned. Avoid dimension creep.
  - Infill units around recessed luminaires and similar openings: Prevent movement and displacement.

## 365 INSTALLING METAL INFILL UNITS

- Sound absorbing pads: Fit to prevent upward air movement through infill units. Cut or fold pads in cut perimeter infill units to full unit size. Reseal cut pads.
- Perimeter infill units: Firmly wedge cut units into perimeter trim, or clip down.

## 385 UPSTANDS AND BULKHEADS

- Vertical ceiling systems: Support and brace to provide alignment and stability.
- High upstands: Provide support at base of upstand.

## 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: Steel Hangers.**
    - 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.
- 406    **TRUNKING**
- **Recessed trunking:** Provide flanges for support of grid and infill units, unless mounted above grid flanges. Retain in position with lateral restraint.
- 411    **MECHANICAL SERVICES**
- **Fan coil units:**
    - Inlet/ 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.
- 431    **INSTALLING SOUND BARRIERS**
- **Material:** Wired mineral wool.
  - **Setting out:** Align accurately with partition heads.
  - **Fixing:** Fix tightly at perimeters and joints using methods recommended by barrier manufacturer, including steel support sections as appropriate. Completed installation to be stable, secure and continuous, with no gaps.
  - **Gaps at junctions with partition heads, ceiling system, structural soffit, walls, ducts, pipes, etc:** Seal with mineral wool or suitable sealant.

## 500 ELECTRICAL CONTINUITY AND EARTH BONDING

- Substantial conductive parts of the ceiling system: Electrically continuous and fully earth bonded to carry prospective earth fault currents.
  - Standard: To BS 7671.
- Sequence: Complete earth bonding as soon as possible after completion of each independent area of suspension system.
- Testing: After completion of the ceiling system, associated services and fittings, test conductive parts of suspension system required to carry earth fault current, or used as bonding connections. Give notice before testing.
  - Electrical continuity: Measure from various distant conductive points of ceiling system and to earth bar in distribution board serving the area.
  - Test current: Sufficient to indicate probable electrical performance under fault conditions.
  - Test instrument: Type providing a pulse of about 25 A at safe voltage for safe duration, and indicating resistance in ranges 0-2 ohms and 0-20 ohms.
  - Resistance of measuring conductors: Deduce from test instrument readings.
  - Test readings: Record and certify. Add results to resistance of other parts of the path forming the earth fault loop.

**COMPLETION**

## 505 TOOLS

- Access tools: At Completion, supply one set of the following: Ecophon Connect Edge Tool .

## 520 USER INSTRUCTIONS

- Contents: Include the following:
  - Correct methods for removing and replacing infill units and other components.
  - Cleaning methods and materials.
  - Recommendations for redecoration.
  - Ceiling systems intended for fire protection: Limitations placed on subsequent alterations and maintenance procedures, to ensure that their fire performance is not impaired.
  - Maximum number, position and value of point loads that can be applied to ceiling system after installation.

## 530 SPARES

- General: At Completion supply the following: tiles for ceiling system K40/115 - 119 (number to be confirmed with client).

**K**

**Linings/Sheathing/Dry partitioning**

**K41**

**Raised access floors**

## K41 Raised access floors

To be read with Preliminaries/ General conditions.

### TYPES OF RAISED ACCESS FLOOR

#### 130A RAISED ACCESS FLOOR TO FITNESS SUITE AREAS

- Manufacturer: Kingspan Access Floors Ltd.
  - Web: [www.kingspanaccessfloors.co.uk](http://www.kingspanaccessfloors.co.uk).
  - Email: [info@kingspanaccessfloors.co.uk](mailto:info@kingspanaccessfloors.co.uk).
  - Product reference: DRF600 (Extra heavy grade).
  - Integral floor finish: carpet Burmatex 4200 sidewalk as Clause M50/130I.  
Colour: Refer schedule.
- Pedestals: Alpha V.
  - Fixing: Adhesive and mechanical.
- Height:
  - Finished raised access floor height above sub-floor: 145 mm.
  - Under-floor void height: 102 mm.
- Accessories:
  - Aluminium foil tape;
  - Bridging sections;
  - Fixing screws;
  - Oversize perimeter panels;
  - Pedestal earth clamps; and
  - Universal stringers; bolt-on.

#### 140 RAISED ACCESS FLOOR TO FITNESS SUITE

- Manufacturer : Kingspan Access Floors Limited, Burma Drive, Marfleet, Hull, HU9 5SG. Tel +44 (0)1482 781701. [www.kingspanaccessfloors.co.uk](http://www.kingspanaccessfloors.co.uk)
- Product reference: DRF600 Simploc Heavy Grade
- Level of access: Partial access.
- Shape, size and mass of fixed floor panels: Submit proposals.
- Floor panel size: 600 x 600 x 32mm.
- Structural grade: PSA MOB PF2 PS/SPU medium grade
- Installed mass of system (maximum): 44 kg/m<sup>2</sup>.
- Height:
  - Finished raised access floor height above subfloor:145 mm
  - Under-floor void height: 102 mm subject to build up of finishes.
  - Limits on maximum and minimum heights: limitations are under 65mm and over 1000mm.
- Floor finishes: As specified in Clause M50/130. Supplied and fitted by others.
- Other requirements:
  - Oversize panels to be used at perimeters as necessary in order to maintain minimum cut panel size.
  - Copy of independent test certificates in compliance with full PSA specification to be submitted for approval at tender stage.
  - Manufacturer to provide full 25 year system warranty on installed components.

**GENERAL/ PERFORMANCE**209 **GENERAL****STANDARDS**

- Raised access flooring system: To MOB PF2 PS/SPU.
- Clauses which do not apply:
  
- Quality management system: To BS EN ISO 9001.
- Environmental: To BS EN ISO14001
- All standards are to be submitted at tender stage.

210 **INTERPRETATION**

- Authority: References to Authority in MOB PF2 PS/SPU are deemed to be to Employer.

212 **STRUCTURAL PERFORMANCE**

- Uniform distributed loads: 12 kN/m<sup>2</sup>.
- Point loads: 4.5 kN/(25 x 25) mm<sup>2</sup>.
- Deflection (maximum): 2.4 mm

213 **HYGROTHERMAL PERFORMANCE**

- Onerous environmental conditions applying: As required by MOB PF2 PS/SPU.
- Consequent limits to use: Submit.
- Deemed-to-satisfy test results: Submit, with testing authority's opinion.

215 **FIRE PERFORMANCE**

- Reaction to fire:
  - As required by MOB PF2 PS/SPU.
  - Standard BS 476 -7
  - Class 1
- Resistance to fire:
  - As required by MOB PF2 PS/SPU.
  - Standard BS 476 - 6
  - Period: fire propagation index less than 12 and sub index less than 6.

216 **SOUND TRANSMISSION**

- Laboratory system test:
- Standard: To BS EN ISO 140-12.
- Airborne sound insulation 42dB
- Impact sound insulation 69dB
- Test report: Submit.

217 **DURABILITY**

- Fungi, moulds and insects:
- Tests: To BS 1982-1, -2 and -3.
- Preventive measures: Submit proposals

## 219 GENERAL PERFORMANCE

- Completed installation: Clean and stable. Free from bounce and vibration. No lipping between floor panels.

## 239 SOUND TRANSMISSION

- Laboratory system test: In accordance with BS EN ISO10848-2.
  - Airborne sound insulation: 42 dB .
  - Impact sound insulation: 69 dB .
  - Test report: Submit.

**COMPONENTS**

## 310 SAMPLES

- General: Submit representative samples of the following: Floor panels with cable management accessories .
  - Purpose: Client approval .

## 315 FLOOR PANELS To Fitness Suite

- Panel size: 600 x 600 mm .
- Tolerances:
  - Deviation: To MOB PF2 PS/ SPU .
- Life expectancy, excluding coverings (minimum): 25 years .
- Casing material: Steel .
  - Casing finish: Galvanized .
- Core material: HD particleboard .
- Perimeter edging material: Rigid plastic .
- Weight of removable panels: 12.5 kg .
- Floor panel fixing: Screws .
- Floor panel location method: Positive.
- Labelling:
  - Nonstandard panels: Identify for relocation purposes.
  - Service identification labels: Provide self-adhesive labels to identify under-floor services and their direction. Fix to the visible surface of the floor panel, and under carpet finish if any.

## 320 PEDESTALS To Fitness Suite

- Life expectancy (minimum): 50 years. Submit manufacturer's life expectancy.
- Adjustability: Adjustable.
  - Limits on adjustability: Submit proposals.
  - Locking: Required.
- Additional pedestals: Submit proposals.
- Pedestal materials: Zinc plated steel.

- 321 PEDESTALS: Kingspan Access Floors Alpha V
- Life expectancy (minimum): 50 years. Submit manufacturers expected life expectancy.
  - Pedestal fixing:
  - Adhesive fixing:
    - Selection of test specimens: Submit proposals. T42
    - Test results: Submit.
    - Adhesive: Uretech KPA one component, solvent free polyurethane system.
  - Mechanical fixing:
  - Two point mechanical fixing in addition to adhesive on floor heights over 400mm.
    - Selection of test specimens: Submit proposals. T42
    - Test results: Submit.
  - Adjustability:
    - Limits on adjustability: + or – 20mm.
    - Locking: Required.
  - Additional pedestals: At door thresholds, columns and other cut panel edges as applicable.
  - Pedestal materials: All zinc plated steel.

- 322 PEDESTAL ADHESIVE
- General: Compatible with subfloor finishing.

- 326 STRINGERS
- Type: Kingspan Access Floors Heavy Grade 30x30 box section stringers.
  - Removable stringers:
  - Life expectancy (minimum): 50 years.
  - Materials: 3mm Galvanised steel

#### INSTALLATION

- 410 CONTROL SAMPLES
- General: Complete areas of finished work in the following locations: Fitness Suite .

- 420 TOOLS
- Floor panel lifting devices: At Practical Completion, supply one set of suitable devices for each type of raised access floor finish installed. Train designated personnel in their use.
  - Pedestal locking: At Practical Completion, supply one set of tools for releasing pedestal locking.

- 421 PREPARATION
- Cleanliness: Clean before installation and keep clean during installation.
  - Setting out: Before installation of services, indelibly mark pedestal positions.
  - Fixtures: Before installation, complete the fixtures which floor panels are to be cut around or which supports are to bridge.
  - Bridging structures - supplementary supports: Submit proposals .

## 425 ENVIRONMENTAL CONDITIONS

- General:
  - Dry, well ventilated, not subject to extremes of temperature or humidity, and free from rapid variations of temperature or humidity.
  - RH of air (maximum): 75%.
  - RH of surrounding walls (maximum): 75%.
- Subfloors:
  - RH (maximum): 75%. Test to BS 8201 using an accurately calibrated hygrometer.
  - Temperature (minimum): 5°C.

## 430 USER INSTRUCTIONS

- Manual contents: Include the following:
  - Correct method for lifting and replacing floor panels and stringers.
  - Servicing: Limitations on sequence, number and positions of floor panels and stringers which can be removed safely at one time.
  - Permissible loads: With guidance on use of spreader plates when shifting heavy equipment and subsequent maintenance.
  - Methods for installing cabling and ducts, to prevent damage to supporting structure.
  - Cleaning methods: For floor panels and integral finishes.
  - Floor panel covering renewal: Method for replacement of integral floor panel coverings.
  - Pedestal adjustment and locking.
  - Maintenance: Recommended methods and frequency. Minimum maintenance-free life of raised access floor system. Minimum maintenance-free life of replaceable parts where this differs from that of the whole system. Minimum period during which replaceable components will be available.
- Installation instructions, including COSHH Assessment.

## 431 DUSTPROOFING

- Sealer: Colour tinted. Recommended by raised access floor manufacturer. Compatible with materials used to pack and/ or fix pedestals.
- Sealing:
  - Extent: Concrete and masonry surfaces within raised access floor void .
  - Preparation: Surfaces to be sealed must be clean, dry and free from dust, grease and other contaminants.
  - Number of coats: Two.
  - First coat: Apply before pedestals are erected.
  - Second coat: Different tint to first coat. Apply after completion of services and other associated work.

## 433 PEDESTAL ADHESIVE TESTING

- Test method: To manufacturer's requirements.
- Selection of test specimens: 0.5 % of total.
- Test results: submit.

## 435 CUT FLOOR PANELS

- Size (minimum): Half full width x half full length.
- Burrs and rough edges: Make smooth.
- Edge sealer: Class 0 spread of flame rated aluminium foil self adhesive tape.
- Edge sealing: Seal exposed cut edges of floor panels that have moisture sensitive or combustible cores.

- 440 SPARES
- General: At Practical Completion, supply the following:
  - DRF600 Simploc floor panels 6 number
  - Alpha V pedestals 6 number
- 441 RAISED ACCESS FLOOR LEVELS
- Permissible deviations in level:
    - Over set length:  $\pm 1.5$  mm over 5m .
    - Overall:  $\pm 6$  mm .
- 445 PERIMETERS
- Expansion gaps:
    - Size: 10 mm.
    - Location: At abutments.
  - Expansion gap filling:
    - Filler type: Resilient closed cell.
    - Filling: Before fixing skirtings and cover strips.
- 450 CLEANING
- Subfloors: After completion, thoroughly clean accessible areas of subfloors and leave free of dust and debris.
  - Raised access floor: Before delivery of items carried by floor, clean thoroughly.
- 451 CAVITY BARRIERS
- Construction:
    - Material: PVC sleeved mineral wool .
    - Fire resistance to BS 476-20:  
Integrity/ insulation (minutes): 120/120 .
  - Performance: Permanently stable, continuous, and an effective barrier to smoke and flame.
  - Distribution:
    - Centres (maximum): 10m .
    - Subdivided areas (maximum): 20 sq.m. .
  - Fixing: Fix securely to subfloor, at joints and as necessary.
  - Floor panels: Firmly secure floor panels above cavity barriers.
  - Gaps between cavity barriers and other elements: Seal with mineral wool or other suitable material.
  - Fire stopping: Give notice when fire stopping is complete.
- 451A CAVITY BARRIER
- Manufacturer: PFC Corofil Fire Stop Products.
    - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
    - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
    - Product reference: C470 Raised Floor Fire Stops
  - Facing: Foil both sides.
  - Fire resistance: 120 minutes (integrity/ insulation).
  - Supports: Not required.

## 465 ELECTRICAL CONTINUITY AND EARTH BONDING

- Substantial metal parts of raised access floor: Electrically continuous and fully earth bonded.
  - Standard: To BS 7671.
  - Bonding methods: Submit proposals.
  - Earthing methods: Submit proposals.
- Rooms used for electronic data processing equipment: I.T. .
- Earth bonding connection points: Determine number and location. Provide connectors.
- Total resistance of earth fault loop (maximum): Resistance required to operate earth fault protection devices to BS 7671.
- Electrical continuity and earth bonding tests:
  - General: Test complete raised access floor.
  - Points for testing: Randomly selected pedestals, stringers, tops and bottoms of floor panels.

**COMPLETION**

## 510 TOOLS

- Floor panel lifting devices: At completion, supply one set of suitable devices for each type of raised access floor finish installed. Train designated personnel in their use.
- Pedestal locking: At completion, supply one set of tools for releasing pedestal locking.

## 515 USER INSTRUCTIONS

- Manual contents: Include the following:
  - Correct method for lifting and replacing floor panels and stringers.
  - Servicing: Limitations on sequence, number and positions of floor panels and stringers that can be removed safely at one time.
  - Permissible loads: With guidance on use of spreader plates when shifting heavy equipment and subsequent maintenance.
  - Methods for installing cabling and ducts, to prevent damage to supporting structure.
  - Cleaning methods: For floor panels and integral finishes.
  - Floor panel covering renewal: Method for replacement of integral floor panel coverings.
  - Pedestal adjustment and locking.
  - Maintenance: Recommended methods and frequency. Minimum maintenance-free life of raised access floor system. Minimum maintenance-free life of replaceable parts where this differs from that of the whole system. Minimum period during which replaceable components will be available.
  - Installation instructions, including COSHH Assessment.

## 520 SPARES

- General: At completion, supply the following: DRF600 floor panels 12 number  
Alpha IV pedestals 12 number.

## 525 CLEANING

- Subfloors: At completion, thoroughly clean accessible areas of subfloors and leave free of dust and debris.
- Raised access floor: Before delivery of items carried by floor, clean thoroughly.

L  
Windows/Doors/Stairs

**L10**

**Windows/ Rooflights/ Screens/ Louvres**

## L10 Windows/ Rooflights/ Screens/ Louvres

To be read with Preliminaries/ General conditions.

### GENERAL

- 100 INTERNAL SCREENS DESIGN  
The contractor will be responsible through the supplier of the internal door & screens for the final detailed scheduling in accordance with the outline schedule prepared for the tender documents. This will take account of all performance requirements with regard to moisture resistance, acoustic performance and fire performance. If alternatives are to be proposed than samples indicating the finish, structure and core, must be submitted to the architect for approval. Ref - BS 6375 - 2 : 2009 and BS 8300.
- 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:  
Windows in Services Block.
- 140 CONTROL SAMPLES
- Procedure:
    - Finalise component details.
    - Fabricate one of each of the following designated items as part of the quantity required for the project.
    - Obtain approval of appearance and quality before proceeding with manufacturer of the remaining quantity.
  - Designated items:  
Tilt and Turn Windows East Whale Lane Elevation.

### PRODUCTS

- 330A ALUMINIUM WINDOWS
- Manufacturer: Metal Technology Ltd.
    - Web: [www.metaltechnology.com](http://www.metaltechnology.com).
    - Email: [sales@metaltechnology.com](mailto:sales@metaltechnology.com).
    - Product reference: System 5-20 tilt and turn windows
  - Size: As drawing 445.
  - Colour: RAL ???.
  - Glazing details: 28 mm insulating glass units.
    - Beading: Internal.
    - Glazing method: Site glazed.
  - Ironmongery/ Accessories: Manufacturer's standard.

## 460 ROOFLIGHTS

- Manufacturer: Lareine Engineering Ltd, Unit 1, Armadale Industrial Estate, West Lothian.
  - Product reference: Solus Rooflights- Location- Stairwells in Services Block.
- Type: Monopitch Rooflight up to 3.2metre span. Min Pitch 15 deg to BS 5516 CP3 chapter 5 and BS 6399 Part 3 1998.
- Frame: Aluminium, aluminium to BS1474:1987 Alloy 6063-T6. Bars normally at 600mm centres or centres to suit Architect.
  - Finish: Polyester powder coated to BS 6496 Interpon D92 range. 25 year life expectancy.
  - Colour: Standard RAL colour, Grey externally, White internally..
- Kerb: Structural Kerb by Main Contractor. High side of mono-pitch to be supported by Roof parapet wall with ragged aluminium flashing in fairfaced blockwork .
- Glazing details: 6mm SKN 165 Solar Control Glass 16mm air gap Argon filled, 6.4mm Low-E inner laminated glass..
- Other requirements: Glazed ventilator.
- Fixing: As Lareine Engineering approved details.

## 490A ROOF VENTILATORS WITHIN ROOFLIGHTS OVER FIRE ESCAPE STAIRS

- Manufacturer: Lareine Engineering Ltd, Unit 1, Armadale Industrial Estate, West Lothian.
  - Product reference: Solus Smoke Release Hatch.
- Type: Hatch suitable for flat/pitched roofs. Non fragile, Class B to ACR (M) 001:2005 Test for Fragility of Roofing Assemblies.
  - Size: 1050 mm x 1050 mm 2 No to Fire Escape Stairs.
- Controls: 24 volt high temperature linear actuators.
- Materials: Glazing: 28 mm insulating glass unit.
  - Finish as delivered: Polyester Powder Coated Colour Standard RAL, Grey externally and White internally..
- Seals: Required.
- Guards: Burglar.
- Accessories/ Special features: Aluminium covers to actuators.
- Fixing: Lareine Engineering proprietary fixings to 400mm high aluminium insulated kerb upstand by Lareine Engineering painted white internally..

## 550A GLAZED SCREEN SYSTEM

- Manufacturer: Metal Technology Ltd.
  - Web: [www.metaltechnology.com](http://www.metaltechnology.com).
  - Email: [sales@metaltechnology.com](mailto:sales@metaltechnology.com).
  - Product reference: System 8 Low rise Curtain walling System
- Screen height: 7.20 metres varies.
- System U-value: 1.6 W/m<sup>2</sup>K.
- Fire resistance rating of complete system: Smoke retardant construction.
- Sound insulation rating: ?.
- Frames:
  - Profile size: 100 mm x 45 mm.
  - Finish: Polyester powder coated – colour ???.
- Panels: Insulated panels above glazing.
  - Finish: Polyester powder coated.
- Glazing details: 24 mm insulating glass units.
- Incorporated features: Glazing tape to front face of joints. Cover caps horizontally and vertically. .
- Accessories/ Other requirements: small gap sealant. Aluminium P.P.C flashings and cills as per detail drawings. .

## 650 METAL LOUVRES

- Manufacturer: Colt International Ltd..
  - Product reference: 3UL.
- Material: Steel.
  - Finish as delivered: Powder coated.
- Fire resistance rating: Not applicable.
- Number of louvre banks: Two.
- Louvre blade pitch and angle: Pitch: 100 mm.
- Blanking panels: As required.
- Accessories/ Other requirements: Stainless steel bird mesh.
- Fixing: Bolted to concrete as per details.

## 650A METAL LOUVRESTO WAVE PLANT ROOM

- Manufacturer: Colt International Ltd.
  - Web: [www.coltinfo.co.uk](http://www.coltinfo.co.uk).
  - Email: [info@coltgroup.com](mailto:info@coltgroup.com).
  - Product reference: Universal Louvre 2UL/DH.
- Dimensions:
  - Width: Refer details.
  - Height: Refer details.
- Arrangement: Horizontal.
- Materials: Mild Steel.
  - Finish: Polyester powder coating.
    - Coverage: Partial coverage.
    - Colour: Refer details.
- Seals: Required.
- Guards: Insect mesh.
- Blanking panels: Single skin aluminium with external decorative polyester powder paint finish to match louvres.
- Noise control: None.
- Accessories: None.

**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.

## 740 CORROSION PROTECTION

- Surfaces to be protected: Aluminium/Steel Louvres.
- 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.

- 765 WINDOW INSTALLATION GENERALLY
- Installation: Into prepared openings.
  - Gap between frame edge and surrounding construction:
    - Minimum: 3mm.
    - Maximum: 10mm.
  - Distortion: Install windows without twist or diagonal racking.
- 770 DAMP PROOF COURSES IN PREPARED OPENINGS
- Location: Ensure correct positioning in relation to window frames. Do not displace during fixing operations.
- 781 FIXING OF STEEL FRAMES
- Standard: As section Z20.
  - Fasteners: 10 mm phosphor bronze expanding bolts.
    - Spacing: When not predrilled or specified otherwise, position fasteners not less than 50 mm and not more than 190 mm from ends of each jamb, adjacent to each hanging point of opening lights and at maximum 900 mm centres.
- 782 FIXING OF ALUMINIUM FRAMES
- Standard: As section Z20.
  - Fasteners: 25 x 3 x 150 mm galvanized carbon steel frame cramps.
    - 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.
- 784 FIXING OF COMPOSITE FRAMES
- Standard: As section Z20.
  - Fasteners: 25 x 3 x 150 mm galvanized carbon steel frame cramps.
    - Spacing: When not predrilled or specified otherwise, position fasteners not more than 150 mm from ends of each jamb, adjacent to each hanging point of opening lights, and at maximum 600 mm centres.
- 790 FIRE RESISTING FRAMES
- Gap between back of frame and reveal: Completely fill with intumescent mastic or tape.
- 800 BACKFILLING OF STEEL FRAME SECTIONS
- Windows fixed direct into openings: After fixing, fill back of steel frame with waterproof cement fillet.
- 810 SEALANT JOINTS
- Sealant:
    - Manufacturer: Submit proposals.  
Product reference: silicone.
    - Colour: to be agreed.
    - Application: As section Z22 to prepared joints. Finish triangular fillets to a flat or slightly convex profile.
- 820 IRONMONGERY
- Fixing: 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.

L  
Windows/Doors/Stairs

**L20**

**Doors/ shutters/ hatches**

## L20 Doors/ shutters/ hatches

To be read with Preliminaries/ General conditions.

### GENERAL

- 100 **INTERNAL DOORS AND SCREENS DESIGN**  
The contractor will be responsible through the supplier of the internal door sets for the final detailed scheduling in accordance with the outline schedule prepared for the tender documents. This will take account of all performance requirements with regard to moisture resistance, acoustic performance and fire performance. If alternatives are to be proposed than samples indicating the finish, structure and core, must be submitted to the architect for approval. Ref - BS 6375 - 2 : 2009 and BS 8300.
- 110 **EVIDENCE OF PERFORMANCE**
- Certification: Provide independently certified evidence that all incorporated components comply with specified performance requirements. CERTIFIRE
- 112 **TIMBER PROCUREMENT**
- Timber (including timber for wood based products): Obtained from well managed forests and/ or 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.
    - Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood based products.
- 115 **FIRE RESISTING DOORS/ DOORSETS/ ASSEMBLIES**
- 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/ doorset/ assembly supplied will comply with the specified requirements for fire 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.
- 170 **CONTROL SAMPLES**
- Procedure:
    - Finalize component details.
    - Fabricate one of each of the following designated items as part of the quantity required for the project.
    - Obtain approval of appearance and quality before proceeding with manufacture of the remaining quantity.
  - Designated items:
    - Standard double doorset.

**PRODUCTS****280A DOORS WITHIN INTERNAL GLAZED SCREENS**

- Manufacturer: Metal Technology Ltd.
  - Web: [www.metaltechnology.com](http://www.metaltechnology.com).
  - Email: [sales@metaltechnology.com](mailto:sales@metaltechnology.com).
  - Product reference: System 10 Commercial Doors
- Material: Extruded aluminium alloy 6063 T6.
- Size: as details.
  - Internal: 826 x 2100 mm.
  - External: 826 x 2100 mm.
- Glazing: Single glazed.
  - Thickness: 10 mm.

**410 WOOD DOORSETS - INTERNAL**

- Manufacturer: Leaderflush Shapland Ltd, Miinhay Road, Langley Mill, Nottingham. NG16 4AZ tel: 01773 530500.
  - Product reference: Decoative Doorsets.
- Door leaf:
  - Facings: Crown cut American Oak veneer.
  - Lippings: postformed 6mm radius.
  - Finish as delivered: Full factory finish.
- Frame and architraves:
  - Wood species: American white oak.
  - Finish as delivered: Full factory finish.
- Preservative treatment: Not required.
- Glazing details: Clear fire-resisting glazing.
  - Beading: Internal.
- Ironmongery: As ironmongery schedule.
- Perimeter seals: Fire and smoke seal.
- Other requirements: None.
- Fixing: Plugged and screwed.

- 410A            **INTERIOR VENEER FACED DOORSETS (DRY AREAS):**  
Drawing reference(s): Refer to plans, door elevations 423 and Door Schedule 425.  
Manufacturer and reference: Leaderflush Shapland Ltd, Designer Range interior doorsets.  
Sustainability: All timber products certified FSC 100% full chain of custody.  
Fire performance: Non-rated.  
Acoustic performance: Not required.  
Door leaf:  
Core: Enduracor severe duty with finger-jointed softwood perimeter framing around core.  
Facings: American White Oak.  
Lippings: Exposed Oak hardwood to all edges.  
Finish as delivered: Facings Hygenilac. Lippings Hyalux clear lacquer with Hygienilac.  
Glazing details if required (see door schedule): VN4 Vision panel  
Bead system: Hardwood bolection bead, pinned, species and finish to match lippings.  
Size and position of aperture(s): As per door elevations.  
Glass: 6mm toughened clear.  
Frame and architraves:  
Frame: Barum 32 mm thick with 14mm separate stop.  
Architraves: 65 x 18mm if required.  
Material: American White Oak  
Class (to BS EN 942): J40.  
Finish as delivered: Hygenilac.  
Moisture content on delivery: 10 to 12%.  
Ironmongery: As schedule.  
Hinges: Ref. J-605 Grade 316 satin stainless steel lift-off hinge Grade 11 to BS EN 1935, supplied and fixed by doorset manufacturer.  
Locks: Factory morticed, supplied and fixed by doorset manufacturer.  
Fixing: Factory drilled frames with matching pellets.
- 410B            **INTERIOR VENEER FACED DOORSETS (DRY AREAS): Fire rated**  
Drawing reference(s): Refer to plans, door elevations 423 and Door Schedule 425.  
Manufacturer and reference: Leaderflush Shapland Ltd, Designer Range interior doorsets.  
Sustainability: All timber products certified FSC 100% full chain of custody.  
Fire performance: FD30.  
Acoustic performance: Not required.  
Door leaf:  
Core: Enduracor severe duty with finger-jointed softwood perimeter framing around core.  
Facings: American White Oak.  
Lippings: Exposed Oak hardwood to all edges.  
Finish as delivered: Facings Hygenilac. Lippings Hyalux clear lacquer with Hygienilac.  
Glazing details if required (see door schedule): VN4 vision panel  
Bead system: Hardwood bolection bead, pinned, species and finish to match lippings.  
Size and position of aperture(s): As per door elevations.  
Glass: 7mm Pyrodur plus clear.  
Frame and architraves:  
Frame: Barum 32 mm thick with 14mm separate stop.  
Architraves: 65 x 18mm if required.  
Material: American White Oak  
Class (to BS EN 942): J40.  
Finish as delivered: Hygenilac.  
Moisture content on delivery: 10 to 12%.  
Ironmongery: As schedule.  
Hinges: Ref. J-605 Grade 316 satin stainless steel lift-off hinge Grade 11 to BS EN 1935, supplied and fixed by doorset manufacturer.  
Locks: Factory morticed, supplied and fixed by doorset manufacturer.  
Fixing: Factory drilled frames with matching pellets.

- 410C            **INTERIOR VENEER FACED DOORSETS (DRY AREAS):** Fire rated  
 Drawing reference(s): Refer to plans, door elevations 423 and Door Schedule 425.  
 Manufacturer and reference: Leaderflush Shapland Ltd, Designer Range interior doorsets.  
 Sustainability: All timber products certified FSC 100% full chain of custody.  
 Fire performance: FD60.  
 Acoustic performance: Not required.  
 Door leaf:  
 Core: Enduracor severe duty with finger-jointed softwood perimeter framing around core.  
 Facings: American White Oak.  
 Lippings: Exposed Oak hardwood to all edges.  
 Finish as delivered: Facings Hygenilac. Lippings Hyalux clear lacquer with Hygienilac.  
 Glazing details if required (see door schedule): VN4 vision panel  
 Bead system: Hardwood bolection bead, pinned, species and finish to match lippings.  
 Size and position of aperture(s): As per door elevations.  
 Glass: 6mm Pyran S clear.  
 Frame and architraves:  
 Frame: Barum 32 mm thick with 14mm separate stop.  
 Architraves: 65 x 18mm if required.  
 Material: American White Oak  
 Class (to BS EN 942): J40.  
 Finish as delivered: Hygenilac.  
 Moisture content on delivery: 10 to 12%.  
 Ironmongery: As schedule.  
 Hinges: Ref. J-605 Grade 316 satin stainless steel lift-off hinge Grade 11 to BS EN 1935, supplied and fixed by doorset manufacturer.  
 Locks: Factory morticed, supplied and fixed by doorset manufacturer.  
 Fixing: Factory drilled frames with matching pellets.
- 410D            **INTERIOR POSTFORMED PVC FACED DOORSETS (WET AREAS):**  
 Drawing reference(s): Refer to plans and Door Schedule 425.  
 Manufacturer and reference: Leaderflush Shapland Ltd, Plasform WR interior doorsets.  
 Sustainability: All timber products certified FSC 100% full chain of custody.  
 Fire performance: Non-rated.  
 Acoustic performance: Not required.  
 Door leaf:  
 Core: Lamcor severe duty  
 Facings: 2mm Hygieniform PVC, colour to be confirmed.  
 Vertical edges: Postformed, 6 mm radius.  
 Top and bottom edges: Lipped in PVC.  
 Glazing details, if required: PN4 vision panel  
 System: Duoglaze.  
 Size and position of aperture(s): See Door Type elevations.  
 Frame and architraves:  
 Frame: Postformed Mono 50mm section including 18mm rebate.  
 Architraves: 42 x 18mm if required.  
 Material: Sustainable hardwood.  
 Facings: Hygieniform PVC, colour to be confirmed.  
 Vertical edges: Postformed, 6 mm radius.  
 Moisture content on delivery: 10 to 12%.  
 Ironmongery: As schedule.  
 Hinges: Ref. J-605 Grade 316 satin stainless steel lift-off hinge Grade 11 to BS EN 1935, supplied and fixed by doorset manufacturer.  
 Locks: Factory morticed, supplied and fixed by doorset manufacturer.  
 Fixing: Factory drilled frames with matching pellets.

- 410E            **INTERIOR POSTFORMED PVC FACED DOORSETS (WET AREAS): Fire rated**  
 Drawing reference(s): Refer to plans and Door Schedule 425.  
 Manufacturer and reference: Leaderflush Shapland Ltd, Plasform WR interior doorsets.  
 Sustainability: All timber products certified FSC 100% full chain of custody.  
 Fire performance: FD30  
 Acoustic performance: Not required.  
 Door leaf:  
 Core: Lamcor severe duty  
 Facings: 2mm Hygieniform PVC, colour to be confirmed.  
 Vertical edges: Postformed, 6 mm radius.  
 Top and bottom edges: Lipped in PVC.  
 Glazing details, if required: PN4 vision panel  
 System: Duoglaze FD30  
 Size and position of aperture(s): See Door Type elevations.  
 Frame and architraves:  
 Frame: Postformed Mono 50mm section including 18mm rebate.  
 Architraves: 42 x 18mm if required.  
 Material: Sustainable hardwood.  
 Facings: Hygieniform PVC, colour to be confirmed.  
 Vertical edges: Postformed, 6 mm radius.  
 Moisture content on delivery: 10 to 12%.  
 Ironmongery: As schedule.  
 Hinges: Ref. J-605 Grade 316 satin stainless steel lift-off hinge Grade 11 to BS EN 1935, supplied and fixed by doorset manufacturer.  
 Locks: Factory morticed, supplied and fixed by doorset manufacturer.  
 Fixing: Factory drilled frames with matching pellets.
- 410F            **INTERIOR POSTFORMED PVC FACED DOORSETS (WET AREAS): Fire rated**  
 Drawing reference(s): Refer to plans and Door Schedule 425.  
 Manufacturer and reference: Leaderflush Shapland Ltd, Plasform WR interior doorsets.  
 Sustainability: All timber products certified FSC 100% full chain of custody.  
 Fire performance: FD60  
 Acoustic performance: Not required.  
 Door leaf:  
 Core: Lamcor severe duty  
 Facings: 2mm Hygieniform PVC, colour to be confirmed.  
 Vertical edges: Postformed, 6 mm radius.  
 Top and bottom edges: Lipped in PVC.  
 Glazing details, if required: PN4 vision panel  
 System: Duoglaze FD60  
 Size and position of aperture(s): See Door Type elevations.  
 Frame and architraves:  
 Frame: Postformed Mono 50mm section including 18mm rebate.  
 Architraves: 42 x 18mm if required.  
 Material: Sustainable hardwood.  
 Facings: Hygieniform PVC, colour to be confirmed.  
 Vertical edges: Postformed, 6 mm radius.  
 Moisture content on delivery: 10 to 12%.  
 Ironmongery: As schedule.  
 Hinges: Ref. J-605 Grade 316 satin stainless steel lift-off hinge Grade 11 to BS EN 1935, supplied and fixed by doorset manufacturer.  
 Locks: Factory morticed, supplied and fixed by doorset manufacturer.  
 Fixing: Factory drilled frames with matching pellets.

410G

## INTERIOR PAINTED DOORSETS: TO BASEMENT DOORS

Drawing reference(s): Refer to plans, door elevations 423 and Door Schedule 425.  
 Manufacturer and reference: Leaderflush Shapland Ltd, Designer Range exterior doorsets.  
 Sustainability: All timber products certified FSC 100% full chain of custody.  
 Fire performance: Non-rated.  
 Acoustic performance: Not required.  
 Door leaf:  
 Core: Enduracor severe duty.  
 Facings: 6mm WBP Plywood.  
 Lippings: Exposed hardwood to all edges.  
 Finish as delivered: Interior grade primed for painting on site by others.  
 Glazing details if required (see door schedule):  
 Bead system: Hardwood bolection bead, pinned, species and finish to match lippings.  
 Size and position of aperture(s): As per door elevations.  
 Glass: 6mm toughened clear.  
 Frame and architraves:  
 Frame: Barum 32 mm thick with 14mm separate stop.  
 Architraves: 65 x 18mm M.D.F..  
 Material: M.D.F.  
 Class (to BS EN 942): J40.  
 Finish as delivered: Interior grade primed for painting on site by others.  
 Moisture content on delivery: 10 to 12%.  
 Ironmongery: As schedule.  
 Hinges: Ref. J-603 Grade 316 satin stainless steel fixed pin hinge Grade 13 to BS EN 1935, supplied and fixed by doorset manufacturer.  
 Locks: Factory morticed, supplied and fixed by doorset manufacturer.  
 Fixing: Factory drilled frames with matching pellets.

410H

## INTERIOR PAINTED DOORSETS: Fire Rated

Drawing reference(s): Refer to plans, door elevations 423 and Door Schedule 425.  
 Manufacturer and reference: Leaderflush Shapland Ltd, Designer Range exterior doorsets.  
 Sustainability: All timber products certified FSC 100% full chain of custody.  
 Fire performance: FD30.  
 Acoustic performance: Not required.  
 Door leaf:  
 Core: Enduracor severe duty.  
 Facings: 6mm WBP Plywood.  
 Lippings: Exposed hardwood to all edges.  
 Finish as delivered: Interior grade primed for painting on site by others.  
 Glazing details if required (see door schedule):  
 Bead system: Hardwood bolection bead, pinned, species and finish to match lippings.  
 Size and position of aperture(s): As per door elevations.  
 Glass: 7mm Pyrodur plus clear.  
 Frame and architraves:  
 Frame: Barum 32 mm thick with 14mm separate stop.  
 Architraves: 65 x 18mm if required.  
 Material: M.D.F.  
 Class (to BS EN 942): J40.  
 Finish as delivered: Interior grade primed for painting on site by others.  
 Moisture content on delivery: 10 to 12%.  
 Ironmongery: As schedule.  
 Hinges: Ref. J-603 Grade 316 satin stainless steel fixed pin hinge Grade 13 to BS EN 1935, supplied and fixed by doorset manufacturer.  
 Locks: Factory morticed, supplied and fixed by doorset manufacturer.  
 Fixing: Factory drilled frames with matching pellets.

410I WOOD DOORSETS Secure Door to Safe Room Refer Door Schedule 425.

- Manufacturer: Leaderflush Shapland.
- Web: [www.leaderflushshapland.co.uk](http://www.leaderflushshapland.co.uk).
- Email: [enquiries@leaderflushshapland.co.uk](mailto:enquiries@leaderflushshapland.co.uk).
- Product reference: Castle AV2 Doorset
- Door leaf thickness: 55 mm.
- Facings: Veneer.
- Finish: Hyalux factory lacquered veneer.
- Frame: 94 mm x 69 mm solid hardwood rebated frame.

410J INTERIOR PAINTED DOORSETS: Fire Rated

Drawing reference(s): Refer to plans, door elevations 423 and Door Schedule 425.  
 Manufacturer and reference: Leaderflush Shapland Ltd, Designer Range exterior doorsets.  
 Sustainability: All timber products certified FSC 100% full chain of custody.  
 Fire performance: FD60.  
 Acoustic performance: Not required.  
 Door leaf:  
 Core: Enduracor severe duty.  
 Facings: 6mm WBP Plywood.  
 Lippings: Exposed hardwood to all edges.  
 Finish as delivered: Interior grade primed for painting on site by others.  
 Glazing details if required (see door schedule):  
 Bead system: Hardwood bolection bead, pinned, species and finish to match lippings.  
 Size and position of aperture(s): As per door elevations.  
 Glass: 6mm Pyran S clear.  
 Frame and architraves:  
 Frame: Barum 32 mm thick with 14mm separate stop.  
 Architraves: 65 x 18mm if required.  
 Material: M.D.F.  
 Class (to BS EN 942): J40.  
 Finish as delivered: Interior grade primed for painting on site by others.  
 Moisture content on delivery: 10 to 12%.  
 Ironmongery: As schedule.  
 Hinges: Ref. J-603 Grade 316 satin stainless steel fixed pin hinge Grade 13 to BS EN 1935, supplied and fixed by doorset manufacturer.  
 Locks: Factory morticed, supplied and fixed by doorset manufacturer.  
 Fixing: Factory drilled frames with matching pellets.

410K INTERIOR VENEER FACED DOORSETS (DRY AREAS): Fire rated special facings

Drawing reference(s): Refer to plans, door elevations 423 and Door Schedule 425.

Manufacturer and reference: Leaderflush Shapland Ltd, Designer Range interior doorsets.

Sustainability: All timber products certified FSC 100% full chain of custody.

Fire performance: FD30.

Acoustic performance: Not required.

Door leaf:

Core: Enduracor severe duty with finger-jointed softwood perimeter framing around core.

Facings: American White Oak one side, Hygeniform other side

Lippings: Exposed Oak hardwood to all edges.

Finish as delivered: Facings Hygenilac. Lippings Hyalux clear lacquer with Hygienilac.

Glazing details if required (see door schedule): VN4 vision panel

Bead system: Hardwood bolection bead, pinned, species and finish to match lippings.

Size and position of aperture(s): As per door elevations.

Glass: 7mm Pyrodur plus clear.

Frame and architraves:

Frame: Barum 32 mm thick with 14mm separate stop.

Architraves: 65 x 18mm if required.

Material: American White Oak

Class (to BS EN 942): J40.

Finish as delivered: Hygenilac.

Moisture content on delivery: 10 to 12%.

Ironmongery: As schedule.

Hinges: Ref. J-605 Grade 316 satin stainless steel lift-off hinge Grade 11 to BS EN 1935, supplied and fixed by doorset manufacturer.

Locks: Factory morticed, supplied and fixed by doorset manufacturer.

Fixing: Factory drilled frames with matching pellets.

410L INTERIOR VENEER FACED DOORSETS (DRY AREAS): Fire and acoustic rated  
Drawing reference(s): Refer to plans, door elevations 423 and Door Schedul 425.  
Manufacturer and reference: Leaderflush Shapland Ltd, Extended performance Audiodor 35 doorsets.  
Sustainability: All timber products certified FSC 100% full chain of custody.  
Fire performance: FD30.  
Acoustic performance: 35dB.  
Door leaf:  
Core: Enduracor severe duty with finger-jointed softwood perimeter framing around core.  
Facings: American White Oak.  
Lippings: Exposed Oak hardwood to all edges.  
Finish as delivered: Facings Hygenilac. Lippings Hyalux clear lacquer with Hygenilac.  
Glazing details if required (see door schedule): VN4 vision panel  
Bead system: Hardwood bolection bead, pinned, species and finish to match lippings.  
Size and position of aperture(s): As per door elevations.  
Glass: 7mm Pyrodur plus clear.  
Frame and architraves:  
Frame: Barum 32 mm thick with 14mm separate stop.  
Architraves: 65 x 18mm if required.  
Material: American White Oak  
Class (to BS EN 942): J40.  
Finish as delivered: Hygenilac.  
Moisture content on delivery: 10 to 12%.  
Ironmongery: As schedule.  
Hinges: Ref. J-605 Grade 316 satin stainless steel lift-off hinge Grade 11 to BS EN 1935, supplied and fixed by doorset manufacturer.  
Threshold Bar  
Locks: Factory morticed, supplied and fixed by doorset manufacturer.  
Fixing: Factory drilled frames with matching pellets.

410M            **INTERIOR VENEER FACED DOORSETS (DRY AREAS):** Fire and acoustic rated  
Drawing reference(s): Refer to plans, door elevations 423 and Door Schedule 425.  
Manufacturer and reference: Leaderflush Shapland Ltd, Extended performance Audiodor  
44 doorsets.  
Sustainability: All timber products certified FSC 100% full chain of custody.  
Fire performance: FD30.  
Acoustic performance: 44dB.  
Door leaf:  
Core: Enduracor severe duty with finger-jointed softwood perimeter framing around core.  
Facings: American White Oak.  
Lippings: Exposed Oak hardwood to all edges.  
Finish as delivered: Facings Hygenilac. Lippings Hyalux clear lacquer with Hygienilac.  
Glazing details if required (see door schedule): VN4 vision panel  
Bead system: Hardwood bolection bead, pinned, species and finish to match lippings.  
Size and position of aperture(s): As per door elevations.  
Glass: 23 mm clear pyrostop.  
Frame and architraves:  
Frame: Barum 32 mm thick with 14mm separate stop.  
Architraves: 65 x 18mm if required.  
Material: American White Oak  
Class (to BS EN 942): J40.  
Finish as delivered: Hygenilac.  
Moisture content on delivery: 10 to 12%.  
Ironmongery: As schedule.  
Hinges: Ref. J-605 Grade 316 satin stainless steel lift-off hinge Grade 11 to BS EN 1935,  
supplied and fixed by doorset manufacturer.  
Threshold bar  
Locks: Factory morticed, supplied and fixed by doorset manufacturer.  
Fixing: Factory drilled frames with matching pellets.

410N INTERIOR VENEER FACED DOORSETS (DRY AREAS): Secure Door to Safe Room

Drawing reference(s): Refer to plans, door elevations and Door Schedule.

Manufacturer and reference: Leaderflush Shapland Ltd, Extended Performance interior doorsets.

Sustainability: All timber products certified FSC 100% full chain of custody.

Security Performance : delayed entry level 2

Fire performance: Non-rated.

Acoustic performance: Not required.

Door leaf:

Core: Castle AV2 reinforced core with zintec sheet in core

Nominal thickness 55mm

Facings: American White Oak.

Lippings: Exposed Oak hardwood to all edges.

Finish as delivered: Facings Hygenilac. Lippings Hyalux clear lacquer with Hygienilac.

Glazing details if required (see door schedule): VB1

Bead system: High security beads in black stove enamelled steel.

Size and position of aperture(s): As per Leaderflush security details.

Glass: 11.5mm anti-bandit clear clear.

Frame and architraves:

Frame: Security Mono

Architraves: 65 x 18mm if required.

Material: American White Oak

Class (to BS EN 942): J40.

Finish as delivered: Hygenilac.

Moisture content on delivery: 10 to 12%.

Ironmongery: As schedule.

Hinges: Ref. J-605 Grade 316 satin stainless steel butt hinge Grade 11 to BS EN 1935, supplied and fixed by doorset manufacturer.

Locks: Factory morticed, supplied and fixed by doorset manufacturer.

Fixing: Factory drilled frames with matching pellets.

- 460 FRAMELESS GLASS DOORS TO EAST WHALE LANE ENTRANCE
- Manufacturer: Pilkington Building Products.
    - Product reference: Eclipse Advatage Toughened Glass.
  - Door leaf material: Toughened safety glass to BS 6206, class A.
    - Thickness: 12 mm.
    - Colour: Grey.
  - Decoration: Acid etched manifestation ?.
  - Door rails/ Patch fittings: Bottom Rail + Top Patch with pivot.
    - Material/ Finish: Polished stainless steel.
  - Peripheral fixings: Surface mounted.
  - Lock: Profile double cylinder.
    - Position: Door top rail.
  - Floor springs: None required.
  - Pull handles: None required.
    - Size: N/A.
    - Material/ Finish: N/A.
  - Additional ironmongery/ accessories: Door seals.

- 460A GLASS TYPE
- Manufacturer: Pilkington Building Products UK.
    - Web: [www.pilkington.co.uk](http://www.pilkington.co.uk).
    - Email: [pilkington@respond.uk.com](mailto:pilkington@respond.uk.com).
    - Product reference: Eclipse Advantage™ Toughened Glass
  - Thickness: As Planar Glass Facade.
  - Colour: Clear.
- 480 DOORSETS /EXIT WEST FOYER, FIRE ESCAPE TO POOL AND ACCOMMODATION BLOCK
- Manufacturer: Metal Technology Ltd or EQUAL.
    - Product reference: System 10 non thermally broken Aluminium commercial door system.
  - Door leaf: single, twin - refer to door schedule.
    - Finish as delivered: Outer Polyester powdercoated to match adjacent curtain walling, Interior Polyester powdercoated, colour - white. Marine environment guarantee required for doors to pool area..
  - Frame and architraves: Aluminium.
    - Finish as delivered: Outer Polyester powdercoated to match adjacent curtain walling, Interior Polyester powdercoated, colour - white.
  - Glazing details: Clear double glazing 24mm thick.
    - Beading: External 'snap in' extruded aluminium beads with Metal Technology's standard colour coded, co-extruded PVC Nitrile captive 'E' gaskets externally and 'wedge' gaskets internally. The corners of the gaskets shall be accurately mitred together and sealed to ensure an effective joint..
  - Ironmongery: pivot hinge, three point locking, bulb ended (anti finger trap) As ironmongery schedule.
  - Perimeter seals: double polypropylene pile brush seals on all four sides, EPDM weatherseals elsewhere.
  - Other requirements: Metal Technology SD160 drained and flush threshold.  
 Push bar escape fitments: stainless steel Dorma AD4100 Series concealed vertical rod exit device - refer to door schedule. The exit device shall contain a built in electric dogging facility and shall be supplied complete with stainless steel JT09 lockable lever handle and entry trim. All panic ironmongery shall comply with BSEN 1125.  
 "hold open" concealed overhead closers, PCD106A with mounting plate PCD105A as required - refer to door schedule, Doors to fire escapes to have metal insulated infill panels in lieu of glass, generally 24mm thick panel overall comprising polyester powder coated finish aluminium bonded to both sides of styrofoam core. - refer to door schedule.  
 Flush bolts: where applicable the half slave leaf doors shall be fitted with one pair of flush bolts (SD272) to secure the door in the closed position. .
  - Fixing: Plugged and screwed.
- 480B DOORSETS Fire Escape Doors to East Whale Lane North and South stairs.
- Manufacturer: Hörmann (UK) Ltd.
    - Web: [www.hormann.co.uk](http://www.hormann.co.uk).
    - Email: [industrial.lei@hormann.co.uk](mailto:industrial.lei@hormann.co.uk).
    - Product reference: Type D45 Double Leaf Doorset.
  - Size: 1552 x 2100mm Structural Opening.
    - Single leaf: 1026 x 2040 mm.
    - Double leaf: 426 x 2040 mm.
  - Finish: Factory applied powder coating.
  - Glazing: 20 mm insulated wired glass.

- 480C DOORSETS Louvre Doors to Service Areas To East Whale Lane Elevation Refer drawing 421.
- Manufacturer: Hörmann (UK) Ltd.
    - Web: [www.hormann.co.uk](http://www.hormann.co.uk).
    - Email: [industrial.lei@hormann.co.uk](mailto:industrial.lei@hormann.co.uk).
    - Product reference: Type D65 Double Leaf Doorset.
  - Size: 2804 x 2100 Structural opening.
    - Single leaf:
      - Width: N/A.
      - Height: N/A.
    - Double leaf:
      - Width: 1332 mm.
      - Height: 2040 mm.
  - Finish: Factory applied powder coating.
  - Glazing details: None required.
    - Glazing options: None required.
- 480D DOORSETS Louvre Doors to Service Areas To East Whale Lane Elevation. (Electrical/Switchgear).Refer drawing 421.
- Manufacturer: Hörmann (UK) Ltd.
    - Web: [www.hormann.co.uk](http://www.hormann.co.uk).
    - Email: [industrial.lei@hormann.co.uk](mailto:industrial.lei@hormann.co.uk).
    - Product reference: Type D65 Double Leaf Doorset.
  - Size: 2100 x 2504 Structural opening.
    - Single leaf:
      - Width: N/A.
      - Height: N/A.
    - Double leaf:
      - Width: 1202 mm.
      - Height: 2040 mm.
  - Finish: Factory applied powder coating.
  - Glazing details: None required.
    - Glazing options: None required.
- 480E DOORSETS Louvre Doors to Service Areas To East Whale Lane Elevation ( Store and Gas Meter) .Refer drawing 421.
- Manufacturer: Hörmann (UK) Ltd.
    - Web: [www.hormann.co.uk](http://www.hormann.co.uk).
    - Email: [industrial.lei@hormann.co.uk](mailto:industrial.lei@hormann.co.uk).
    - Product reference: Type D65 Double Leaf Doorset.
  - Size: 1752 x 2100 Structural opening.
    - Single leaf:
      - Width: N/A.
      - Height: N/A.
    - Double leaf:
      - Width: 826 mm.
      - Height: 2040 mm.
  - Finish: Factory applied powder coating.
  - Glazing details: None required.
    - Glazing options: None required.

- 480F DOORSETS Service Yard Door (refer drawing 421)
- Manufacturer: Hörmann (UK) Ltd.
    - Web: [www.hormann.co.uk](http://www.hormann.co.uk).
    - Email: [industrial.lei@hormann.co.uk](mailto:industrial.lei@hormann.co.uk).
    - Product reference: Type MZ Single Leaf Doorset.
  - Size: 1000 x 2100 mm Structural Opening.
    - Single leaf: 926.
    - Double leaf: N/A.
  - Finish: Factory applied powder coating.
  - Glazing: None required.
- 490 AUTOMATIC DOORS TO EAST WHALE LANE ENTRANCE
- Type: Sliding.
  - Manufacturer: Geze UK Ltd, Blenheim way , Fradley Park ,Llichfield , Staffordshire , S13 8SY.Telephone 01543 443 000 , e-mail : [sales@geze.com](mailto:sales@geze.com)..
    - Product reference: Geze Automatic Bi-parting Sliding Media Door.
  - Materials/ finishes:
    - Doors: 12mm toughened glass..
    - Frames: Polished Stainless Steel Patch fittings etc..
    - Screens: None.
  - Glazing: Clear single glazing.
  - Activation and control system: Automatic, infra-red controlled.
    - Safety devices: Presence sensor.
    - Breakout facility: Required.
  - Locking mechanism: Electro-mechanical.
  - Signs: None.
  - Barriers: None.
  - Other requirements: Manifestation to Glass,Proprietary safety sensors.
- 495 AUTOMATIC REVOLVING DOORS TO WEST MAIN ENTRANCE
- Manufacturer: Boon Edam Ltd, Holland House, Crowbridge Rd, Orbital Park, Ashford, Kent TN24 0GR tel: 01233 505900.
    - Product reference: Duotour 4200 AC break out.
  - Materials/ finishes:
    - Doors: PPC Extruded aluminum with horsehair weatherstrips and tempered safety glass.
    - Drum walls: glazed walls - laminate glass in slim line aluminium sections.
    - Canopy: Aluminium Clad to match Drum.
  - Activation and control system: automatic.
    - Safety devices: As per Man Spec.
  - Locking mechanism: electrical magnetic brake units.
  - Breakout facility: Required.
  - Other requirements: watertight roof, push button for temporary low speed (disabled access).

## 497 REVOLVING DOOR

- Type: Duotour 2-wing revolving door DTAC2404 incorporating internal Collapsible doors
- Drawing reference(s): TBA
- Manufacturer and reference: Boon Edam Ltd, Holland House, Crowbridge Rd, Orbital Park, Ashford, Kent, TN24 0GR Tel: 01233 505954 Fax 01233 505909
- Size 4200mm internal diameter, 2400mm height under canopy with a 400mm canopy
- Materials:
  - Doors: Curved areas 9mm laminated glass, Flat areas 6mm tempered glass
  - Frame: Slimline aluminium sections
  - Finish: Polyester Powder Coated Aluminium
- Activation and control system: Boon-O-Matic Fully Automatic Operation activated by motion sensors.
- Sliding Doors: Central bi-parting sliding doors which are closed during normal revolving door operation, but which can be switched to sliding mode allowing the door to be used as a conventional sliding door during good weather or peak traffic periods.
- Collapsible Doors: Central Collapsible swing doors which are locked in position during normal operation of the door but upon receipt of a signal from the fire alarm or power failure they will unlock and can be broken out for eascape.
- Safety Features: All in accordance with BS7036:1996
  - SRB – Safety buffer on the leading edge of the curved wall
  - SRT – Safety Buffer on the leading edge of the rotating doorset
  - SRD – Safety buffer on the lower face of the doorset
  - EBS – Static and rotating infra red presence sensors mounted within the ceiling and canopy scanning the areas in front of the rotating doorset and the curved wall.
  - HBS – 2 no. sets of infra-red transmitters and receivers on the lower face of the showcase and bi-parting doors providing safety in front of the doorset.
  - SBS - Active presence sensor mounted in the area between the bottom of the SRT and the finished floor level
- Locking mechanism: Mechanical locks
  - Break out facility: Emergency escape with monitored battery back up
  - Central collapsible doors
  - Lighting: 12 no. halogen lights in the ceiling of the revolving door

## 520A SLIDING DOORS TO EAST FOYER ENTRANCE

- Manufacturer: Geze UK Ltd. , Blenheim Way , Fradley Park , Lichfield , Staffordshire , WS13 8SY or EQUAL .
  - Product reference: Geze Bi-Parting Automatic sliding door system .
- Performance: as structural glazed external walll .
- Arrangement: Paired leaf top hung .
  - Track system: overhead .
- Door leaf: 12mm toughened glass .
  - Finish as delivered: Polished stainless steel overhead gear .
- Operation: Powered, Automatic sensors .
- Ironmongery: As ironmongery schedule .
- Other requirements: None .

- 545 SLIDING STACKING PANEL PARTITIONS TO 1ST FLOOR MULTI-PURPOSE AREA ,  
SECOND FLOOR MEETING ROOM 2.
- Manufacturer: Little and Rutherford Ltd or EQUAL .
    - Product reference: Folding Stacking Partition .
  - Performance: Acoustic control:56 db Rw .
  - Arrangement: One way bunching .
    - Track system: Overhead .
  - Door leaf: with acoustic seals .
    - Finish as delivered: to be agreed with Architect .
  - Ironmongery: As supplied by Man .
  - Other requirements: Sound Barrier above ceiling level .
- 545A SLIDING STACKING PANEL PARTITIONS
- Manufacturer: Becker (Sliding Partitions) Ltd.
    - Web: [www.becker.uk.com](http://www.becker.uk.com).
    - Email: [sales@becker.uk.com](mailto:sales@becker.uk.com).
    - Product reference: Monoplan System S130 K
  - Type: FR System 100.
  - Arrangement: Single roller with parking to one side of opening.
  - Track system: 2 point suspension track.
  - Sound reduction: 56 dB.
  - Surface spread of flame: Class 0.
- 610 ROLLER SHUTTERS TO EAST WHALE LANE ELEVATION.
- Manufacturer: As clause 610A .
    - Product reference: As Clause 610A .
  - Performance: Wind resistance: to comply with BS EN 12424 : Class 2 .
  - Arrangement: Vertical, face fitted across opening .
  - Shutter curtain: Galvanized steel .
    - Finish as delivered: Polyester powder coated .
  - Frame/ Guides: 2mm Galvanised steel side guides,c/w signal coloured plastic protection strips and sealing brush strip. .
    - Finish as delivered: PPC to RAL ??? .
  - Operation: Electrical, with constant pressure button control .
  - Ironmongery: Emergency hand crank operation in case of power .
  - Other requirements: Lockable bottom profile.  
Ventilation grilles , anthracite Grey RAL 7016 .
- 610A ROLLER SHUTTERS
- Manufacturer: Hörmann (UK) Ltd.
    - Web: [www.hormann.co.uk](http://www.hormann.co.uk).
    - Email: [industrial.lei@hormann.co.uk](mailto:industrial.lei@hormann.co.uk).
    - Product reference: HR120 Aero Classic Rolling Shutter.
  - Size: 2800 x 3125 mm  
5440 x 3125 mm.
  - Shutter curtain: Single skinned PPC coated galvanised steel..
    - Finish: Coil-coated aluminium.
    - External colour: Grey white RAL 9002.
    - Internal colour: Basalt grey RAL 7012.
  - Frame/ guides: 2 mm thick galvanized steel side guides, complete with articulated windlock and integral brush seal.
  - Operation: Three phase power.

**630 HATCHES GENERALLY AS REQUIRED TO ROOF AREA , REFER ROOF PLAN**

- Manufacturer: Bilco UK Ltd .
- Product reference: JFR-2 .
- As clause 630A .

**630A FLOOR DOORTO SERVE BASEMENT PIANT AREA FROM SERVICE YARD.**

- Manufacturer: Bilco UK Ltd.
- Web: [www.bilcouk.com](http://www.bilcouk.com).
- Email: [bilcouk@bilco.com](mailto:bilcouk@bilco.com).
- Product reference: JAL
- Type: JAL-H20.
- Latch: Slam lock.
- Lock: High security detention lock.
- Hardware: Stainless steel.
- Accessories: Fall protection grating
  - Electric motor operation;
  - Metal enclosed insulation; and
  - Slip-resistant coating.

**630B FLOOR DOORTO SERVE BASEMENT PIANT AREA**

- Manufacturer: HIAC SUREMAN.
- Web: [www.bilcouk.com](http://www.bilcouk.com).
- Email: [bilcouk@bilco.com](mailto:bilcouk@bilco.com).
- Product reference: JAL
- Type: JAL-H20.
- Latch: Slam lock.
- Lock: High security detention lock.
- Hardware: Stainless steel.
- Accessories: Fall protection grating
  - Electric motor operation;
  - Metal enclosed insulation; and
  - Slip-resistant coating.

**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.

**730 PRIMING/ SEALING**

- Wood surfaces inaccessible after installation: Primed or sealed as specified before fixing components.

**750 FIXING DOORSETS**

- Timing: After associated rooms have been made weathertight and the work of wet trades is finished and dried out.

**760 BUILDING IN**

- General: Not permitted unless indicated on drawings.

**770 DAMP PROOF COURSES ASSOCIATED WITH BUILT IN WOOD FRAMES**

- Method of fixing: To backs of frames using galvanized clout nails.

- 780 DAMP PROOF COURSES IN PREPARED OPENINGS**
- Location: Correctly positioned in relation to door frames. Do not displace during fixing operations.
- 790 FIXING OF WOOD FRAMES**
- Spacing of fixings (frames not predrilled): Maximum 150 mm from ends of each jamb and at 600 mm maximum centres.
- 800 FIXING OF LOOSE THRESHOLDS**
- Spacing of fixings: Maximum 150 mm from each end and at 600 mm maximum centres.
- 809 FIRE RESISTING/ SMOKE CONTROL DOORS/ DOORSETS**
- 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**
- Gaps between frames and supporting construction: Filled as necessary in accordance with requirements for certification and/ or door/ doorset manufacturer's instructions.
- 820 SEALANT JOINTS**
- Sealant:
    - Manufacturer: as Clause 820B .
    - Product reference: Arbokol AG2 .
    - Colour: Grey .
    - Application: As section Z22 to prepared joints. Triangular fillets finished to a flat or slightly convex profile.
- 820A SEALANT JOINTS To Pool Area doors**
- Sealant:
    - Manufacturer: as Clause 820B .
    - Product reference: Arbosil 1096 .
    - Colour: White .
    - Application: As section Z22 to prepared joints. Triangular fillets finished to a flat or slightly convex profile.
- 820B SEALANT TO INTERNAL FIRE DOORS**
- Manufacturer: Adsheed Ratcliffe & Co Ltd.
    - Web: [www.arbo.co.uk](http://www.arbo.co.uk).
    - Email: [arbo@arbo.co.uk](mailto:arbo@arbo.co.uk).
    - Product reference: Arbosil 1070
  - Colour: Grey.
  - Accessories: Joint backing: Mineral wool and Primer: Arbo Primer 2650.
- 820C SEALANT To internal doors outwith Pool Area**
- Manufacturer: Adsheed Ratcliffe & Co Ltd.
    - Web: [www.arbo.co.uk](http://www.arbo.co.uk).
    - Email: [arbo@arbo.co.uk](mailto:arbo@arbo.co.uk).
    - Product reference: Arbocaulk
  - Accessories: Joint backing: Closed cell foam polyethylene rod.

**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 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 on centre line of door leaf .
- Hinges for fire resisting doors: Positioned in accordance with door leaf manufacturer's recommendations.

**860 INSTALLATION OF EMERGENCY EXIT DEVICES**

- Standard: Unless specified otherwise, install panic bolts/ latches in accordance with BS EN 1125.

**L**  
**Windows/Doors/Stairs**

n 100 100

**L30**

**Stairs/ ladders/ walkways/ handrails/ balustrades**

## L30 Stairs/ ladders/ walkways/ handrails/ balustrades

To be read with Preliminaries/ General conditions.

### PRELIMINARY INFORMATION/ REQUIREMENTS

#### 100 Handrails and Barriers

The contractor will be responsible for the detailed design of the proprietary handrails and balustrading system, the scope and requirements of which are shown on the Architects Drawings of Intent (dwg nos 503-506 (stairs), 508 (pool side), 513 (café mezzanine) 416-418 (spectators seating). The contractor will also be responsible for co-ordination of interfaces all in compliance with BS 6399 - 1:1996 (activity/occupancy + horizontal loading) BS 5395-1 : 2000 (design) BS 8300 - 2007 (accessible design), BS 6206 : 1981 (impact performance for glazing), BS 6262 :2005 (glazing for building), BS 6180 : 1999 (barriers), BS EN 12150-1 : 2000 (safety glass).

#### 110 DESIGN

- Design standard: The following items have been designed to BS 5395 where applicable: Stairs, balustrades and handrails.
- Completion of design: Finalize details to meet structural and safety requirements of BS 5395.
- Type of activity/occupancy category to BS 6399-1: C (Areas where people may congregate).

### COMPONENTS

#### 200 SPIRAL STAIR TO FLUME

The contractor will be responsible for the design of the specialist spiral staircase used to access the Flume Launch Pad. For this cognisance will need to be taken of the environmental conditions in the pool hall, with specific reference to corrosion resistance, and in the case of stainless steel - stress corrosion cracking for the selection of suitable materials. Design should be in accordance with BS 5395-2 : 1984, and BS 6399-1 : 1996 (activity/occupancy and horizontal loading), however, it should be noted that in respect to travel distance and secondary means of escape this stair will not be compliant with the Technical Handbook of the Building Standards (Scotland) Regulations 2004. The building is instead covered by an 'alternative approach' employing the use of a Fire Engineer all with the agreement of Building Control. Two specific design requirements to be imposed would be the incorporation of storey height landings and increased height to the balustrade/barrier to at least 1500 mm measured from the pitch line of the stair. Reference should be made to the Architects Drawing of Intent (dwg no 408) and NBS Clause L30.

#### 250 METAL STAIRS Escape stair from basement.

- Grades of metal: Aluminium treads to BS 4592-3 .
- Finish as delivered: Treads: to receive applied slip resistant treatment .
- Workmanship: To section Z11.
- Other requirements:
  - Applied slip resistant nosings with visual contrast;
  - Slip resistant coating to treads, as section M60;
  - Joints welded and ground smooth;
  - Landing return kit; and
  - Matching balustrade to landing .

- 250A METAL STAIRS FEATURE STAIRS FROM GROUND FLOOR FOYER TO CAFE AREA.
- Grades of metal: Rectangular hollow steel sections to BS EN 10210; Grade S275 .
  - Finish as delivered: Galvanized to BS EN ISO 1461 .
  - Workmanship: To section Z11.
  - Other requirements: Caithness stone set within trays, inlaid with carborundum to form nosing.
    - Carborundum nosings with visual contrast;
    - Glass balustrading with ancillary channels and support brackets;
    - Joints welded and ground smooth;
    - Landing return kit; and
    - Matching balustrade to landing .
- 250B METAL STAIRS FROM POOL AREA TO FLUME LAUNCH PAD.
- Grades of metal: Rectangular hollow steel sections to BS EN 10210; Grade S316L Marine Grade .
  - Finish as delivered: Highly polished Marine Grade 316L .
  - Workmanship: To section Z11.
  - Other requirements: Treadmaster AF/DB anti-slip finish to tread
    - Applied slip resistant nosings with visual contrast;
    - Slip resistant coating to treads, as section M60;
    - Joints welded and ground smooth;
 Polished Marine Grade steel 316L Handrail and balusters.1500mm high ,  
 Offset P.P.C perforated aluminium infill panels.
    - Landing return kit; and
    - Matching balustrade to landing .
- 270 STAIRS FEATURE STAIR WITHIN FOYER
- Component material, grade and finish as delivered:
    - Treads: Caithness Stone .
    - Risers: open riser .
    - Strings: Satin brushed stainless Steel .
    - Newels: Satin brushed stainless steel .
    - Guarding: 19 mm toughened clear float glass to BS EN 12150 .
    - Handrails: Satin brushed Stainless steel .
  - Workmanship:
    - Joinery: To Section Z10 .
    - Metalwork: To Section Z11 .
  - Other requirements:
    - Inlaid Carborundum circles at nosings with visual contrast;
    - Slip resistant coating to treads, as section M60;
    - Matching balustrade to landing; and
    - Stair trim .

- 272 STAIRS NORTH EAST ESCAPE STAIR WITHIN ACCOMMODATION BLOCK
- Component material, grade and finish as delivered:
    - Treads: pre-cast concrete .
    - Risers: pre-cast concrete .
    - Strings: n/a .
    - Newels: n/a .
    - Guarding: 40mm O/D nylon covered uprights with 32mm steel tube core with 2 fixing points to secure 10mm clear toughened glass to BS EN 12150.
    - Handrails: and balustrades to have a removable top-rail facility,40mm O/D nylon with a 4mm wall thickness,32mm steel tube core .
  - Workmanship:
    - Joinery: n/a .
    - Metalwork: to section Z11 .
  - Other requirements: Recessed anti-slip visually contrasting Carborundum strip and Slip resistant coating to treads, as section M60 .
- 272A STAIRS SOUTH ESCAPE STAIR WITHIN ACCOMMODATION BLOCK
- Component material, grade and finish as delivered:
    - Treads: pre-cast concrete .
    - Risers: pre-cast concrete .
    - Strings: n/a .
    - Newels: n/a .
    - Guarding: 40mm O/D brushed stainless steel uprights with concealed connections fixed to 3mm perforated stainless steel panels 304 grade steel dull polished and coated both sides.
    - Handrails: 40mm O/D brushed stainless steel with concealed connections .
  - Workmanship:
    - Joinery: n/a .
    - Metalwork: to section Z11 .
  - Other requirements: Recessed anti-slip visually contrasting Carborundum strip and Slip resistant coating to treads, as section M60 .
- 272B STAIRS NORTH AND SOUTH STAIRS WITHIN ACCOMMODATION BLOCK, BASEMENT TO GROUND
- Component material, grade and finish as delivered:
    - Treads: pre-cast concrete .
    - Risers: pre-cast concrete .
    - Strings: n/a .
    - Newels: n/a .
    - Guarding: Not required..
    - Handrails: PPC Colour Galvanized , refer drawing 503 , 504 ,505 & 506 .
  - Workmanship:
    - Joinery: n/a .
    - Metalwork: to section Z11 .
  - Other requirements: Recessed anti-slip visually contrasting Carborundum strip and Slip resistant coating to treads, as section M60 .

- 460 WALKWAYS FROM LIFT TO 1ST FLOOR FOYER/CAFE AREA
- Component material, grade and finish as delivered:
    - Flooring: Creation Wood vinyl flooring by Gerflor to match first floor Cafe area..
    - Guarding: Satin brushed stainless steel tube with 19mm toughened clear float glass to BS EN 12150 1500mm high overall.
    - Handrails: 40mm o/d Satin brushed stainless steel tube secured to glass by supplied rosettes, refer drawing 513.
  - Workmanship:
    - Joinery: Not applicable .
    - Metalwork: To section Z11 .
  - Other requirements: Slip resistant flooring R9 with visual contrast .
- 560 PROPRIETARY BALUSTRADES To Cafe, Walkway & landings
- Manufacturer: As Clause 560A.
    - Product reference: Submit proposals.
  - Component material and finish as delivered:
    - Guarding: Stainless steel - satin polished uprights  
with 19mm clear toughened glass to BS 6206 Class A.
    - Handrails: Stainless steel - satin polished.
  - Other requirements: LRV contrast of ??? to ???.
  - Fixing: Anchor fixed to concrete with steel channel.
- 560A PROPRIETARY BALUSTRADES To spectator Seating Area (1100mm high)
- Manufacturer: Laidlaw Solutions Ltd.
    - Web: [www.laidlaw.net](http://www.laidlaw.net).
    - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
    - Product reference: Easifix Handrails and Balustrades
  - Guarding:
    - Upright: 2740 031 .  
Components for uprights: 2374 860 .
    - Infill/ Mid rail: 10 mm glass panel.  
Components for mid-rails: Not required.
  - Handrail: 2740 008 .
    - Colour: Polished Marine Grade 316L Steel .
  - Components for handrails and top rails:
    - 2740 150 ;
    - 2740 160 ;
    - 2740 170 ;
    - 2740 180 ; and
    - 2740 190 .

- 560B PROPRIETARY BALUSTRADES To Spectator Seating at Pool Area ( 900mm high)
- Manufacturer: Laidlaw Solutions Ltd.
    - Web: [www.laidlaw.net](http://www.laidlaw.net).
    - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
    - Product reference: Easifix Handrails and Balustrades
  - Guarding:
    - Upright: 2740 030 .  
Components for uprights: 2374 860 .
    - Infill/ Mid rail: 10 mm clear toughened glass to BS6206 Class A.  
Components for mid-rails: Not required.
  - Handrail: 2740 008 .
    - Colour: Polished Marine Grade 316l steel .
  - Components for handrails and top rails:
    - 2740 150 ;
    - 2740 160 ;
    - 2740 170 ;
    - 2740 180 ; and
    - 2740 190 .
- 560C PROPRIETARY BALUSTRADES To Spectator Seating at Pool Area (800mm high)
- Manufacturer: Laidlaw Solutions Ltd.
    - Web: [www.laidlaw.net](http://www.laidlaw.net).
    - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
    - Product reference: Easifix Handrails and Balustrades
  - Guarding:
    - Upright: 2740 030 .  
Components for uprights: 2374 860 .
    - Infill/ Mid rail: 10 mm clear toughened glass to BS6206 Class A.  
Components for mid-rails: Not required.
  - Handrail: 2740 008 .
    - Colour: Polished Marine Grade 316L Steel .
  - Components for handrails and top rails:
    - 2740 150 ;
    - 2740 160 ;
    - 2740 170 ;
    - 2740 180 ; and
    - 2740 190 .
- 560D PROPRIETARY BALUSTRADES Removable Guarding to Raised End of Pool (800mm High)
- Manufacturer: M & G Olympic  
[www.mgolympic.co.uk](http://www.mgolympic.co.uk) , e-mail [sales@mgolympic.co.uk](mailto:sales@mgolympic.co.uk)  
 109-111 Randall Street, Sheffield , S2 4SJ  
 Telephone 0114 275 6009.
    - Product reference: Submit proposals.
  - Component material and finish as delivered:
    - Guarding: 50mm Dia. mirror polished Stainless Steel.
    - Handrails: 50mm Dia. mirror polished Stainless Steel.
  - Other requirements: LRV contrast of ??? to ???.
  - Fixing: R36 Flange / Socket 100mm Dia. , 150mm deep grouted in,  
 R41 drop-in cover for R36 , refer drawing 508...

- 560E PROPRIETARY BALUSTRADES Fixed Guarding to Wave Pool height varies
- Manufacturer: M & G Olympic  
www.mgolympic.co.uk , e-mail sales@mgolympic.co.uk  
109-111 Randall Street,Sheffield , S2 4SJ  
Telephone 0114 275 6009.
  - Product reference: Submit proposals.
  - Component material and finish as delivered:
    - Guarding: 50mm Dia. mirror polished Stainless Steel.
    - Handrails: 50mm Dia. mirror polished Stainless Steel.
  - Other requirements: LRV contrast of ??? to ???.
  - Fixing: R26 collared flange with 4 No. holes, 140mm Dia. complete with expanding bolts & set screws, refer drawing 508..
- 560F PROPRIETARY BALUSTRADES Fixed Guarding to Rapid River 500mm High
- Manufacturer: M & G Olympic  
www.mgolympic.co.uk , e-mail sales@mgolympic.co.uk  
109-111 Randall Street,Sheffield , S2 4SJ  
Telephone 0114 275 6009.
  - Product reference: Submit proposals.
  - Component material and finish as delivered:
    - Guarding: 50mm Dia. mirror polished Stainless Steel.
    - Handrails: 50mm Dia. mirror polished Stainless Steel.
  - Other requirements: LRV contrast of ??? to ???.
  - Fixing: R26 collared flange with 4 No. holes, 140mm Dia. complete with expanding bolts & set screws, refer drawing 508..
- 560G PROPRIETARY BALUSTRADES Fixed Guarding to Main Pool 1100mm High
- Manufacturer: M & G Olympic  
www.mgolympic.co.uk , e-mail sales@mgolympic.co.uk  
109-111 Randall Street,Sheffield , S2 4SJ  
Telephone 0114 275 6009.
  - Product reference: Submit proposals.
  - Component material and finish as delivered:
    - Guarding: 50mm Dia. mirror polished Stainless Steel.
    - Handrails: 50mm Dia. mirror polished Stainless Steel.
  - Other requirements: LRV contrast of ??? to ???.
  - Fixing: R26 collared flange with 4 No. holes, 140mm Dia. complete with expanding bolts & set screws, refer drawing 508..
- 560H PROPRIETARY BALUSTRADES Removable Guarding & Gates (1100mm High)
- Manufacturer: M & G Olympic  
www.mgolympic.co.uk , e-mail sales@mgolympic.co.uk  
109-111 Randall Street,Sheffield , S2 4SJ  
Telephone 0114 275 6009.
  - Product reference: Submit proposals.
  - Component material and finish as delivered:
    - Guarding: 50mm Dia. mirror polished Stainless Steel.
    - Handrails: 50mm Dia. mirror polished Stainless Steel.
  - Other requirements: LRV contrast of ??? to ???.
  - Fixing: R36 Flange / Socket 100mm Dia. , 150mm deep grouted in,  
R41 drop-in cover for R36 , refer drawing 508...

- 580A PROPRIETARY HANDRAILS To North Stair in accommodation Block and from Basement to Ground Floor in South stair.
- Manufacturer: Laidlaw Solutions Ltd.
    - Web: [www.laidlaw.net](http://www.laidlaw.net).
    - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
    - Product reference: Nylon System
  - Guarding: Handrail/balustrade with removable top-rail ,40mm o/d nylon with 4mm wall thickness over steel tube core of 32mm o/d x 2mm thk steel,40mm o/d uprights with a 32mm x 4mm thk steel tube core extended for 2 point side fixing ref : 1.12C , type C-s
    - Uprights: 40mm o/d nylon covered uprights with a 32mm x 4mm thk steel tube core  
Colour: As drawing 400 .
    - Infill: 10 mm clear toughened glass to BS EN 12150.
  - Handrails: Wall fixed handrail 40mm o/d nylon with a 4mm wall thickness over a 32mm o/d steel tube core connected to 34mm dia. steel cored nylon elbow supports ref 34.90V complete with steel rosettes and clip on 70mm nylon cover caps @ 1300mm centres.Type 111c-s/40
    - Colour: As drawing 400.
    - Other requirements: Tactile indicators and Visual contrast.
  - Connections: In-line handrail connection.
  - Fixings: Type C.
- 580B PROPRIETARY HANDRAILS To First Floor Cafe Area
- Manufacturer: Laidlaw Solutions Ltd.
    - Web: [www.laidlaw.net](http://www.laidlaw.net).
    - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
    - Product reference: Stainless Steel System
  - Guarding: 1500mm high 42mm dia. brushed stainless steel capping rail
    - Infill: 19 mm clear toughened glass to BS 6206 Class A.
  - Handrails: 42mm dia. brushed stainless steel capping rail.
    - Other requirements: Manifestation to glass panels,
      - Braille indicators;
      - Tactile indicators; and
      - As drawing 407.
  - Connections: As drawing 513 .
  - Fixings: As drawings 407, 513.
- 580C PROPRIETARY HANDRAILS To South Stair within Accommodation Block
- Manufacturer: Laidlaw Solutions Ltd.
    - Web: [www.laidlaw.net](http://www.laidlaw.net).
    - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
    - Product reference: Stainless Steel System
  - Guarding: Handrail/Balustrade 40mm o/d x 2mm thk brushed stainless steel with concealed connections in running lengths connected to 40mm o/d uprights extended for plate fixing ref: 1.12E.Type NT A-h
    - Infill: 3mm thk perforated stainless steel panels 304 grade and dull polished and coated both sides with 15mm dia. holes x 28mm square pitch, held in position using panel holders to uprights..
  - Handrails: Wall fixed handrail to be 40mm o/d x 2mm thk brushed stainless steel with concealed connections in running lengths connected to 14mm dia. elbow supports ref: 14.90V complete with rosettes @ 1300mm centres , Type NT 11c-s/40
    - Other requirements: Tactile indicators.
  - Connections: In-line clamp panel holder.
  - Fixings: As drawing 403.

- 580D PROPRIETARY HANDRAILS To Pool area stair and walkway to Flume Stair.
- Manufacturer: Laidlaw Solutions Ltd.
    - Web: [www.laidlaw.net](http://www.laidlaw.net).
    - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
    - Product reference: Stainless Steel System
  - Guarding: Handrail/Balustrade uprights 40mm o/d x 2mm thk Grade 316 highly polished finish , anchor fixed to floor slab .MK type A fixings.
    - Infill: None Required.
  - Handrails: Wall fixed handrail to be 40mm o/d x 2mm thk Grade 316 polished stainless steel with concealed connections in running lengths connected to 26mm dia. elbow supports ref:26.90V complete with rosettes @ 1300mm centres , Type NT 11c-s/40
    - Other requirements: Tactile indicators.
  - Connections: Grade 316 polished stainless steel.
  - Fixings: Type A.

### 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.

**L**  
**Windows/Doors/Stairs**

**L35**

**Fixed utilitarian access systems**

## L35 Fixed utilitarian access systems

To be read with Preliminaries/ General conditions.

### GENERAL

- 100 COMPANIONWAY LADDER DESIGN  
The contractor will be responsible for the design and installation of the proprietary companion-way ladders which give access to the various sub-floor areas in the pool hall. This will be in compliance with BS 5395-3 : 1985. The Architects Drawing of Intent (dwg no 411A) and NBS Clause L35 should be referred to for guidance.
- 110 COMPANIONWAY SYSTEM To Pool side storage
- Method of provision: Fabricated off site and assembled on site.
  - Dimensions: As drawing 411.
  - Basic component material: Stainless steel.
  - Treads: Chequer plate.
  - Stringers: Angles.
  - Landings: Not required.
  - Slip potential:
    - Slip resistance value (SRV) (minimum)/ Pendulum test value (PVT) (minimum) to BS 7932: 65 dry.
  - Guarding system: Required.
  - Assembly connectors: Submit proposals.
  - Fixing to superstructure: Submit proposals.
  - Accessories: Contrast nosings to treads.
- 130 LADDER SYSTEM Between Service Block and Pool Roof
- Method of provision: Fabricated off site and assembled on site.
  - Dimensions: As drawing 497.
  - Basic component material: Galvanized carbon steel.
  - Rungs: Solid bar.
  - Stiles: Angle.
  - Landings/ platforms: Chequer plate.
  - Hoops: Circular .
  - Assembly connectors: Submit proposals.
  - Fixing to superstructure: Submit proposals.
  - Accessories: Brackets for fall arrest system, as section N25.
- 140 HIGH LEVEL WALKWAY SYSTEM To Pool Roof
- Method of provision: Proprietary prefabricated .
  - Dimensions: As drawing 497.
  - Basic component material: pvc-U.
  - Decking: Flat plate.
  - Stringers: Channels.
  - Guarding system: Required.
  - Assembly connectors: Submit proposals.
  - Fixing to superstructure: Submit proposals.
  - Accessories: Brackets for fall restraint system and Companionways at each end of walkway.

- 150 STAIR SYSTEM To Accommodation Block Roof
- Method of provision: Fabricated off site and assembled on site.
  - Dimensions: As drawing 497.
  - Basic component material: Aluminium.
  - Treads: Chequer plate.
  - Stringers: Rectangular hollow sections.
  - Landings: Chequer plate.
  - Guarding system: Required.
  - Assembly connectors: Submit proposals.
  - Fixing to superstructure: Submit proposals.
  - Accessories: Contrast nosings to treads.
- 150A STAIR SYSTEM Fire Escape from Basement to Ground Floor at Pool side
- Method of provision: Fabricated off site and assembled on site.
  - Dimensions: As drawing 407 ???.
  - Basic component material: Aluminium.
  - Treads: Chequer plate.
  - Stringers: Rectangular hollow sections.
  - Landings: Chequer plate.
  - Guarding system: Handrails as Clause 170.
  - Assembly connectors: Submit proposals.
  - Fixing to superstructure: Submit proposals.
  - Accessories: Contrast nosings to treads.
- 170 GUARDING SYSTEM TO COMPANIONWAY
- Method of provision: Fabricated off site and assembled on site.
  - Dimensions: As drawing 411.
  - Basic component material: Stainless steel.
  - Standards: Tubes.
  - Handrails: Tubes.
  - Knee rails: Tubes.
  - Infill panels: Not required.
  - Assembly connectors: Submit proposals.
  - Fixing to parent structure: Submit proposals.
  - Accessories: None required.

#### SYSTEM PERFORMANCE

- 210 DESIGN
- Design: Complete the design of the fixed utilitarian access systems.
  - Design standards:
    - Companionways: In accordance with BS 5395-3.
    - Ladders for access to tall structures: To BS 4211.
    - Straight stairs and winders: In accordance with BS 5395-1.
    - Helical and spiral stairs: In accordance with BS 5395-2.
    - Industrial stairs, permanent ladders and walkways: In accordance with BS 5395-3.
    - Access to machinery: To BS EN ISO 14122-1, -2, and -3.
    - Industrial type flooring, walkways and stair treads: To BS 4592.
  - Proposals: Submit drawings, technical information, calculations and manufacturers' literature.
- 220 DESIGN DEVELOPMENT DOCUMENTATION
- Drawings: Provide design development and details: To comply with BS 4592-0.

- 240     **STRUCTURAL DESIGN**
- Design standard: In accordance with the relevant parts of BS 1993-1-5.
  - Deflections (maximum): 1:200.
  - Characteristic loads: As drawing ???.
- 250     **PERFORMANCE CRITERIA** For Companionway ladders to Pool side storage
- Requirements: Marine grade alloy.

#### **PRODUCTS**

- 310     **COMPANIONWAYS**
- Standard: In accordance with BS 5395-3.
  - Manufacturer: HIAC SURESPAN.
    - Product reference: Submit proposals.
- 330A    **LADDER** To Accommodation Block Roof
- Manufacturer: Canal Engineering Ltd.
    - Web: [www.canalengineering.co.uk](http://www.canalengineering.co.uk).
    - Email: [enquiries@canalengineering.co.uk](mailto:enquiries@canalengineering.co.uk).
    - Product reference: Fixed ladder system
- 340A    **ROOF WALKWAY**
- Manufacturer: Latchways plc.
    - Web: [www.latchways.com](http://www.latchways.com).
    - Email: [info@latchways.com](mailto:info@latchways.com).
    - Product reference: WalkSafe – Flat.
  - Colour: Silver grey.
  - Size: As drawing 497.
  - Accessories: Fall-proof cover.
- 350     **STAIRS**
- Type: Straight.
  - Standard: In accordance with BS 5395-1 and -3..
  - Manufacturer: As clause 350A.
    - Product reference: Submit proposals.
- 350A    **STAIRS**
- Manufacturer: Canal Engineering Ltd.
    - Web: [www.canalengineering.co.uk](http://www.canalengineering.co.uk).
    - Email: [enquiries@canalengineering.co.uk](mailto:enquiries@canalengineering.co.uk).
    - Product reference: Utilitarian stairs
- 370     **GUARDINGS**
- Standard: To BS EN ISO 14122-3.
  - Manufacturer: SURESPAN.
    - Product reference: Submit proposals.

## 410 ALUMINIUM COMPONENTS

- Material: To BS EN 573.
  - Designation: AW 2024.
- Solid plates: To BS 4592-5.
  - Thickness: 6 mm.
- Expanded metal grating panels: To BS 4592-2.
- Open bar gratings: To BS 4592-1.
  - Depth: 30 mm.
- Finish: Powder coated, as section Z31.
  - Colour: Select from manufacturer's standard range.
- Fixings: As section Z20.

## 420 CARBON STEEL COMPONENTS

- Material: To BS EN 10025.
  - Grade: S316L.
  - Options: none.
- Solid plates: To BS 4592-5.
  - Thickness: 8 mm.
- Expanded metal grating panels: To BS 4592-2.
- Open bar gratings: To BS 4592-1.
  - Depth: 30 mm.
- Finish: Submit proposals.
  - Colour: Submit proposals.
- Fixings: As section Z20.

## 440 STAINLESS STEEL COMPONENTS

- Material: To BS EN 10088.
  - Grade: 1.4462.
- Solid plates: To BS 4592-5.
  - Thickness: 6 mm.
- Expanded metal grating panels: To BS 4592-2.
- Open bar gratings: To BS 4592-1.
  - Depth: 30 mm.
- Finish: Submit proposals.
- Fixings: As section Z20.

## 490 ANCHORS

- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Material and finish: Submit proposals.
- Size: Submit proposals.

**FABRICATION**

## 510 FABRICATION GENERALLY

- Shop drawings: Submit.

**EXECUTION****620 EXECUTION GENERALLY**

- Structural members: Do not subject to nondesign loading. Do not modify, cut, notch or make unspecified holes.
- Frameworks: Assemble and brace, including temporary members required for installation.
  - Temporary support: Do not use access systems as temporary support or strutting for other work.
- External durability of fastenings: Corrosion resistant material or with a corrosion resistant finish.
- Bolted joints:
  - Contact between dissimilar metals: Avoid.
  - Bolts and washers: Select types, sizes and quantities of fasteners or packings and spacings to retain supported components without distortion or loss of support.
- Welded joints:
  - Standards:
    - Aluminium alloys: TIG or MIG welding to BS EN 1011-4.
    - Carbon steel: Metal arc welding to BS EN 1011-1 and -2.
    - Stainless steel: TIG welding to BS EN 1011-3.
  - Surfaces to be jointed: Clean.
  - Tack welds: Use only for temporary attachment.
  - Traces of flux residue, slag and weld spatter: Remove.
  - Surface of welds: Grind smooth.
  - Joints: Fully bonded with no holes or cracks.
- Finished components:
  - Free: From distortion, cracks, burrs and sharp arrises.
  - Corner junctions of identical sections: Mitre.
  - Handrails: Smooth and continuous, with no sharp edges.

**660 ANCHORING**

- Fixing positions: Coordinate location of holding down bolts and wall fixings with services fixing positions.

**COMPLETION****910 CLEANING**

- General: Clean surfaces and wipe down finishes.

**920 INSPECTION**

- Notice for inspection (minimum): 5 days.

**930 DOCUMENTATION**

- Operation and maintenance instructions: Submit.
- Record drawings: Submit.

**L**  
**Windows/Doors/Stairs**

**L40**  
**General glazing**

## L40 General glazing

To be read with Preliminaries/ General conditions.

### GENERAL REQUIREMENTS

- 111 **PREGLAZING**
- Preglazing of components: Permitted.
  - Prevention of displacement: Submit details of precautions to be taken to protect glazing and compound/ seals during delivery and installation.
  - Defective/ displaced glazing/ compound/ seals: Reglaze components in situ.
- 140 **MATERIAL SAMPLES**
- Representative samples of designated materials: Submit before cutting panes.
    - Sample size (minimum): 600 x 300 mm.
    - Designated materials: ??? mm laminated safety glass.
- 150 **WORKMANSHIP GENERALLY**
- Glazing generally: To BS 6262.
  - Integrity: Glazing must be wind and watertight under all conditions with full allowance made for deflections and other movements.
  - Dimensional tolerances: Panes/ sheets to be within  $\pm 2$  mm of specified dimensions.
  - Materials:
    - Compatibility: Glass/ plastics, surround materials, sealers, primers and paints/ clear finishes to be used together to be compatible. Avoid contact between glazing panes/ units and alkaline materials such as cement and lime.
    - Protection: Keep materials dry until fixed. Protect insulating glass units and plastics glazing sheets from the sun and other heat sources.
- 151 **PREPARATION**
- Surrounds, rebates, grooves and beads: Cleaned and prepared by others.
- 152 **PREPARATION**
- Surrounds, rebates, grooves and beads: Clean and prepare before installing glazing.
- 155 **GLASS GENERALLY**
- Standards: To BS 952 and relevant parts of:
    - BS EN 572 for basic soda lime silicate glass.
    - BS EN 1096 for coated glass.
    - BS EN 1748-1 for borosilicate glass.
    - BS EN 1748-2 for ceramic glass.
    - BS EN 1863 for heat strengthened soda lime silicate glass.
    - BS EN 12150 for thermally toughened soda lime silicate safety glass.
    - BS EN 12337 for chemically strengthened soda lime silicate glass.
    - BS EN 13024 for thermally toughened borosilicate safety glass.
    - BS EN ISO 12543 for laminated glass and laminated safety glass.
  - Panes/ sheets: Clean and free from obvious scratches, bubbles, cracks, rippling, dimples and other defects.
    - Edges: Generally undamaged. Shells and chips not more than 2 mm deep and extending not more than 5 mm across the surface are acceptable if ground out.

- 160    **LINEAR PATTERNED/ WIRED GLASS**
- Alignment: Vertical/ Horizontal as appropriate, and pattern matched across adjacent panes in close proximity.
- 165    **HEAT SOAKING OF THERMALLY TOUGHENED GLASS**
- Standard: To BS EN 14179.
    - Holding period (minimum): 2 hours.
    - Mean glass temperature:  $290^{\circ} \pm 10^{\circ}\text{C}$ .
  - Certified evidence of treatment: Submit.
  - Designated locations: Swimming Pool Curtain Wall and Planar glazing.
- 170    **PLASTICS GLAZING SHEET**
- Condition: Free from scratches, edge splits and other defects.
  - Preparation for use: Protective coverings carefully peeled back from edges and trimmed off to facilitate glazing. Remainder retained in place until completion unless instructed otherwise.
- 190    **GLASS TO GLASS JOINTING**
- Sealant: Silicone.
    - Standard: To BS EN ISO 11600.
      - Class: G-25LM.
    - Colour: Clear.
  - Fire resistance rating: 30 minutes integrity.
  - Joints:
    - Width: Consistent and suitable to receive sealant.
    - Gap between panes: Completely filled, leaving no voids or bubbles.
    - Surplus sealant: Removed to leave a clean, neatly finished weathertight joint.
- 195    **GLASS TO GLASS JOINTING**
- Sealant: Low modulus silicone.
  - Manufacturer: Submit proposals.
    - Product reference: Man Spec.
    - Colour: Clear.
  - Joints:
    - Width: Consistent and suitable to receive sealant.
    - Gap between panes: Completely filled, leaving no voids or bubbles.
    - Surplus sealant: Removed to leave a clean, neatly finished weathertight joint.

## TYPES OF GLAZING

### 370 BEAD FIXED INSULATING GLASS UNITS TO ALUMINIUM EXTERNAL DOORS AND WINDOWS

- Pane material: 24mm insulating glass units to BS EN 1279 and Kitemark certified .
  - Inner pane: 6.8 mm clear laminated glass .
  - Outer pane: 6mm toughened grey antisun solar control glass .
  - Spacer: 16 mm anodized aluminium, colour: Black .
  - Perimeter taping: Do not use.
- Surround/ bead: Aluminium .
  - Preparation: Sealant primer .
  - Bead location: Outside .
  - Bead fixing: Proprietary clip fixing .
- Glazing system: Preformed gasket sections supplied by window manufacturer .
- Glazing installation:
  - Insulating unit: Located centrally in surround using setting and location blocks.
  - Gaskets and beads: Installed as recommended by frame manufacturer.
  - Gasket fit at corners: Tight, without gaps.
  - Drainage and ventilation holes: Unobstructed.

### 371 BEAD FIXED INSULATING GLASS UNITS TO POOL HALL

- Pane material: 28mm insulating glass units 16mm argon 90% gas fill cavity .
  - Inner pane: 6mm Pilkington Optilam I white with K .
  - Outer pane: 6mm Pilkington Eclipse Advantage grey .
  - Spacer: 16 mm anodized aluminium, colour: Black .
  - Perimeter taping: Do not use.
- Surround/ bead: Aluminium .
  - Preparation: Priming/ sealing not required .
  - Bead location: Outside .
  - Bead fixing: snap on .
- Glazing system: Cellular adhesive sections/ strips .
- Glazing installation:
  - Insulating unit: Located centrally in surround using setting and location blocks.
  - Glazing sections/ strips/ tapes: Applied to rebate upstands and beads in positions recommended by manufacturer.
  - Beads: Installed using sufficient pressure to compress inner and outer sections/ strips/ tapes and fixed securely.
  - Drainage and ventilation holes: Unobstructed.

- 495 U-PROFILED SINGLE GLAZING TO WALKWAY RAMP AT EAST WHALE LANE ENTRANCE
- Supporting structure: Blockwork .
  - U-Profiled glazing system:
    - Manufacturer: As Clause 495A .
    - System reference: 796PVC-U .
    - Arrangement: Single glazing aligned vertically .
  - Framing system:
    - Type and reference: Extruded aluminium .
    - Finish: Polyester powder coated .
  - Glazing:
    - Material and reference: Toughened glass, ref: ??? .
    - Dimensions: 3000mm x 3265mm .
    - Colour: Clear .
    - External surface finish: Smooth .
    - Coating: Polymeric on sand blasted surface .
  - Joints:
    - Width (minimum): 2 mm.
    - Sealant depth (minimum): 8 mm.
    - Sealant: Low modulus, neutral curing silicone sealant .
  - Ancillary components: Manifestation .
  - Accessories: None .
  - Other requirements: Glazing installation to be from interior .
- 495A SEALANT
- Manufacturer: Dow Corning Ltd.
    - Web: [www.dowcorning.com](http://www.dowcorning.com).
    - Email: [marie.elliott@dowcorning.com](mailto:marie.elliott@dowcorning.com).
    - Product reference: 796 PVC-U, Aluminium and Wood Sealant
  - Colour: Dark brown.
- 495B SEALANT
- Manufacturer: Dow Corning Ltd.
    - Web: [www.dowcorning.com](http://www.dowcorning.com).
    - Email: [marie.elliott@dowcorning.com](mailto:marie.elliott@dowcorning.com).
    - Product reference: 794 Plastics and Glass Silicone Sealant
  - Colour: Grey.
- 520 FIRE RATING
- Assessment of capability: Submit proposed construction details of designated items to a UKAS/ NAMAS accredited laboratory or other approved authority for assessment of capability of achieving specified fire ratings.
    - Test standard: To BS EN 1364-1.
  - Assessment/ test results and reports: Submit immediately they are available, and before installing glazing.
  - Designated items: Fire resistant glazing within Protected Zone doors.

- 550 GLASS MIRRORS To Changing Village and Toilets
- Mirror material: Float glass, silvered to give maximum reflection, free from tarnishing, discoloration, scratches and other defects visible in the designed viewing conditions.
    - Thickness: 6 mm .
    - Backing: Silvered .
    - Edge treatment: Polished arris .
  - Background: Fair faced masonry .
  - Fixing method: Double sided self-adhesive pads at 400 mm centres .
  - Installation: Fixed accurately and securely without overtightening fasteners, to provide a flat surface giving a distortion free reflection.
- 630 MANIFESTATION TO GLAZED SCREEN ON RAMPED WALKWAY FROM EAST WHALE LANE ENTRANCE.
- Design: As drawing ???.
    - Art work: Supplied by designer.
    - Media: Full size drawing.
  - Technique: Acid etched.

**M**

**Surface finishes**

**M13**

**Calcium sulfate based levelling screeds**

## M13 Calcium sulfate based levelling screeds

To be read with Preliminaries/ General conditions.

### TYPES OF LEVELLING SCREED

#### 120 PROPRIETARY SELF SMOOTHING LEVELLING SCREEDS LEVEL FLOOR AREAS ALL FLOORS

- Substrate: insulation on precast concrete planks.
- Manufacturer: Cemex UK Ltd.
  - Product reference: Supaflo.
- Screed construction: Floating.
- Thickness:
  - Nominal: 50mm.
  - Minimum: 50mm.
  - Maximum: 50mm.
- In situ crushing resistance (ISCR) category: B .
- Flatness/ surface regularity: 5 mm and also 2 mm under a 1 m straightedge.
- Finish: Unsanded.
  - To receive: 2.5 mm vinyl sheet flooring.
- Movement joints: Not required.
- Services: Underfloor heating as section T90, ducting for electrics.

### GENERALLY/ PREPARATION

#### 210 DESIGN LIFE OF SCREEDS

- Duration: 30 years generally .
  - Condition of use: Subject to reasonable wear and tear and correct loading and traffic usage throughout duration.

#### 220 SUITABILITY OF SUBSTRATES

- General:
  - Within tolerances for level and surface regularity.
  - Moisture content: To suit type of screed.
  - Sound, clean and even textured.
- Concrete strength: To BS 8204-1, table 2.
- Penetrations/ Outlets: Completed.
- Movement joints: Correctly installed.

#### 230 CONDUITS UNDER FLOATING SCREEDS

- Requirement: Haunch up on both sides of conduits in 1:4 cement:sand mortar.
- Timing: Before laying insulation.

#### 235 PIPE DUCTS/ TRUNKING

- Requirement: Fix securely to substrate and level accurately in relation to finished floor surface.
- Timing: Before laying screed.

## 260 FLOATING CONSTRUCTION

- Insulation: 30mm min expanded polystyrene board to BS EN 13163.
  - Installation: Loose lay on substrate.
  - Joints: Butted.
- Separating layer: Polyethylene sheet minimum 125 micrometres thick (500 gauge).
  - Installation: Loose lay over insulation.
  - Joints: Lap and seal with tape to prevent penetration of self smoothing screed.
- Edge strips at perimeter abutments: 5 mm thick resilient polyethylene foam.
  - Installation: To full depth of screed.
  - Joints in strips: Lap with separating layer and seal with tape.

**BATCHING AND MIXING**

## 303 AGGREGATES

- Sand: To BS EN 13139.
  - Grading limits: In accordance with BS 8204-1, table B1.

## 305 BATCHING 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.
- Gauge boxes: Accurate. Allow for bulking of damp sand.

## 315 MIXING SELF SMOOTHING SCREEDS

- Dry preblended materials: Batch using completely full bags only.
- Materials: Mix thoroughly to uniform consistence.
- Water content: Sufficient to achieve correct flow rate for screed.
- Flow rate test of mix batches:
  - Test method: Flow ring test.
  - Timing: Before pumping screed and at strategic intervals during screeding.
  - Criteria: Screed manufacturer's recommended values.
  - Results and frequency of testing: Record.

**LAYING**

## 320 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.

## 325 LEVEL OF SCREED SURFACES

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

## 330 IN SITU CRUSHING RESISTANCE (ISCR)

- Standard: To BS 8204-1, table 4.
  - Testing of bonded and unbonded levelling screeds: To Annex D.
  - Testing of floating levelling screeds: To Annex E.

## 335 FLATNESS/ SURFACE REGULARITY OF SCREEDS

- Standard: To BS 8204-1, table 5.
  - Testing: To Annex C.
- Sudden irregularities: Not permitted.

**355 LAYING SELF SMOOTHING SCREEDS**

- Self smoothing screeds: Lay continuously. Agitate thoroughly.
- Joints generally:
  - Defined joints: Minimize.
  - Daywork joints: Form with vertical edge. Prime before continuing screeding.

**365 HEATED SCREEDS**

- Screed bays, movement joints and other joints: Coordinate with heating circuits.
- Substrate: Irregularities not permitted.
- Heating elements: Secure. Do not damage.
- Screeds: Lay carefully. Compact thoroughly around heating elements.
- Minimum screed cover over heating circuits: 30 mm.

**FINISHING/ CURING****440 CURING SELF SMOOTHING SCREEDS**

- General: Prevent premature drying. Immediately after laying, protect surface from wind, draughts and strong sunlight.
- Drying after curing: Allow screeds to dry gradually. Do not subject to artificial drying conditions that will cause cracking or other shrinkage related problems.

**M**

**Surface finishes**

**M20**

**Plastered/ Rendered/ Roughcast coatings**

## M20 Plastered/ Rendered/ Roughcast coatings

To be read with Preliminaries/ General conditions.

### TYPES OF COATING

#### 160A BEADS/ STOPS

- Manufacturer: Sto Ltd.
- Web: [www.sto.co.uk](http://www.sto.co.uk).
- Email: [info.uk@sto.eu.com](mailto:info.uk@sto.eu.com).
- Product reference: Sto beads.

#### 160B RENDER SYSTEM

- Manufacturer: Sto Ltd.
- Web: [www.sto.co.uk](http://www.sto.co.uk).
- Email: [info.uk@sto.eu.com](mailto:info.uk@sto.eu.com).
- Product reference: Sto Rend Flex Cote System
- Substrate: Concrete blockwork, as section F10.
- Preparation: StoPrim Micro - Adhesion promoting primer.
- Levelling coat: StoLevell Cote
- Number of coats: 2.
- Overall thickness: 25 mm (maximum).
- Reinforcing coat: Sto Armat classic cement-free reinforcing render.
- Reinforcing mesh: Sto Glass Fibre Mesh - reinforcing mesh.
- Colour: As Finishes Schedule.
- Texture: Smooth - Stolit / Sto Silco MP.
- Accessories: Sto Render Stop beads.

#### 220 MULTICOAT PROPRIETARY PLASTER To Car park / Foyer wall

- Substrate: Concrete blockwork, as section F10.
- Preparation: Bonding agent recommended by plaster manufacturer.
- Manufacturer: STO.
- Undercoats:
- Product reference: Sto Acoustic Plaster.
- Thickness (excluding dubbing out): As manufacturer's recommendations.
- Final coat:
- Product reference: Sto Silent Fine.
- Thickness: As manufacturer's recommendations.
- 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.
- Manufacturer: As Clause 280A .
- Product reference: As Clause 280A .
- Thickness: 2 mm .
- Finish: Smooth.
- Accessories: Beads and stops .

## 280A THISTLE MULTI FINISH

- Manufacturer: British Gypsum.
- Web: [www.british-gypsum.com](http://www.british-gypsum.com).
- Email: [bgtechnical.enquiries@bpb.com](mailto:bgtechnical.enquiries@bpb.com).
- Product reference: Thistle Multi Finish

**GENERAL**

## 413 SAMPLES

- General: Provide representative samples of the following: Acoustic Plaster Finish.

## 418 CONTROL SAMPLES

- Complete sample areas, being part of the finished work, in locations as follows: Projection plaster, ???.

## 421 SCAFFOLDING

- General: Prevent putlog holes and other breaks in coatings.

**MATERIALS AND MARKING OF MORTAR**

## 430 READY-TO-USE CEMENT GAUGED RENDER 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 and CE marked.
- 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 and CE marked.
- Type: Portland cement, CEM1.
- Strength class: 52.5.
- Sulfate resisting Portland cement: To BS 4027 and Kitemarked.
- 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.

## 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.

## 450 CHLORIDE CONTENT OF MORTARS

- Chloride content (maximum): 0.1% by dry mass.

## 495 MIXING

- Render mortars (site prepared):
  - 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 detriment 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 joinery and other surfaces.

**BACKINGS/ BEADS/ JOINTS**

## 600 ADDITIONAL FRAMING SUPPORTS FOR BACKINGS

- Framing: Accurately position and securely fix to give full support to fixtures, fittings and service outlets.
- Support board edges and perimeters: As recommended by board manufacturer to suit type and performance of board.

## 630 BEADS/ STOPS FOR INTERNAL USE Plater to panels in Foyer area

- Material: Galvanized steel to BS EN 13658-1.

## 634 BEADS/ STOPS For External Render

- Manufacturer: As clause 634A.
  - Product reference: pvc-U Beads.
- Material: pvc-U.

- 634A BEADS/ STOPS
- Manufacturer: Renderplas Ltd.
    - Web: [www.renderplas.co.uk](http://www.renderplas.co.uk).
    - Email: [info@renderplas.co.uk](mailto:info@renderplas.co.uk).
    - Product reference: PVCu Corner Bead/ Angle Bead
  - Type: CBW20.
  - Colour: Slate.
- 634B BEADS/ STOPS
- Manufacturer: Renderplas Ltd.
    - Web: [www.renderplas.co.uk](http://www.renderplas.co.uk).
    - Email: [info@renderplas.co.uk](mailto:info@renderplas.co.uk).
    - Product reference: PVCU Bellcast Bead
  - Type: pvc-U stop bead.
  - Colour: Slate.
- 636 BEADS/ STOPS FOR EXTERNAL USE South Elevation Accommodation Block
- 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 substrate materials are in same plane and rigidly bonded or tied together.
  - Crack control materials:
    - Isolating layer: Building paper to BS 1521.
    - Metal lathing: Externally: 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 substrate material (column, beam, etc. with face width not greater than 450 mm):
    - Isolating layer: 25 mm (minimum) beyond junctions with adjacent substrate.
    - Lathing: 100 mm (minimum) beyond edges of isolating layer.
- 650 MOVEMENT JOINTS External render panels
- Manufacturer: As clause 650A.
    - Product reference: pvc-U .
  - Installation: Centred over joint in substrate.
    - Fixing: Stainless steel screws.

**650A MOVEMENT JOINTS**

- **Manufacturer:** Renderplas Ltd.
- **Web:** www.renderplas.co.uk.
- **Email:** info@renderplas.co.uk.
- **Product reference:** PVCu Movement Joint
- **Type:** MJX20.
- **Colour:** Slate.

**653 SEALANT MOVEMENT JOINTS WITH STOP BEAD EDGINGS To South Elevation**

- **Stop beads:** As clause 634.
- **Installation:** Centred over joint in substrate.
  - **Joint width:** To suit that of structural movement joint in background.
  - **Fixing:** Stainless steel screws.
- **Sealant:**
  - **Manufacturer:** As clause 650A.
  - **Product reference:** pvc-U joints.
  - **Preparation and application:** As section Z22. Stainless steel screws.

**659 PLASTERBOARD JOINTS**

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

**673 PLASTERING OVER CONDUITS/ SERVICE CHASES**

- **General:** Prevent cracking over conduits and other services.
- **Services chased into substrate:** Isolate from coating by covering with galvanized metal lathing, fixed at staggered centres along both edges.

**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 localized 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.

## 742 THIN COAT PLASTER

- Preparation for plasters less than 2 mm thick: Fill holes, scratches and voids with finishing plaster.

## 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.

## 830 ANCHORED MESH REINFORCEMENT

- Application of first undercoat: Through and round mesh to fully bond with solid substrate.

## 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.

## 856 FINAL COAT - PLAIN FLOATED FINISH

- Finish: Even, open texture free from laitance.

## 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 the 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.

**M**  
**Surface finishes**

**M22**

**Sprayed monolithic coatings**

## M22 Sprayed monolithic coatings

To be read with Preliminaries/ General conditions.

### TYPES OF COATING

- 120 **SPRAYED ACOUSTIC CONTROL TO CAR PARK / FOYER WALL**
- Survey: Carry out before installation commences.
  - Preparation: Submit proposals.
  - Barrier/ Bonding coat: As recommended by coating manufacturer.
  - Coating material:
    - Manufacturer: As Clause 120A.  
Product reference: StoSillent Fein.
    - Colour: As per Finishes Schedule.
    - Surface finish: As applied.
    - Minimum applied thickness: 3 mm.
  - Mechanical retention/ reinforcement: Sto PVC Plaster tracks.
  - Finishing/ Sealing coat: As recommended by the manufacturer.
  - Installer: BSI registered, BUFCA member or approved in accordance with the British Board of Agrément Surveillance Scheme.
- 120A **SPRAYED ACOUSTIC PLASTER AND PANELS**
- Manufacturer: Sto Ltd.
    - Web: [www.sto.co.uk](http://www.sto.co.uk).
    - Email: [info.uk@stoeu.com](mailto:info.uk@stoeu.com).
    - Product reference: Sto Acoustic Spray Plaster
  - Minimum applied thickness: 15 mm built up in 5 coats, 1 coat per day.
  - Colour: As Finishes Schedule.
  - Bonding coat: Required.

### PERFORMANCE REQUIREMENTS

- 160 **RESISTANCE TO FIRE**
- Standard: To BS EN 13501-2.
  - Location: to car park wall.
    - Minimum period of resistance: 60 minutes.
- 165 **REACTION TO FIRE**
- Standard: To BS 13501-1.
  - Location: Car Park wall.
    - Reaction to fire classification: B-s3,d2 .
- 180 **ACOUSTIC PERFORMANCE**
- Standard: To BS EN ISO 354.
  - Location: Foyer Wall drawing 580.
    - Frequencies and minimum coating sound absorption coefficients: As per Acoustician report.

Frequency (Hz)	Coefficient
As per Report	As per Report

**GENERAL REQUIREMENTS****210 SURFACES TO BE COATED**

- Condition: Structurally sound, dry, frost free, free from contamination by dirt, dust, efflorescence or other deleterious substances, and in a suitable condition to receive specified coatings.

**220 ENVIRONMENTAL CONDITIONS**

- General: Do not start work specified in this section before building is weathertight.
- Surface temperature: Minimum 4°C above the dew point temperature with conditions stable or improving.

**240 SEQUENCE OF WORK**

- Hangers, supports, clips, sleeves and other attachments: Securely fixed before application of coating.
- Sprayed coating and sealer coats: Applied and cured before:
  - Installation of ductwork, piping, conduit and other suspended equipment.
  - Application of finishes to adjacent surfaces.

**250 DIFFICULT ACCESS AREAS**

- Requirement: Identify areas where difficulty of access may prejudice achievement of complete integrity of the coating or application of the specified coating thickness and submit proposals for applying coating to these areas. If necessary, seek advice from the coating manufacturer.

**260 PROTECTION FROM OVERSPRAY**

- Adjacent areas not to be coated: Protect using suitable shielding/ masking materials that will not damage the surface when removed.

**270 HEALTH AND SAFETY**

- Dust, vapour and fumes: Prevent exposure in excess of occupational limits set in the current Health and Safety Executive (HSE) document EH40.

**280 CONTROL SAMPLES**

- General: Complete areas of finished work in designated locations. Obtain approval before proceeding.
  - Designated areas: 2 square metres Car Park wall.

**290 INSPECTIONS**

- Surface preparation and coating: Notify proposed starting dates.
- Coating manufacturer: Permit to:
  - Inspect the work in progress.
  - Inspect all quality control records.
  - Take dry coating thickness measurements and samples of coating products.
- Coating manufacturer's directions or requests: Submit proposals.
- Coating manufacturer's inspection reports: Submit copies without delay.

**300 FINISHED COATING APPEARANCE**

- Standard: Appropriate to the end use and position within the building.
- Decorative coatings: Free from surface crazing, unevenness, inconsistency in colour and other defects.

**APPLICATION OF COATINGS****350 SPRAYED COATINGS GENERALLY**

- Standards:
  - Coatings for fire protection: In accordance with BS 8202-1.
  - Coatings for thermal insulation and sound absorption: In accordance with BS 8216.

**380 CURING**

- Ventilation: Sufficient and continuous.
- Newly coated surfaces: Prevent from drying out too rapidly.

**390 MOVEMENT JOINTS**

- Location: Coincident with movement joints in substrate.
  - Extent: Through coating to substrate.
- Joint type: Contractor's choice.

**430 COMPLETION**

- Remove:
  - Masking tape and temporary coverings.
  - Overspray from adjacent exposed surfaces.

**M**  
**Surface finishes**

**M40**

**Stone/ concrete/ quarry/ ceramic tiling/ mosaic**

**M40 Stone/ concrete/ quarry/ ceramic tiling/ mosaic**

To be read with Preliminaries/ General conditions.

**TYPES OF TILING/ MOSAIC**

## 112 Tiling to pool edge detail - long side

Tiles Ceramique Internationale GAIL  
 Contact David Longbottom, 07711 760585, david@ceramiqueinternationale.co.uk  
 Reference 573073/35136  
 Colour White Finger Grip with Blue Edge  
 Size 240x115x15/26.5mm  
 Anti Slip Value DIN 51097 Group C  
 Base Cement sand screed, or fixed in semi-dry mix  
 Preparation General preparation as clause 310  
 Bedding BAL-THICK BED SOLID BED TROWEL (FLOOR) as clause 7 10  
 Adhesive BAL-SUPERCOVER RAPID FLEX (GREY) or BAL SINGLE PART  
 FLEXIBLE (GREY)  
 Grouting BAL-SUPERFLEX WIDE JOINT GROUT or Epoxy  
 Colour Grey  
 Joint width 10mm  
 Accessories Internal angles 573265/66/35136 to suit - 105x105x15mm  
 External angles 573965/66/35136 to suit - 235x115x15mm  
 2 courses of 3130/22106 White Ribbed - 240x115x10mm  
 CI - Cover grille, spec tbc

## 112A Tiling to pool edge detail - short side

Tiles Ceramique Internationale GAIL  
 Contact David Longbottom, 07711 760585, david@ceramiqueinternationale.co.uk  
 Reference 573073/35136  
 Colour White Finger Grip with Blue Edge  
 Size 240x115x15/26.5mm  
 Anti Slip Value DIN 51097 Group C  
 Base Cement sand screed, or fixed in semi-dry mix  
 Preparation General preparation as clause 310  
 Bedding BAL-THICK BED SOLID BED TROWEL (FLOOR) as clause 7 10  
 Adhesive BAL-SUPERCOVER RAPID FLEX (GREY) or BAL SINGLE PART  
 FLEXIBLE (GREY)  
 Grouting BAL-SUPERFLEX WIDE JOINT GROUT or Epoxy  
 Colour Grey  
 Joint width 10mm  
 Accessories Internal angles 573265/66/35136 to suit - 105x105x15mm  
 Finger Grip Recess 1100/2290 Cut to suit  
 Glazed Edges where applicable - 1101/ Glazed Short Edge  
 1102/ Glazed Long Edge  
 Rounded Edges where applicable - 1105/ Rounded Short Edge  
 1106/Rounded Long Edge

## 112B -Tiling to Diving Platform (Raised Detail - short sides of pool )

Tiles Ceramique Internationale GAIL  
 Contact David Longbottom, 07711 760585, david@ceramiqueinternationale.co.uk  
 Reference Nosing 562060/35136 & Mitred for Externals  
 Main Area 3130/22106  
 Size 240x115x10mm  
 Anti Slip Value DIN 51097 Group C  
 Base Cement sand screed, or fixed in semi-dry mix  
 Preparation General preparation as clause 310  
 Bedding BAL-THICK BED SOLID BED TROWEL (FLOOR) as clause 710  
 Adhesive BAL-SUPERCOVER RAPID FLEX (GREY) or BAL SINGLE PART  
 FLEXIBLE (GREY)  
 Grouting BAL-SUPERFLEX WIDE JOINT GROUT  
 Colour Grey  
 Joint width 10mm  
 Accessories Faces of Raised Area 1100/Colour Tba  
 Glazed Edges where applicable - 1101/ Glazed Short Edge  
 1102/ Glazed Long Edge  
 Rounded Edges where applicable - 1105/ Rounded Short Edge  
 1106/Rounded Long Edge  
 Racing Lane Numbers on Pool side face of Raised Detail - as per Architects Drawings  
 Cove where Raised Detail meets pool surround ?

## 112C Tiling to pool tank floors - deeper than 1m (except under moveable floor)

Tiles Ceramique Internationale GAIL  
 Contact David Longbottom, 07711 760585, david@ceramiqueinternationale.co.uk  
 Reference 1100/2290  
 Colour Matt White Glazed  
 Size 240x115x10mm  
 Base Cement sand screed  
 Preparation General preparation as clause 310  
 Bedding BAL-THICK BED SOLID BED TROWEL (FLOOR) as clause 710  
 Adhesive BAL-SUPERCOVER RAPID FLEX (GREY) or BAL SINGLE PART  
 FLEXIBLE (GREY)  
 Grouting BAL-SUPERFLEX WIDE JOINT GROUT  
 Colour Grey  
 Joint width 10mm  
 Movement joint Perimeter sealant type as clause 815  
 Colour Sealant type - to match floor grout  
 Location As per Architects drawings  
 Accessories 1100/3740 as lane markings

## 112D Tiling to pool tank floors – under moveable floor

Tiles	Ceramique Internationale CLD
Contact	David Longbottom, 07711 760585, david@ceramiqueinternationale.co.uk
Reference	Cocco
Size	200x200x7mm
Base	Cement sand screed
Preparation	General preparation as clause 310
Bedding	BAL-THICK BED SOLID BED TROWEL (FLOOR) as clause 710
Adhesive	BAL-SUPERCOVER RAPID FLEX (GREY) or BAL SINGLE PART FLEXIBLE (GREY)
Grouting	BAL-SUPERFLEX WIDE JOINT GROUT
Colour	Grey
Joint width	3-4mm
Movement joint	Perimeter sealant type as clause 815
Colour	Sealant type – to match floor grout
Location	As per Architects drawings

## 112E Tiling to pool tank walls - long side

Tiles	Ceramique Internationale GAIL
Contact	David Longbottom, 07711 760585, david@ceramiqueinternationale.co.uk
Reference	1100/2290
Size	240x115x10mm
Background	Cement sand render
Preparation	General preparation as clause 310
Bedding	BAL-THICK BED SOLID BED TROWEL (FLOOR) as clause 710
Adhesive	BAL-SUPERCOVER RAPID FLEX (GREY) or BAL SINGLE PART FLEXIBLE (GREY)
Grouting	BAL-SUPERFLEX WIDE JOINT GROUT
Colour	Grey
Joint width	10mm
Movement joint	Perimeter sealant type as clause 815
Colour	Sealant type - to match floor grout
Location	As per Architects drawings
Accessories	Top Course 1100/3513 as per Architects drawings, fixed landscape
Foot Recess	563066/35136 for bottom - cut to suit
	1100/3513 generally - cut to suit
Glazed Edges where applicable -	1101/ Glazed Short Edge
1102/ Glazed Long Edge	
Rounded Edges where applicable -	1105/ Rounded Short Edge
1106/Rounded Long Edge	

## 112F Tiling to pool tank walls - short side, to 1m depth, for turning pads

Tiles Ceramique Internationale GAIL  
 Contact David Longbottom, 07711 760585, david@ceramiqueinternationale.co.uk  
 Reference 3170/2290 Check Stud Generally  
 Size 240x115x10mm  
 Anti Slip Value DIN 51097 Group C  
 Background Cement sand render  
 Preparation General preparation as clause 300  
 Bedding BAL-THICK BED SOLID BED TROWEL (WALLS) as clause 710  
 Adhesive BAL-SUPERCOVER RAPID FLEX (GREY) or BAL SINGLE PART FLEXIBLE (GREY)  
 Grouting BAL-SUPERFLEX WIDE JOINT GROUT  
 Colour Grey  
 Joint width 10mm  
 Movement joint Perimeter sealant type as clause 815  
 Colour Sealant type - to match floor grout  
 Location As per Architects drawings  
 Accessories 3170/3513 240x115x10mm for top course as per Architects drawings, fixed landscape  
 3170/3740 for lane markings

## 112G Tiling to pool tank walls - short side, deeper than 1m

Tiles Ceramique Internationale GAIL  
 Contact David Longbottom, 07711 760585, david@ceramiqueinternationale.co.uk  
 Reference 1100/2290  
 Size 240x115x10mm  
 Background Cement sand render  
 Preparation General preparation as clause 310  
 Bedding BAL-THICK BED SOLID BED TROWEL (FLOOR) as clause 710  
 Adhesive BAL-SUPERCOVER RAPID FLEX (GREY) or BAL SINGLE PART FLEXIBLE (GREY)  
 Grouting BAL-SUPERFLEX WIDE JOINT GROUT  
 Colour Grey  
 Joint width 10mm  
 Movement joint Perimeter sealant type 815  
 Colour Sealant type - to match floor grout  
 Location As per Architects drawings  
 Accessories 1100/3740 as lane markings  
 Foot Recess - Base 563066/35136 - cut to suit  
 1100/3513 generally - cut to suit  
 Glazed Edges where applicable - 1101/ Glazed Short Edge  
 1102/ Glazed Long Edge  
 Rounded Edges where applicable - 1105/ Rounded Short Edge  
 1106/Rounded Long Edge

## 112H Tiling to stair areas into Pool

Tiles Ceramique Internationale GAIL  
 Contact David Longbottom, 07711 760585, david@ceramiqueinternationale.co.uk  
 Reference Nosing 562060/3513  
 Main tread 3130/22106  
 Riser 1100/3513  
 Size 240x115x10mm  
 Anti Slip Value DIN 51097 Group C  
 Base Cement sand screed  
 Preparation General preparation as clause 300  
 Bedding BAL-THICK BED SOLID BED TROWEL (FLOOR) as clause 710  
 Adhesive BAL-SUPERCOVER RAPID FLEX (GREY) or BAL SINGLE PART  
 FLEXIBLE (GREY)  
 Grouting BAL-SUPERFLEX WIDE JOINT GROUT  
 Colour Grey  
 Joint width 10mm  
 Movement joint Perimeter sealant type as clause 815  
 Colour Sealant type - to match floor grout  
 Location As per Architects drawings  
 Accessories Open edge of step- Nosing 562760/35136 Corner  
 Left  
 562860/35136 Corner Right  
 Tread 3135/22106 Rounded Short Side  
 Glazed Edges where applicable - 1101/ Glazed Short Edge  
 1102/ Glazed Long Edge  
 Rounded Edges where applicable - 1105/ Rounded Short Edge  
 1106/Rounded Long Edge

## 112J Tiling to Shower/Pool Surround/Toilet Floors - HEATED SCREED

Tiles Ceramique Internationale Ltd - TECHNIC  
 Contact David Longbottom, 07711 760585 david@ceramiqueinternationale.co.uk  
 Finish Bugnato R11 C  
 Colour Georgia  
 Size 200x200x8mm  
 Base Sand : Cement screed  
 Preparation General preparation as clause 300  
 Bedding BAL-THICK BED SOLID BED TROWEL (FLOOR) as clause 810  
 Adhesive BAL -SUPERCOVER RAPID FLEX (GREY)  
 Grouting BAL-SUPERFLEX WIDE JOINT GROUT  
 Colour TBA  
 Joint width 3-4 mm  
 Movement joint Perimeter sealant movement joint as clause 624  
 Intermediate sealant movement joint as clause 626  
 Accessories Georgia Sit on Cove 200x100mm  
 Georgia Internal & External Angles 100x25mm

- 112K Tiling to Kitchen Floor - Food Preparation Area  
 Tiles Ceramique Internationale Ltd - TECHNIC  
 Contact David Longbottom, 07711 760585 david@ceramiqueinternationale.co.uk  
 Finish PROFIL R12 V8  
 Colour Arkansas  
 Size 200x200x8mm  
 Base Sand : Cement screed  
 Preparation General preparation as clause 300  
 Bedding BAL-THICK BED SOLID BED TROWEL (FLOOR) as clause 810  
 Adhesive BAL -SUPERCOVER RAPID FLEX (GREY)  
 Grouting BAL-MICROFLEX WIDE JOINT GROUT or Epoxy Grout  
 Colour TBA  
 Joint width 3-4 mm  
 Movement joint Perimeter sealant movement joint as clause 624  
 Intermediate sealant movement joint as clause 626  
 Accessories Arkansas Sit on Cove 200x100mm  
 Arkansas Internal & External angles 100x25mm
- 112L Tiling to Kitchen Floor - General Area (Non Food Preparation Area)  
 Tiles Ceramique Internationale Ltd - TECHNIC  
 Contact David Longbottom, 07711 760585 david@ceramiqueinternationale.co.uk  
 Finish SECURA R11  
 Colour Arkansas  
 Size 200x200x8mm  
 Base Sand : Cement screed  
 Preparation General preparation as clause 300  
 Bedding BAL-THICK BED SOLID BED TROWEL (FLOOR) as clause 810  
 Adhesive BAL -SUPERCOVER RAPID FLEX (GREY)  
 Grouting BAL-MICROFLEX WIDE JOINT GROUT or Epoxy Grout  
 Colour TBA  
 Joint width 3-4 mm  
 Movement joint Perimeter sealant movement joint as clause 624  
 Intermediate sealant movement joint as clause 626  
 Accessories Arkansas Sit on Cove 200x100mm  
 Arkansas Internal & External angles 100x25mm

- 113 Tiles Ceramique Internationale Ltd - CALEIDOSCOPIO  
 Contact David Longbottom, 07711 760585, david@ceramiqueinternationale.co.uk  
 Finish Satin  
 Colour Cocco  
 Size 200x200x7mm  
 Background Blockwork wall with Windposts  
 Preparation Ensure that the blockwork wall is suitable and that adequate time has been allowed for drying. Fix 1250x600x6mm Marmox board supplied by Ceramique Internationale with Flexible Rapidset Cement Based adhesive, apply appropriate thickness of adhesive over the entire back of the Marmox board and use appropriate notched trowel. Fix Marmox washers at all 4 corners of the boards with appropriate stainless steel screws. Ensure that the joints in the boards do not coincide with the Windposts and that waterproof tape is applied at all joints in the boards.  
 General preparation as clause 300  
 Bedding BAL-ROUND NOTCHED TROWEL (WALL) as clause 670  
 Adhesive BAL RAPIDSET FLEXIBLE  
 Grouting BAL-SUPERFLEX WALL GROUT  
 Colour TBA  
 Joint width 3-4 mm  
 Movement Joint Sealant Movement Joint as clause 622 as per Architects Drawings  
 Accessories Skirting - Sit on Cove 200x100mm - Colour Tbc  
 Internal and External Angles 100x25mm  
 Fix Skirtings and Angles with SUPERCOVER RAPID FLEX  
 Tile Trim for all External angles, Colour Tbc
- 114A Tiling to Spectator Area - Steps  
 Tiles Ceramique Internationale Ltd - TECHNIC  
 Contact David Longbottom, 07711 760585 david@ceramiqueinternationale.co.uk  
 Finish Secura R10 B  
 Colour Georgia  
 Size 200x200x8mm  
 Base Sand : Cement screed  
 Preparation General preparation as clause 310  
 Bedding BAL-THICK BED SOLID BED TROWEL (FLOOR) as clause 710  
 Adhesive BAL -SUPERCOVER RAPID FLEX (GREY)  
 Grouting BAL-SUPERFLEX WIDE JOINT GROUT  
 Colour TBA  
 Joint width 3-4 mm  
 Movement joint Perimeter sealant movement joint as clause 815  
 Intermediate sealant movement joint as clause 825  
 Accessories Nosing Ontario Secura Bullnose with Grooves  
 200x55mm  
 Top 55mm of Riser Ontario Natural 200x200mm cut on site  
 Main Riser Georgia Natural 200x200mm cut on site

- 114B Tiling to Spectator Area - Seating
- Tiles Ceramique Internationale Ltd - CLD  
 Contact David Longbottom, 07711 760585 david@ceramiqueinternationale.co.uk  
 Finish Satin  
 Colour Oceano  
 Size 200x200x8mm  
 Base Sand : Cement screed  
 Preparation General preparation as clause 300  
 Bedding BAL-THICK BED SOLID BED TROWEL as clause 670walls/710floors  
 Adhesive BAL -SUPERCOVER RAPID FLEX (GREY)  
 Grouting BAL-SUPERFLEX WIDE JOINT GROUT  
 Colour TBA  
 Joint width 3-4 mm  
 Movement joint Perimeter sealant movement joint as clause 815  
 Intermediate sealant movement joint as clause 626  
 Accessories Top 100mm of Riser CLD Oceano 200x200mm cut on site with cut edge placed at the top, cut edge slightly recessed under nosing to avoid sharp edge.  
 Tile Trim Stainless steel trim for seating nosing edge  
 \*Riser Georgia Natural 200x200mm cut on site to suit  
 Cocco 200x200mm cut on site to suit  
 \*Where applicable, as per Architects Drawings  
 Sit on Cove 200x100mm + Angles, colour tba
- 114C Tiling to Steps within Pool Surround Area
- Tiles Ceramique Internationale Ltd - TECHNIC  
 Contact David Longbottom, 07711 760585 david@ceramiqueinternationale.co.uk  
 Finish Bugnato R11 C  
 Colour Georgia  
 Size 200x200x8mm  
 Base Sand : Cement screed  
 Preparation General preparation as clause 310  
 Bedding BAL-THICK BED SOLID BED TROWEL (FLOOR) as clause 710  
 Adhesive BAL -SUPERCOVER RAPID FLEX (GREY)  
 Grouting BAL-SUPERFLEX WIDE JOINT GROUT  
 Colour TBA  
 Joint width 3-4 mm  
 Movement joint Perimeter sealant movement joint as clause 815  
 Intermediate sealant movement joint as clause 825  
 Accessories Nosing Ontario Secura Bullnose with Grooves  
 200x55mm  
 Top 55mm of Riser Ontario Natural 200x200mm cut on site  
 Main Riser Georgia Natural 200x200mm cut on site  
 Sit on Cove 200x100mm + Angles, colour tba

- 115 NATURAL STONE COVERING TO FOYER AND RAMP WALKWAY
- Type: Slabs to BS EN 12058.
  - Stone:
    - Name (traditional): Caithness Stone.
    - Petrological family: Calcareous Sitstone.
    - Colour: Blue/Black.
    - Origin: Spittal Mains Quarry,Wick, Caithness, Scotland.
    - Finish: Fine rubbed.
    - Supplier: Spittal Mains Quarry,Wick, Caithness,Scotland.
    - Quality: Free from vents, cracks, fissures, discoloration, or other defects deleterious to strength/ colour.
    - Size: Refer drawings.
    - Thickness: 50mm.
    - Slip potential:
      - Slip resistance value (SRV) (minimum) to BS EN 14231: 65 dry .
      - Surface roughness (Rz) (minimum) to BS 1134: 22 micrometres.
    - Other requirements: None.
  - Background/ Base: Concrete slab.
    - Preparation: Easypoint Ltd Bonding Agent..
  - Intermediate substrate: 30mm thick modified mortar bed Easypoint Ltd Fine Bedding concrete or equal and approved.
  - Bedding: As intermediate substrate with Easipont Bonding agent applied to underside of slab..
    - Reinforcement: Not applicable.
    - Adhesive: Easipoint Ltd Bond Plus.
  - Joint width: 10 mm.
  - Grout: Granatech mortar by Easypoint Ltd. or equal and approved..
    - Type/ classification: Not applicable.
  - Movement joints: None.
  - Accessories: Drainage channels.

#### GENERAL

- 200 BAL PRODUCTS: will be applied strictly in accordance with the sitework instructions on the manufacturer's product data sheets. All BAL products are covered with a 25 year guarantee, except cleaning products.
- 210 SUITABILITY OF BACKGROUNDS/ BASES
- Background/ base tolerances: To permit specified flatness/ regularity of finished surfaces given the permissible minimum and maximum thickness of bedding.
  - New background drying times (minimum):
    - Concrete walls: 6 weeks.
    - Brick/ block walls: 6 weeks.
    - Rendering: 2 weeks.
    - Gypsum plaster: 4 weeks.
  - New base drying times (minimum):
    - Concrete slabs: 6 weeks.
    - Cement:sand screeds: 3 weeks.
- 215 FALLS IN THE BASES
- General: Give notice if falls are inadequate.

- 220 **SWIMMING POOL TILING**
- Watertightness of pool base/ substrate structure: Test and prove to be watertight.
  - Time intervals between stages of the work (minimum):
    - Completion (curing) of pool shell to start of rendering/ screeding/ tiling: 6 weeks
    - Completion of rendering/ screeding to start of tiling: 3 weeks
    - Completion of tiling to start of grouting: 3 days
    - Completion of grouting and sealing of movement joints to filling of pool: 3 weeks.
  - Filling, emptying and heating pool: Minimize stresses.
    - Maximum filling and emptying rate: 750 mm/24 hour.
    - Maximum rate of heating water: 0.25°C/hour.
- 250 **SAMPLES**
- General: Submit representative samples of the following:  
Each type of tile.
- 252 **NATURAL STONE SAMPLES**
- General: Submit samples in accordance with BS EN 12058, clause 4.2.3.2.
- 260 **CONTROL SAMPLES**
- General: Complete sample areas, being part of finished work, in locations as follows:  
1 mm x 1 m including skirtings etc.
- 270 **TILING TO HEATED FLOORS:** Before work is started it will be ensured that:
- The screed has been allowed to dry out for at least 3 weeks if containing Portland cement, to BS12, class 42.5 or 1 week if containing BAL-QUICKSET CEMENT.
  - After drying out, the screed has been heated slowly at a maximum rate of 5°C per 24 hours to a temperature of 25°C and maintained at that level for 3 days before being allowed to cool to room temperature.
  - The heating system has been turned off or in cold weather turned down to below 15°C.
  - On completion of tiling it must be ensured that 28 days elapse before the floor is brought to its operating temperature at a maximum rate of 5°C per 24 hours.

### **PREPARATION**

- 310 **EXISTING BACKGROUNDS/BASES GENERALLY**
- Efflorescence, laitance, dirt and other loose material: Remove.
  - Deposits of oil, grease and other materials incompatible with the bedding: Remove.
  - Tile, paint and other nonporous surfaces: Clean.
  - Wet backgrounds: Dry before tiling.
- 315 **EXISTING CONCRETE/SCREED BASES:** All loose or hollow portions will be cut out and made good with a 1:3 cement:sand mortar applied over a slurry bonding coat as clause 510. Alternatively, BAL-POURABLE THICK-BED over a slurry bonding coat of 2 parts BAL-POURABLE THICK-BED adhesive to 1 part BAL-BOND SBR will be used.
- Any soft or unsound adhesive residues will be removed without damaging the base. It will be ensured that any remaining adhesive residue is sound and firmly bonded to the base.

- 317 **GYPSUM PLASTERBOARD BACKGROUNDS:** It will be ensured that sheets are dry, securely fixed and rigid with no protruding fixings and the face intended to receive the decorative finish is exposed.  
Gypsum plasterboard is a suitable background where the weight of tiling does not exceed 32 kg/m<sup>2</sup> (equivalent to tiles with a thickness of 12.5mm).  
The plasterboard should comply with BS 1230: Part 1 and be:
- Type 3 where there will be any exposure to moisture.
  - Not less than 12.5mm thick.
  - Fixed with screws or nails at 300mm centres both horizontally and vertically to seasoned timber or suitable proprietary framed supports.
  - Rigid and free from springiness and surface undulations.
- Plasterboard wall linings fixed with plaster dabs or adhesive should be allowed to stand for 10 days before being tiled.
- 319 **PRIME WITH BAL-PRIME APD:** The undiluted primer will be brush applied to the background/base and allowed to dry.
- 370 **NEW IN SITU CONCRETE**
- Backgrounds/ bases to be tiled: Remove mould oil, surface retarders and other materials incompatible with bedding.
- 390 **PLASTERBOARD BACKGROUNDS**
- Boards: Dry, securely fixed and rigid with no protruding fixings and face to receive decorative finish exposed.
- 400 **BACKGROUNDS TO POOL AREA**
- Boards: Dry, securely fixed and rigid with no protruding fixings.
  - Surfaces to be tiled: Seal or prime if recommended by adhesive manufacturer.
- 410 **HACKING FOR KEY**
- Keying: Roughen backgrounds thoroughly and evenly to a depth of 3 mm.
  - Backgrounds to be keyed: Concrete.
- 444 **PREPARING CONCRETE BASES FOR PARTIALLY BONDED BEDDING**
- Surface finish: Brushed, with no laitance.
  - Surface preparation: Suitable to achieve a full bond with bedding. Select from:
    - Keep well wetted for several hours. Remove free water then brush in a slurry bonding coat.  
Slurry: Neat cement.
    - Prepare, prime as necessary and apply a bonding agent.  
Bonding agent: BBA certified SBR bonding agent.
- 450 **PREPARING CONCRETE BASES FOR UNBONDED BEDDING - WITHOUT SEPARATING LAYER**
- Surface finish: Smooth.
  - Surface preparation: Dampen lightly before laying mortar bed.
- 460 **SMOOTHING UNDERLAYMENT**
- Type: Recommended by adhesive manufacturer.
  - Condition: Allow to dry before tiling.

## 470 INTERMEDIATE SUBSTRATE

- Type: Polymer enhanced sand / cement levelling render.
  - Manufacturer: SIKA.
  - Product reference: Sikatop 77.
  - Thickness: 50mm.
- Fixing system: Sikadur 32 epoxy bonding agent.
  - Manufacturer: SIKA.
  - Product reference: Sikadur 32.
  - Application: As recommended by manufacturer.
  - Substrate surface: Secure, true and even.
- Joints: Close butt.
  - Treatment: Sika 1 waterproofing system.
- Penetrations: Seal.
- Accessories: None.

**FIXING**

## 510 FIXING GENERALLY

- Colour/shade: Unintended variations within tiles for use in each area/room are not permitted.
  - Variegated tiles: Mix thoroughly.
- Adhesive: Compatible with background/base. Prime if recommended by adhesive manufacturer.
- Cut tiles: Neat and accurate.
- Fixing: Provide adhesion over entire background/base and tile backs.
- Final appearance: Before bedding material sets, make adjustments necessary to give true, regular appearance to tiles and joints when viewed under final lighting conditions.
- Surplus bedding material: Clean from joints and face of tiles without disturbing tiles.

## 520 ADVERSE WEATHER: Tiles will not be fixed if the temperature is below 5°C or in damp conditions.

- Frozen materials will not be used nor will adhesives be applied to frozen or frost covered surfaces.
- Tiles will not be fixed if the temperature of the background/base is in excess of 65°C.
- Adequate precautions will be taken to protect work from inclement weather, frost and premature drying out.

## 530 SETTING OUT

- Joints: True to line, continuous and without steps.
  - Joints on walls: Horizontal, vertical and aligned round corners.
  - Joints in floors: Parallel to the main axis of the space or specified features.
- Cut tiles: Minimize number, maximize size and locate unobtrusively.
- Joints in adjoining floors and walls: Align.
- Joints in adjoining floors and skirtings: Align.
- Movement joints: Where locations are not indicated, submit proposals.
- Setting out of Floor : Drawing references: 515.
- Setting out of Walls : Submit proposals.

- 535 **SETTING OUT MOVEMENT JOINTS (INTERIOR WALLS):** Movement joints in tiling will be provided:
- At abutments with other surfaces.
  - Over junctions between different background materials.
  - At internal vertical corners.
  - At 3.0 to 4.5m centres horizontally and vertically.
  - Joints will be at least 6mm wide and extend through the tiles and bedding to the substrate.
  - Joints located over structural movement joints will extend through any intermediate substrate and be 10 mm wide.
- 537 **SETTING OUT PERIMETER MOVEMENT JOINTS (FLOORS):** Movement joints in tiling will be provided at floor perimeters including abutments with walls, columns, upstands/bases, etc.
- Joints will be at least 6mm wide and extend through the tiles and bedding to the substrate.
- 539 **SETTING OUT PRE-FORMED INTERMEDIATE MOVEMENT JOINTS (FLOORS):**  
Movement joints in tiling will be provided:
- Over existing and/or structural movement joints.
  - Over junctions between different base materials.
  - Over supporting walls and beams.
  - In large floor areas, the tiling should be divided into bays measuring no greater than 10m x 10m. Where there is underfloor heating, these bays should measure no greater than 40m<sup>2</sup> in area and no side should exceed 8m in length.
  - Joints will be at least 6mm wide and extend through the tiles and bedding to the base.
  - Joints located over existing structural movement joints will extend through any intermediate substrate and be \_ mm wide.
- 540 **LEVEL OF FLOOR TILING**
- Permissible deviation in level from datum 10mm.
- 540A **LEVEL OF FLOOR TILING WITHIN COMPETITION POOL**
- Permissible deviation in level from datum 0 mm.
- 550 **FLATNESS/ REGULARITY OF TILING**
- Sudden irregularities: Not permitted.
  - Deviation of surface: Measure from underside of a 2 m straightedge placed anywhere on surface. The straightedge should not be obstructed by the tiles and no gap should be greater than 3 mm.
- 560 **LEVEL OF TILING ACROSS JOINTS**
- Deviation (maximum) between tile surfaces either side of any type of joint:
    - 1 mm for joints less than 6 mm wide.
    - 2 mm for joints 6 mm or greater in width.
- 600 **SIT-ON TILE SKIRTINGS**
- Sequence: Bed solid to wall after laying floor tiles.
  - Bedding: Cement based adhesive.

- 670 THICK BED ADHESIVE - SOLID (WALLS)
- Application: Apply floated coat of adhesive to dry background. Comb surface.
  - Tiling: Apply thin even coat of adhesive to backs of dry tiles. Press tiles firmly onto float coat.
  - Finished adhesive thickness: Within range recommended by manufacturer.
- 690 CEMENT:SAND BEDDING (WALLS)
- Preparation: Dampen background.
  - Application: Apply floated coat: 1:3-4 cement:sand mortar bedding.
    - Thickness (maximum): 10 mm.
    - Finish: Equivalent to wood float. Before tiling allow to stiffen slightly.
  - Tiling: Without delay, apply 2 mm thick coat of 1:2 cement:fine sand mortar to backs of tiles, filling keys. Press tiles firmly onto float coat. Tap firmly into position.
- 710 THICK BED ADHESIVE - SOLID (FLOORS)
- Application: Apply floated coat of adhesive to dry base and comb surface.
  - Tiling: Apply coat of adhesive to backs of tiles filling depressions or keys. Press tiles firmly into position.
  - Finished adhesive thickness: Within range recommended by manufacturer.

#### MOVEMENT JOINTS/ GROUTING/ COMPLETION

- 815 SEALANT MOVEMENT JOINTS IN TILING TO FLOORS
- Joints: Extend through tiles and bedding to base/ background. Centre over joints in base/ background.
    - Width: 10 mm .
  - Sealant: ARBOKOL 1025 SP .
    - Colour: T.B.C. .
    - Preparation and application: As section Z22.
- 815A SEALANT MOVEMENT JOINTS IN TILING TO WALLS
- Joints: Extend through tiles and bedding to base/ background. Centre over joints in base/ background.
    - Width: 10 mm .
  - Sealant: THIOFLEX ONE .
    - Colour: T.B.C. .
    - Preparation and application: As section Z22.
- 825 STRIP MOVEMENT JOINTS IN TILING TO POOL AREA AND CHANGING ROOMS
- Manufacturer: As Clause 825A .
    - Product reference: Schlüter-DILEX--EKS 4VA .
    - Colour: Standard .
  - Joint width: 10 mm .
  - Fixing to base: As Per Manufacturers Recommendations .
  - Joints: Extend through tiles and bedding to base.
- 825A MOVEMENT AND CONTROL JOINT PROFILES
- Manufacturer: Schlüter-Systems Ltd.
    - Web: [www.schluter.co.uk](http://www.schluter.co.uk).
    - Email: [technical@schluter.co.uk](mailto:technical@schluter.co.uk).
    - Product reference: Schlüter®-DILEX-EKS 4VA
  - Material: Stainless steel V4A.

**825B MOVEMENT AND CONTROL JOINT PROFILES**

- **Manufacturer:** Schlüter-Systems Ltd.
  - **Web:** www.schluter.co.uk.
  - **Email:** technical@schluter.co.uk.
  - **Product reference:** 2.3 Schlüter®- JOLLY-P
- **Material:** P.V.C. Coloured.

**855 CEMENT:SAND GROUTING MIX**

- **Grout mix:**
  - **Cement:** Portland cement to BS EN 197-1 type CEM I/42.5.
  - **Sand:**
    - Joint widths of 6 mm or greater: To BS 1199, table 1, Type B.
    - Joint widths of 3-6 mm: To BS 5385-5, table 2.
  - **Proportions (cement:sand):** 1:3.
  - **Pigment:** Natural.
- **Mixing:** Mix thoroughly. Use the minimum of clean water needed for workability.

**875 GROUTING**

- **Sequence:** Grout when bed/adhesive has set sufficient to prevent disturbance of tiles.
- **Joints:** 6 mm deep (or depth of tile if less). Free from dust and debris.
- **Grouting:** Fill joints completely, tool to profile, clean off surface. Leave free from blemishes.
  - **Profile:** Flush.
- **Polishing:** When grout is hard, polish tiling with a dry cloth.

**875A GROUTING**

- **Sequence:** Grout when bed/adhesive has set sufficient to prevent disturbance of tiles.
- **Joints:** 10 mm deep (or depth of tile if less). Free from dust and debris.
- **Grouting:** Fill joints completely, tool to profile, clean off surface. Leave free from blemishes.
  - **Profile:** Flush.
- **Polishing:** When grout is hard, polish tiling with a dry cloth.

**880 CHECKING CONTACT AREA:** As work proceeds and before the bedding has set, random tiles will be carefully removed to verify that the contact area is as specified. The initial bedding material will be removed and the removed tiles will be buttered with fresh material and re-fixed.

**885 COLOURED GROUT**

- **Staining of tiles:** Not permitted
- **Evaluating risk of staining:** Apply grout to a few tiles in a small trial area. If discoloration occurs apply a protective sealer to tiles and repeat trial.

**895 PREPARING MOVEMENT JOINTS:** The surfaces to which the sealant must adhere will be cleaned using methods and materials recommended by the sealant manufacturer.

- All temporary coatings, tapes, loosely adhering material, dust, oil, grease and other contaminants which may affect the bond will be removed.
- Joints will be kept clean and protected from damage until the sealant is applied.
- **Backing strip, bond breaker, primer:** Types recommended for the purpose by sealant manufacturer.
- Backing strips and/or bond breaker tape will be inserted into the clean joint leaving no gaps.
- Adjacent surfaces will be covered with masking tape to prevent staining and to protect the surfaces which would be difficult to clean if smeared with primer or sealant.

- 905 **APPLYING SEALANTS:** It will be ensured that the operatives observe the manufacturer's and statutory requirements for storage and safe usage of the sealants.
- Equipment and methods recommended by the sealant manufacturer will be used and applied within the recommended application life of the primer and the sealant, and the recommended air and substrate temperature ranges.
  - Sealant will not be applied to damp surfaces (unless permitted otherwise), to surfaces affected by ice or snow or during inclement weather. Joints will not be heated to dry them or to raise their temperature.
  - Joints will be filled completely, leaving no gaps, excluding all air and ensuring the firm adhesion of the sealant to the required joint surfaces. The sealant will be tooled to a neat, slightly concave profile unless specified otherwise.
  - The sealant will be protected until cured.
- 915 **PROTECTION (GENERAL):** All completed areas will be adequately protected and kept clean. Any droppings will be cleaned off immediately.
- 925 **PROTECTION (WET DUTY AREAS):** Tiling must be kept dry and not brought into service after grouting for at least 2 weeks.
- 935 **TRAFFICKING:** When using BAL's rapid setting cementitious adhesives, floors must be kept clear of traffic for at least 3 hours and only light traffic permitted for the next 3 days. Floors must not be subjected to heavy traffic for at least 7 days after completion.

**M**

**Surface finishes**

1000000

**M50**

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

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

To be read with Preliminaries/ General conditions.

**TYPES OF COVERING****110A VINYL TILES**

- Manufacturer: Gerflor Ltd.
  - Web: [www.gerflor.co.uk](http://www.gerflor.co.uk).
  - Email: [gerfloruk@gerflor.com](mailto:gerfloruk@gerflor.com).
  - Product reference: GTI Tile
- Colour/ Pattern: Bleu 0800.

**130 CARPET TILING**

- Location: Fitness suite access floor, General Office Areas.
- Base: Raised access floor.
  - Preparation: Particleboard flooring as clause ???.
- Fabricated underlay: Plywood as clause ??? to Access deck only.
- Carpet tiles:
  - Manufacturer: BURMATEX.
    - Product reference: 4200 sidewalk.
  - Type: Fibre-bonded.
  - BS EN 1307 classification:
    - Category: Type 2.
    - Level of use class: 32.
    - Luxury rating class: LC5.
  - Recycled content: Submit proposals.
  - Size: 500 x 500 mm.
  - Colour/ pattern: Refer Schedule.
- Method of laying: Fully adhere all tiles with release adhesive recommended by tile manufacturer. Stycobond F52 , F3 by Burmatex.
- Accessories: Edging strip at thresholds as clause 740.
- Other requirements: None.

**150 SHEETING - VINYL**

- Location: Main Foyer, Circulation areas and nursing mother rooms.
- Base: Trowelled screed M10/???..
  - Preparation: As clause 430.
- Fabricated underlay: not required.
- Flooring roll: vinyl.
  - Manufacturer: Gerflor Ltd, Wedgnock House, Wedgnock Lane, Warwick, CV34 5AP. Tel: 01926 401500 E: [contractuk@gerflor.com](mailto:contractuk@gerflor.com).
  - Product reference: Taralay Premium Comfort Metallica.
  - BS EN 685 class: 34 / 42 EN 660/1: Abrasion Resistance: 0.08 mm.
  - Recycled content: Submit proposals.
  - Width: 2000mm.
  - Thickness: 3.25mm.
  - Colour/ pattern: 9460 Spectre (colour to be confirmed - refer to architects schedule).
- Adhesive (and primer if recommended by manufacturer): As clause 640.
- Seam welding: as per manufacturers instructions.
- Accessories: Edging trim for thresholds as clause ???.
- Finishing: sweep / vacuum, damp mopping with neutral detergent.
- Other requirements: None.

## 150A SHEETING - VINYL

- Location: Back of house Circulation areas and Main Stair lobby.
- Base: Trowelled screed M10/???..
  - Preparation: As clause 430.
- Fabricated underlay: not required.
- Flooring roll: vinyl.
  - Manufacturer: Gerflor Ltd, Wedgnock House, Wedgnock Lane, Warwick, CV34 5AP. Tel: 01926 401500 E: contractuk@gerflor.com.
  - Product reference: Taralay Premium Comfort ?.
  - BS EN 685 class: 34 / 42 EN 660/1: Abrasion Resistance: 0.08 mm.
  - Recycled content: Submit proposals.
  - Width: 2000mm.
  - Thickness: 3.25mm.
  - Colour/ pattern: 9460 Spectre (colour to be confirmed - refer to architects schedule).
- Adhesive (and primer if recommended by manufacturer): As clause 640.
- Seam welding: as per manufacturers instructions.
- Accessories: Edging trim for thresholds as clause ???.
- Finishing: sweep / vacuum, damp mopping with neutral detergent.
- Other requirements: None.

## 150B SHEETING - VINYL

- Location: Kitchen servery, cafe toilets, staff changing, staff toilets, plant operators tea / change / toilet, plant operators office.
- Base: Trowelled screed M10/???..
  - Preparation: As clause 430.
- Fabricated underlay: not required.
- Flooring roll: slip resistant heavy duty PVC.
  - Manufacturer: Gerflor Ltd, Wedgnock House, Wedgnock Lane, Warwick, CV34 5AP. Tel: 01926 401500 E: contractuk@gerflor.com.
  - Product reference: Tarasafe Ultra.
  - BS EN 685 class: 34 / 43 EN 660/1: Abrasion Resistance: 0.08 mm.
  - Recycled content: Submit proposals.
  - Width: 2000mm.
  - Thickness: 2.0mm.
  - Colour/ pattern: (colour to be confirmed - refer to architects schedule).
- Adhesive (and primer if recommended by manufacturer): Gerfix E120 Adhesive or as recommended by manufacturer.
- Seam welding: all seams must be hot welded using Gerflor matching weld rod and as per manufacturers instructions.
- Accessories: Edging trim for thresholds as clause 740.
- Finishing: sweep / vacuum, damp mopping with neutral detergent.
- Other requirements: None.

## 150C SHEETING - VINYL

- Location: Fire Escape Stair 1 and 2 Landings and lobbies.Refer Architects floor finishes drawing..
- Base: Self-leveling screed as clause M13/120..
  - Preparation: As clause 430.
- Fabricated underlay: not required.
- Flooring roll: vinyl.
  - Manufacturer: Gerflor Ltd, Wedgnock House, Wedgnock Lane, Warwick, CV34 5AP. Tel: 01926 401500 E: contractuk@gerflor.com.
  - Product reference: Taralay Premium Comfort Metallica ?.
  - BS EN 685 class: 34 / 42 EN 660/1: Abrasion Resistance: 0.08 mm.
  - Recycled content: Submit proposals.
  - Width: 2000mm.
  - Thickness: 3.25mm.
  - Colour/ pattern: colour to be confirmed - refer to architects schedule).
- Adhesive (and primer if recommended by manufacturer): As clause 640.
- Seam welding: as per manufacturers instructions.
- Accessories: Stair nosings and wall skirtings as clause 740.
- Finishing: sweep / vacuum, damp mopping with neutral detergent.
- Other requirements: Edgings as per drawings.

## 150D SHEETING - VINYL

- Location: Dsiabled W.C.Refer Architects floor finishes drawings..
- Base: Self-leveling screed as clause M13/120..
  - Preparation: As clause 430.
- Fabricated underlay: not required.
- Flooring roll: slip resistant heavy duty PVC.
  - Manufacturer: Gerflor Ltd, Wedgnock House, Wedgnock Lane, Warwick, CV34 5AP. Tel: 01926 401500 E: contractuk@gerflor.com.
  - Product reference: Tarasafe Ultra Comfort.
  - BS EN 685 class: 34 / 43 EN 660/1: Abrasion Resistance: 0.08 mm.
  - Recycled content: Submit proposals.
  - Width: 2000mm.
  - Thickness: 3.2 mm.
  - Colour/ pattern: (colour to be confirmed - refer to architects schedule).
- Adhesive (and primer if recommended by manufacturer): Gerfix E120 Adhesive or as recommended by manufacturer.
- Seam welding: all seams must be hot welded using Gerflor matching weld rod and as per manufacturers instructions.
- Accessories: Edging trim for thresholds as clause 740.
- Finishing: sweep / vacuum, damp mopping with neutral detergent.
- Other requirements: None.

## 150E SHEETING - VINYL

- Location: 2nd Floor I.T. room..
- Base: Self-leveling screed as clause M13/120..
  - Preparation: As clause 430.
- Fabricated underlay: not required.
- Flooring roll: slip resistant heavy duty PVC.
  - Manufacturer: Gerflor Ltd, Wedgnock House, Wedgnock Lane, Warwick, CV34 5AP. Tel: 01926 401500 E: contractuk@gerflor.com.
  - Product reference: Mipolam Robust EL7 t.
  - BS EN 685 class: 34 / 43 EN 660/1: Abrasion Resistance: 0.08 mm.
  - Recycled content: Submit proposals.
  - Width: 2000mm.
  - Thickness: 2 mm.
  - Colour/ pattern: (colour to be confirmed - refer to architects schedule).
- Adhesive (and primer if recommended by manufacturer): Gerfix E120 Adhesive or as recommended by manufacturer.
- Seam welding: all seams must be hot welded using Gerflor matching weld rod and as per manufacturers instructions.
- Accessories: Edging trim for thresholds as clause 740, Skirtings around perimeter.
- Finishing: sweep / vacuum, damp mopping with neutral detergent.
- Other requirements: None.

## 151 SHEETING - VINYL

- Location: Cafe public area. Refer Architects floor finishes drawings.
- Base: Self-leveling screed as clause M13/120..
  - Preparation: As clause 430.
- Fabricated underlay: not required.
- Flooring roll: PVCI.
  - Manufacturer: Gerflor Ltd, Wedgnock House, Wedgnock Lane, Warwick, CV34 5AP. Tel: 01926 401500 E: contractuk@gerflor.com.
  - Product reference: Premium Comfort Metallica.
  - BS EN 685 class: 34 / 43 EN 660/1: Abrasion Resistance: 0.08 mm.
  - Recycled content: Submit proposals.
  - Width: tiles.
  - Thickness: 3.25mm.
  - Colour/ pattern: (to be confirmed) - refer to architects schedule).
- Adhesive (and primer if recommended by manufacturer): As clause 640.
- Seam welding: as per manufacturers instructions.
- Accessories: Edging trim for thresholds as clause 740. Skirtings where required.
- Finishing: sweep / vacuum, damp mopping with neutral detergent.
- Other requirements: None.

## 151A SHEETING - VINYL

- Location: Cafe/ Balcony, Bridge.Refer Architects floor finishes drawing..
- Base: Self-levelling screed as clause M13/120..
  - Preparation: As clause 430.
- Fabricated underlay: not required.
- Flooring roll: PVCi.
  - Manufacturer: Gerflor Ltd, Wedgnock House, Wedgnock Lane, Warwick, CV34 5AP. Tel: 01926 401500 E: contractuk@gerflor.com.
  - Product reference: Creation Wood.
  - BS EN 685 class: 34 / 43 EN 660/1: Abrasion Resistance: 0.08 mm.
  - Recycled content: Submit proposals.
  - Width: tiles.
  - Thickness: 2.5mm.
  - Colour/ pattern: (to be confirmed) - refer to architects schedule).
- Adhesive (and primer if recommended by manufacturer): As clause 640.
- Seam welding: as per manufacturers instructions.
- Accessories: Edging trim for thresholds as clause , Skirtings as necessary 740.
- Finishing: sweep / vacuum, damp mopping with neutral detergent.
- Other requirements: None.

## 153 SHEETING - VINYL

- Location: Multi Purpose room.
- Base: Self-levelingd screed M13/120..
  - Preparation: As clause 430.
- Fabricated underlay: not required.
- Flooring roll: slip resistant heavy duty PVC.
  - Manufacturer: Gerflor Ltd, Wedgnock House, Wedgnock Lane, Warwick, CV34 5AP. Tel: 01926 401500 E: contractuk@gerflor.com.
  - Product reference: Tarasafe Sport Performance Plus.
  - BS EN 685 class: n/a.
  - Recycled content: Submit proposals.
  - Width: 1500mm.
  - Thickness: 9.0mm.
  - Colour/ pattern: (colour to be confirmed - refer to architects schedule).
- Adhesive (and primer if recommended by manufacturer): Gerfix E120 Adhesive or as recommended by manufacturer.
- Seam welding: as per manufacturers instructions.
- Accessories: Edging trim for thresholds as clause 740, Skirtings by sheeting supplier Product Reference 0471 Flexible Skirting.
- Finishing: sweep / vacuum, damp mopping with neutral detergent.
- Other requirements: None.

**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.

## 220 SAMPLES

- Covering samples: Before placing orders, submit representative sample of each type.

## 230 CONTROL SAMPLES

- General: Complete areas of finished work in approved locations as follows, and obtain approval of appearance before proceeding: to be agreed dependent on programme of work .

## 250 LAYOUT - ROLL MATERIALS

- Setting out of seams: Agree setting out for sheeting types M50/ 151 .

## 251 LAYOUT - SEAMS IN ROLL MATERIALS

- Setting out: Minimise occurrences of seams and cross seams.
- Cross seams: Not permitted in following locations: not applicable.

## 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.

## 360 FLOORS WITH UNDERFLOOR HEATING

- Commencement of laying: Not before a period of 48 hours after heating has been turned off.
- Post laying start up of heating system: Slowly return heating to its operative temperature not less than 48 hours after completing laying.

**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.

## 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, Annexe A or BS 8203, Annexe 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.

**LAYING COVERINGS**

## 620 COLOUR CONSISTENCY

- Finished work in any one area/ room: Free from banding or patchiness.

## 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.

## 650 SEAMS

- Patterns: Matched.
- Joints: Tight without gaps.

## 670 BORDERS/ AND FEATURE STRIPS IN SHEET MATERIAL

- Curl: Not acceptable.
- Corners: Mitre joints.

## 680 SEAM WELDING COVERINGS

- Commencement: At least 24 hours after laying, or after adhesive has set.
- Joints: Neat, smooth, strongly bonded, flush with finished surface.

## 690 SEAM BONDING CARPET

- Carpet types: M50/ 186 .
- Seaming adhesive application: Continuous bead to edges.
- Joints: Securely bonded, free of air bubbles.

## 720 DOORWAYS

- Joint location: On centre line of door leaf.

- 740 EDGINGS AND COVER STRIPS
- Manufacturer: Gerflor Ltd, Wedgnoek House, Wedgnoek Lane, Warwick, CV34 5AP. Tel: 01926 401500 E: contractuk@gerflor.com .
    - Product reference: connecting proile - attraction H205 (aluminium), P1509 ref 0496, colour black 6512, P1224 ref 0495, colour black 6512 Different profiles as required to tie in thresholds/connections. .
  - Material/ finish: see above .
  - Fixing: Secure with edge of covering gripped. Use matching fasteners where exposed to view
- 740A EDGINGS AND COVER STRIPS
- Manufacturer: Gradus.
    - Web: www.gradusworld.com.
    - Email: sales@gradusworld.com.
    - Product reference: Aluminium Welded Corner/ Trimming Strip TA5B.
  - Colour: Not required.
- 750 STAIR NOSINGS AND TRIMS
- Manufacturer: Gerflor Ltd, Wedgnoek House, Wedgnoek Lane, Warwick, CV34 5AP. Tel: 01926 401500 E: contractuk@gerflor.com .
    - Product reference: AK 50 A stair nosing colour - see schedule.
  - Material/ finish: Standard.
  - Fixing: Secure, level and with mitred joints. Adjusted to suit thickness of covering with continuous packing strips of hardboard or plywood. Nosings and packing strips bedded in gap-filling adhesive recommended by nosing manufacturer.
    - Screw fixing with matching plugs: Not required.
- 750A STAIR NOSINGS AND TRIMS
- Manufacturer: As Clause 750B .
    - Product reference: ASXT20.
  - Material/ finish: Standard.
  - Fixing: Secure, level and with mitred joints. Adjusted to suit thickness of covering with continuous packing strips of hardboard or plywood. Nosings and packing strips bedded in gap-filling adhesive recommended by nosing manufacturer.
    - Screw fixing with matching plugs: Required.
- 750B STAIR NOSINGS AND TRIMS
- Manufacturer: Gradus.
    - Web: www.gradusworld.com.
    - Email: sales@gradusworld.com.
    - Product reference: ASXT20.
  - Insert/ Colour: Interior insert, T.B.C..
- 770 SKIRTINGS
- Types: PVC.
  - Manufacturer: Gerflor Ltd, Wedgnoek House, Wedgnoek Lane, Warwick, CV34 5AP. Tel: 01926 401500 E: contractuk@gerflor.com.
    - Product reference: 0481 Profil combined cove former and capping strip generally. Multi-purpose room Product reference 0471 flexible skirting. .
  - Fixing: Secure with top edge straight and parallel with floor.
    - Corners: Mitre joints.
- 780 TRAFFICKING AFTER LAYING
- Covering types: vinyl flooring.
  - Traffic free period: Until adhesive is set.

**COMPLETION****820 FINISHING VINYL FLOORING**

- 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.

**825 FINISHING NON-TEXTILE ANTISTATIC FLOORING**

- 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 for not less than 24 hours before testing.

**880 WASTE**

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

**M**  
**Surface finishes**

**M51**  
**Edge fixed carpeting**

## M51 Edge fixed carpeting

To be read with Preliminaries/ General conditions.

### TYPES OF CARPETING

- 110A CARPETING:
- Location RECEPTION DESK CONTROL
  - Base: Power floated concrete.
    - Preparation: Not required.
  - Fabricated underlay: None.
  - Interlay: None .
  - Underlay to BS 5808 and BS EN 14499:
    - Manufacturer: BURMATEX.  
Product reference: Manufacturers Standard.
    - Type: Plastics (polymeric).
    - Class: HC/U.
    - Recycled content: Submit proposals.
  - Carpet:
    - Manufacturer: BURMATEX.  
Product reference: 4200 sidewalk.
    - Type: Tufted.
    - BS EN 1307 classification:
      - Category: Type 1.
      - Level of use class: 33 .
      - Luxury rating class: LC3.
    - Recycled content: Submit proposals.
    - Colour/ pattern: Refer Architects schedule.
    - Width: ??? mm.
  - Method of seaming: To approval.
  - Method of fixing: Carpet gripper.
  - Methods of fixing at openings/ free edges: Edging strip at junctions with plastics flooring.

### GENERAL/ PREPARATION

- 210 WORKMANSHIP GENERALLY
- Finished carpeting: Tightly seamed, accurately fitted, neatly and securely fixed, smooth and evenly tensioned.
- 220 SAMPLES
- Carpet samples: Before placing orders, submit representative sample of each type of carpet.
    - Size (minimum): 1 metre square.
- 230 CONTROL SAMPLES
- General: Complete areas of finished work in approved locations as follows, and obtain approval of appearance before proceeding:
    - Carpet M51/110A1 .
- 250 CARPET LAYOUT - PRE-ORDER REQUIREMENTS
- Setting out: Agree seam locations and pattern.

- 270    **EXTRA MATERIAL**
- Provision of extra material: At completion hand to Employer.
    - Quantity: 25 sq.metres ? .
- 290    **CONDITIONING CARPET**
- Requirements: As recommended by manufacturer.
- 310    **CONDITION OF WORKS PRIOR TO LAYING**
- General requirements:
    - Building weathertight and well dried out.
    - Wet trades complete.
    - Paintwork complete and dry.
    - Floor service outlets, duct covers and other fixtures around which carpet is to be cut, fixed.
- 315    **NOTIFICATION OF COMMENCEMENT**
- Give notice: Before laying is due to start.
    - Period of notice (minimum): 48 hours.
- 320    **ENVIRONMENT**
- Temperature and humidity: Before, during and after laying, maintain approximately at levels which will prevail after building is occupied.
- 330    **SUITABILITY OF BASES**
- General: Commencement of laying carpeting will be taken as acceptance of suitability of bases.
- 340    **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, Annexe A.
    - Locations for readings: In all corners, along edges, and at various points over area being tested.
  - Commencement of laying carpeting: Not until all readings show 75% relative humidity or less.
- LAYING CARPETING**
- 410    **CARPET GRIPPER**
- Manufacturer: Burmatex.
    - Product reference: Burmatex Gripper.
  - Types and method of fixing: As recommended by gripper manufacturer to suit specified carpet, base and conditions of use.
  - Fixing: Secure to form continuous length along all edges adjacent to vertical surfaces leaving a 'gully width' of approximately three quarters the thickness of carpet. Do not place across openings.
    - Adhesive fixed gripper strip unit length (maximum): 200 mm.
- 420    **INTERLAY**
- Placement: Fully cover base, with no wrinkles, folds, overlapping or gaps (other than to allow for expansion). Lay at right angles to direction of boarded floors.

- 450     **CARPET SEAMS/ JOINTS**
- General: Straight, flat, evenly tensioned and butted, with no surface pile trapped between edges.
  - Method and materials: Compatible with carpet and as recommended by manufacturers.
  - Bond strength: Consistent for full length of seam, sufficient to withstand stretching without opening up and to last the life of carpet.
  - Pattern matching: (where applicable): Accurately matched for full length of seam.
- 460     **RAW EDGE SEAMS (INCLUDING CROSS SEAMS)**
- Treatment prior to seaming: Strengthen with cross straps and make secure by sealing, whipping or binding.
- 470     **LAYING CARPET GENERALLY**
- Appearance of laid carpet: Pieces of the same carpet type capable of being seen together to be of consistent appearance with pile lying in the same direction.
  - Carpet perimeter: Accurately and closely fitted leaving no gaps. Edges turned down and secured to grippers.
  - Carpet tension: Even, and such that carpet lies flat and will not ruck, ripple or become slack.
  - Doorways and recesses: Cut carpet in. Do not piece in without prior approval.
- 480     **POWER STRETCHING**
- General: Power stretch carpets greater than 5 metres in any dimension.
- 490     **DOORWAYS**
- Carpet joint: On centre line of door leaf.
- 510     **EDGINGS AND COVER STRIPS**
- Manufacturer: GRADUS.
    - Product reference: Clip Top FX.
  - Material/ finish: Silver.
  - Fixing: Secure with edge of carpet firmly gripped. Use matching fasteners where exposed to view.
- 510A    **TRANSITION STRIP Gym / Curved Walkway, Carpet / Vinyl**
- Manufacturer: Gradus.
    - Web: [www.gradusworld.com](http://www.gradusworld.com).
    - Email: [sales@gradusworld.com](mailto:sales@gradusworld.com).
    - Product reference: Clip-Top.
  - Product codes:
    - Top: FXR40.
    - Colour: Silver.
    - Base: AFT336.
  - Carpet gripper: Required.
  - Length: refer drawing.
  - Installation: As Manufacturers details.

**510B TRANSITION STRIP Sports Vinyl / Carpet**

- Manufacturer: Gradus.
  - Web: [www.gradusworld.com](http://www.gradusworld.com).
  - Email: [sales@gradusworld.com](mailto:sales@gradusworld.com).
  - Product reference: Clip-Top.
- Product codes:
  - Top: PTT1.
    - Colour: Silver.
  - Base: MPT85.
- Carpet gripper: Required.
- Length: refer drawing.
- Installation: As Manufacturers details.

**510C TRANSITION STRIP Conc. Floor / Vinyl**

- Manufacturer: Gradus.
  - Web: [www.gradusworld.com](http://www.gradusworld.com).
  - Email: [sales@gradusworld.com](mailto:sales@gradusworld.com).
  - Product reference: Clip-Top.
- Product codes:
  - Top: T300.
    - Colour: Silver.
  - Base: T300.
- Carpet gripper: Required.
- Length: refer drawing.
- Installation: As Manufacturers details.

**510D TRANSITION STRIP Carpet / Vinyl**

- Manufacturer: Gradus.
  - Web: [www.gradusworld.com](http://www.gradusworld.com).
  - Email: [sales@gradusworld.com](mailto:sales@gradusworld.com).
  - Product reference: Clip-Top.
- Product codes:
  - Top: RT46.
    - Colour: Silver.
  - Base: AFT15.
- Carpet gripper: Required.
- Length: refer drawing.
- Installation: As Manufacturers details.

**510E TRANSITION STRIP Vinyl / Vinyl**

- Manufacturer: Gradus.
  - Web: [www.gradusworld.com](http://www.gradusworld.com).
  - Email: [sales@gradusworld.com](mailto:sales@gradusworld.com).
  - Product reference: Clip-Top.
- Product codes:
  - Top: JT365.
    - Colour: Silver.
  - Base: JT365.
- Carpet gripper: Required.
- Length: refer drawing.
- Installation: As Manufacturers details.

## 510F TRANSITION STRIP Ceramic Tile/ Vinyl

- Manufacturer: Gradus.
  - Web: [www.gradusworld.com](http://www.gradusworld.com).
  - Email: [sales@gradusworld.com](mailto:sales@gradusworld.com).
  - Product reference: Clip-Top.
- Product codes:
  - Top: ELAR 70940.  
Colour: Silver.
  - Base: ELAR 709 40.
- Carpet gripper: Required.
- Length: refer drawing.
- Installation: As Manufacturers details.

## 510G TRANSITION STRIP Stair Nosings

- Manufacturer: Gradus.
  - Web: [www.gradusworld.com](http://www.gradusworld.com).
  - Email: [sales@gradusworld.com](mailto:sales@gradusworld.com).
  - Product reference: Clip-Top.
- Product codes:
  - Top: AK 50 A.  
Colour: Silver.
  - Base: AK 50 A.
- Carpet gripper: Required.
- Length: refer drawing.
- Installation: As Manufacturers details.

## 570 COMPLETION

- Debris: Remove stay tacks and cut away partly loose warp and face yarns.
- Surface irregularities and tension: Check and make necessary tension adjustments.

## 580 WASTE

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

**M**

**Surface finishes**

**M60**  
**Painting/clear finishing**

## M60 Painting/clear finishing

To be read with Preliminaries/General conditions.

### COATING SYSTEMS

- 110 EMULSION PAINT TO INTERNAL BLOCKWORK WALLS
- Manufacturer: As Clause 110A.
    - Product reference: Crown Trade Silk Vinyl Emulsion.
  - Surfaces: as clause title and schedule.
    - Preparation: As clauses 400, 440 .
  - Initial coats: As recommended by manufacturer .
    - Number of coats: 1 .
  - Undercoats: As recommended by manufacturer .
    - Number of coats: 0 .
  - Finishing coats: Crown Trade Silk Vinyl - refer to schedule .
    - Number of coats: 2 .
- 110A EMULSION PAINT
- Manufacturer: Crown Paints Ltd.
    - Web: [www.crownpaint.co.uk](http://www.crownpaint.co.uk).
    - Email: [crown@publicasity.co.uk](mailto:crown@publicasity.co.uk).
    - Product reference: Silk Vinyl Emulsion
  - Colour: As schedule.
- 111 EMULSION PAINT TO INTERNAL BOARDED PARTITION WALLS
- Manufacturer: Crown Trade .
    - Product reference: Silk Vinyl emulsion.
  - Surfaces: as clause title and schedule.
    - Preparation: As clauses 400 .
  - Initial coats: As recommended by manufacturer .
    - Number of coats: 1 .
  - Undercoats: As recommended by manufacturer .
    - Number of coats: 0 .
  - Finishing coats: Crown trade Silk vinyl, colour - refer to schedule .
    - Number of coats: 2 .
- 111A EMULSION PAINT TO SUSPENDED CEILING PERIMETER TRIMS
- Manufacturer: Crown Trade.
    - Product reference: Matt Vinyl Emulsion.
  - Surfaces: as clause title and schedule.
    - Preparation: As clauses 400 .
  - Initial coats: As recommended by manufacturer .
    - Number of coats: 1 .
  - Undercoats: As recommended by manufacturer .
    - Number of coats: 0 .
  - Finishing coats: Crown trade Matt vinyl, colour - refer to schedule .
    - Number of coats: 2 .

- 111B EMULSION PAINT TO UNDERSIDE OF STAIRS AND STAIRWELLS
- Manufacturer: Crown Trade.
    - Product reference: Matt Vinyl Emulsion.
  - Surfaces: as clause title and schedule.
    - Preparation: As clauses 400 .
  - Initial coats: As recommended by manufacturer .
    - Number of coats: 1 .
  - Undercoats: As recommended by manufacturer .
    - Number of coats: 0 .
  - Finishing coats: Crown trade vinyl matt, colour - refer to schedule .
    - Number of coats: 2 .
- 130 GLOSS PAINT TO PLYWOOD FACED DOORS & MDF FACINGS IN BASEMENT(I)
- Manufacturer: Crown Trade .
    - Product reference: Full Gloss .
  - Surfaces: as clause title and schedule .
    - Preparation: As clauses 400 .
  - Initial coats: As recommended by manufacturer .
    - Number of coats: 1 .
  - Undercoats: As recommended by manufacturer .
    - Number of coats: 0 .
  - Finishing coats: Full gloss .
    - Number of coats: 2 .
- 160 DECORATIVE WOODSTAIN/ VARNISH/ PRESERVATIVE TO INTERNAL EXPOSED HARDWOOD
- Manufacturer: As Clause 160A .
    - Product reference: Sadolin .
  - Surfaces: American Oak joinery .
    - Preparation: As clauses 400 .
  - Initial coats: As recommended by manufacturer .
    - Number of coats: 0 .
  - Finishing coats: Sadolin Clear Varnish .
    - Number of coats: 3 .
- 160A DECORATIVE WOODSTAIN VARNISH PRESERVATIVE
- Manufacturer: Sadolin, product of Crown Paints Ltd.
    - Web: [www.sadolin.co.uk](http://www.sadolin.co.uk).
    - Email: [info@sadolin.co.uk](mailto:info@sadolin.co.uk).
    - Product reference: Polyurethane Varnish
  - Finish: Gloss.
  - Colour: As drawing Clear.
- 175 PROTECTIVE COATING To Concrete Stair (North)
- Manufacturer: As Clause 175A.
    - Product reference: Dekguard Clear.
  - Surfaces: Pre-cast Concrete.
    - Preparation: As clauses 400, 440.
  - Initial costs: As recommended by manufacturer1.
    - Number of coats: 1.
  - Undercoats: As recommended by manufacturer.
    - Number of coats: 1.
  - Finishing coats: 1.
  - Application: Brush.
    - Number of coats: 1.

## 175A PROTECTIVE COATING

- Manufacturer: Fosroc Ltd.
- Web: [www.fosroc.com](http://www.fosroc.com).
- Email: [uk@fosroc.com](mailto:uk@fosroc.com).
- Product reference: Dekguard Clear

## 180 FLOOR COATING TO EXPOSED CONCRETE FLOORS

- Manufacturer: Azko Nobel Decorative Coatings Ltd, PO Box 37, Crown House, Hollins Road, Darwen, Lancashire. BB3 0BG Tel:01254 704 951.
- Product reference: Crown Trade Epimac Anti-slip floor paint.
- Surfaces: New concrete floors.
- Preparation: As clauses 400.
- Initial coats: Prime with Crown Trade Epimac anti slip floor paint, thinned up to 10% by volume with clean white spirit as per manufacturers directions.
- Number of coats: 1.
- Finishing coats: Crown Trade Epimac Anti-slip floor paint.
- Number of coats: 2.

## 180A FLOOR COATING

- Manufacturer: Crown Paints Ltd.
- Web: [www.crownpaint.co.uk](http://www.crownpaint.co.uk).
- Email: [crown@publicasity.co.uk](mailto:crown@publicasity.co.uk).
- Product reference: Epimac Anti-Slip Floor Paint
- Colour: Grey , as Drawing.

195A FINISH COATING To Swimming Pool steelwork generally  
Finish coats must be compatible with steelwork protection chosen within N.B.S. clause G.10 / 660.

Information provided in this clause is for guidance only.

All finish coats to be agreed with Architect prior to site application.

- Manufacturer: Akzo Nobel.
- Product reference: As recommended by manufacturer.
- Surfaces: Steelwork.
- Preparation: As clauses 400, 440.
- Initial coats: As recommended by manufacturer.
- Number of coats: As recommended by manufacturer.
- Undercoats: As recommended by manufacturer.
- Number of coats: As recommended by manufacturer.
- Finishing coats: High Gloss White finish to be fully compatible with undercoat and primer.
- Number of coats: As recommended by manufacturer..

**GENERALLY**

## 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. Allocate to distinct parts or areas of the work.

- 220 COMPATIBILITY
- Coating materials selected by contractor:
    - Recommended by their manufacturers for the particular surface and conditions of exposure.
    - Compatible with each other.
    - Compatible with and not inhibiting performance of preservative/fire retardant pretreatments.
- 240 SURFACES NOT TO BE COATED
- refer to drawings, schedules.
- 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.
- 300 CONTROL SAMPLES
- Sample areas of finished work: Carry out, including preparation, as follows:
 

Types of coating	Nature of sample
M60/ 195 .	Undercoat and Finishing Coat .
  - Approval of appearance: Obtain before commencement of general coating work.
- 310 SUPERVISED CONTROL SAMPLES
- Sample areas of finished work: Carry out, including preparation, as follows:
 

Types of coating	Nature of sample
M60/ 195 .	Undercoat and Finishing Coat .
  - Inspection: Give notice when each stage is ready for inspection.
    - Approval of appearance: Obtain before commencement of general coating work.
- 320 INSPECTION BY COATING MANUFACTURERS
- General: Permit manufacturers to inspect work in progress and take samples of their materials from site if requested.
- 321 INSPECTION OF WORK STAGES
- Programme for inspections: Submit as follows:
 

Types of coating	Inspection at completion of
M60/ 195 .	Finishing Coat .
  - Inspection: Give prior notice when each stage is ready for inspection.

**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, to 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.

**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.
  - Significant rot, corrosion or other degradation of substrates.
- Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
- 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.

**471 PREPRIMED WOOD**

- Areas of defective primer: Take back to bare wood and reprime.

**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.

- 500    **PREPRIMED STEEL**
- Areas of defective primer, corrosion and loose scale: Take back to bare metal. Reprime as soon as possible.
- 511    **GALVANIZED, SHERARDIZED AND ELECTROPLATED STEEL**
- White rust: Remove.
  - Pretreatment: Apply one of the following:
    - 'T wash'/ mordant solution to blacken whole surface.
    - Etching primer recommended by coating system manufacturer.
- 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.
- 531    **UNCOATED STEEL - BLAST CLEANING**
- Oil and grease: Remove.
  - Blast cleaning:
    - Atmospheric conditions: Dry.
    - Abrasive: Suitable type and size, free from fines, moisture and oil.
    - Surface finish: To BS EN ISO 8501-1, preparation grade Sa2.
  - Primer: Apply as soon as possible and within four hours of blast cleaning.
- 560    **UNCOATED CONCRETE**
- Release agents: Remove.
- 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
- 601    **UNCOATED PLASTERBOARD - TO RECEIVE TEXTURED COATING**
- Joints: Fill, tape and feather out with materials recommended by textured coating manufacturer.
- 645    **SEALING OF INTERNAL MOVEMENT JOINTS**
- General: To junctions of walls and ceilings with architraves, skirtings and other trims.
  - Sealant: Water based acrylic.
    - Manufacturer: Crown Trade.
    - Product reference: Crown trade Sealant.
    - Preparation and application: As section Z22.

**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.

**720 PRIMING JOINERY**

- Preservative treated timber: Retreat cut surfaces with two flood coats of a suitable preservative before priming.
- End grain: Coat liberally allow to soak in, and recoat.

**730 WORKSHOP COATING OF CONCEALED JOINERY SURFACES**

- General: Apply coatings to all surfaces of components.

**731 SITE COATING OF CONCEALED JOINERY SURFACES**

- General: After priming, apply additional coatings to surfaces that will be concealed when fixed in place.
  - Components: External door frames.
  - Additional coatings: One undercoat.

**751 STAINING WOOD**

- Primer: Apply if recommended by stain manufacturer.
- Application: Apply in flowing coats and brush out excess stain to produce uniform appearance.

**760 VARNISHING WOOD**

- First coat: Thin with plant oil based thinner.
  - Brush well in and lay off avoiding aeration.
- Subsequent coats: Rub down lightly along the grain between coats.

**770 EXTERNAL DOORS**

- Bottom edges: Prime and coat before hanging doors.

**780 BEAD GLAZING TO COATED WOOD**

- Before glazing: Apply first two coats to rebates and beads.

**800 GLAZING**

- Etched, sand blasted and ground glass: Treat or mask edges before coating to protect from contamination by oily constituents of coating materials.

**810 WATER REPELLENT**

- Application: Liberally flood surface, giving complete and even coverage.

**M**  
**Surface finishes**

**M61**

**Intumescent coatings for fire protection of steelwork**

## M61 Intumescent coatings for fire protection of steelwork

To be read with Preliminaries/General conditions

### PROTECTIVE COATING SYSTEMS

#### 115 ON SITE COATING TO GALVANIZED STEEL INTERNALLY

- Use/ Location: Service Block .
- Fire resistance to BS 476-21: 60 minutes.
- Preparation: Degrease and clean thoroughly.
- Pretreatment: Mordant solution .
- Primer: Zinc phosphate as recommended by intumescent coating manufacturer.
- Intumescent coat:
  - Manufacturer: As clause 115A.
  - Product reference: Nullifire System S707-60.
  - Finish: Visible areas: High decorative, as clause 460.
- Top sealer coat: Type recommended by intumescent coating manufacturer.
  - Dry film thickness: As recommended by manufacturer.
  - Colour: Blue, BS 4800 18 E 51.
- Bolt head/ nut protection: Fire insulating caps.

#### 115A ON SITE COATING TO GALVANIZED STEEL

- Manufacturer: Nullifire Ltd.
  - Web: [www.nullifire.com](http://www.nullifire.com).
  - Email: [protect@nullifire.com](mailto:protect@nullifire.com).
  - Product reference: Nullifire S602/603 Basecoat
- Fire resistance to BS 476-21: 60 minutes.
- Primer: S-620 High Build Zinc Phosphate Primer.
- Top sealer:
  - Type: TS-816.
  - Coats: 2.
  - Colour: RAL ??/.

### GENERAL REQUIREMENTS

#### 210 WORKING PROCEDURES

- Standard: To BS 8202-2.
- Give notice: Before commencing surface preparation and coating application.
- Quality control: Record project specific procedures for surface preparation and coating application.

#### 215 WORKING CONDITIONS

- General: Maintain suitable temperature, humidity and air quality during coating application and drying.
- Surfaces to be coated: Clean and dry at time of coating application.

#### 220 APPLICATOR'S PERSONNEL

- Operatives: Trained/ experienced in anticorrosive and intumescent coatings.
- Evidence of training/ experience: Submit on request.

## 260 CONTROL SAMPLES

- General: Carry out sample areas of finished work as follows:  
One column and two adjoining beams.
- Approval of appearance: Obtain before commencement of general coating application.

## 270 INSPECTION

- Permit intumescent coating manufacturer to:
  - Inspect work in progress.
  - Inspect quality control records.
  - Take dry film thickness and other measurements.
  - Take samples of coating products.
- Intumescent coating manufacturer's inspection reports: Submit without delay.

**PREPARATION OF SURFACES**

## 315 NEW STEEL - BLAST CLEANING

- Preparation: Remove oil and grease.
- Blast cleaning:
  - Atmospheric condition: Dry.
  - Abrasive: Suitable type and size, free from fines, moisture and oil.
  - Finish: To BS EN ISO 8501-1, preparation grade SA2½, with an average profile of approximately 75 micrometres.
  - Abrasive residues and moisture: Remove.
- Primer: Apply as soon as possible after cleaning and before gingering or blackening appears.

**APPLICATION OF COATINGS**

## 410 INTUMESCENT DRY FILM THICKNESS (DFT)

- Required dft: Determine for every steel member to give specified period of fire resistance. Use intumescent coating manufacturer's current published loading tables.
  - Special sections and partial fire exposure conditions: Obtain required dft in writing from manufacturer.
- Schedule and drawings: Submit at least two weeks before starting work.
  - Schedule content: Member sizes, weights/thicknesses, loading conditions, etc. showing, for each variant, the exposed perimeter/ sectional area (Hp/A) ratio and required dft.
  - Drawing content: Steelwork drawings marked in colour to show required dft for each member.

## 420 MEASUREMENT OF INTUMESCENT DFT

- Primer dft: Determine average dft (for deduction from total dft after application of intumescent).
- Intumescent dft: Determine at:
  - 500 mm centres along each coated plane of universal sections (8 planes), and rectangular hollow sections (4 planes).
  - 125 mm centres along coated circular hollow sections, spread evenly around circumference.
- Acceptance standard:
  - Average intumescent dft: Not less than required dft (exclusive of primer and top sealer).
  - Local intumescent dft: Not less than 80% of required dft. Areas greater than 100 mm equivalent diameter with a dft of less than 80% of required dft must be brought up to thickness.

**450 NORMAL DECORATIVE FINISH**

- Definition: Good standard of cosmetic finish generally, when viewed from a distance of 5 m or more. Minor orange peel or other texture is acceptable.

**460 HIGH DECORATIVE FINISH**

- Definition: High standard of evenness, smoothness and gloss when viewed from a minimum distance of 2 m.

**490 TOP SEALER COAT**

- Application: To achieve dft recommended by manufacturer and to give an even, solid, opaque appearance, free from runs, sags and other visual defects.

**530 RECORDS OF COATED STEEL**

- On completion of intumescent coating work, submit:
  - Accurate surface preparation and coating application records.
  - Fire resistance certificates.
  - Intumescent coating manufacturer's recommendations for maintenance and overcoating.

**N**  
**Furniture/Equipment**

**N10**

**General fixtures/ furnishings/ equipment**

## N10 General fixtures/ furnishings/ equipment

To be read with Preliminaries/General conditions.

### PRODUCTS

- 110 PURPOSE MADE Reception desk/Control desk to Ground Floor Foyer (refer Dwg 470)  
Ground Floor Changing Room Reception Counter (refer Dwg 470)  
Fitness-suite Control desk,Admin desk (refer Dwg. 470)  
Second Floor Reception Desk to Swimming lessons Team (refer  
Dwg 471
- Manufacturer: Lam-Art (Dundee ) Limited  
122 Liff Road  
DD2 2TL  
Telephone 01382 612 222.
  - Performance: To BS EN 527-2.
  - Dimensions: To BS 5873-1.
  - Timber: To BS EN 942.
    - Species: Softwood as table NA.1..
    - Appearance class: J2.
    - Moisture content on delivery: 12 to 16%.
  - Wood based boards: None required..
  - Metal: None.
    - Grade: 1.4404.
  - Other materials: Laminate Dark Anthracite Fino SKU F7684 TC laminate top, 15mm clear varnished corniced oak edge trim..
  - Finishes: Panels : Laminate faced plywood manufactured to an approved national standard,Class 1 bonding quality to BS EN 314-2,appearance class E to BS EN 635-2 with sanded grade finish Formica Laminate colour : f4174 Atlantic plain colour.  
Skirtings:Laminate faced plywood manufactured to an approved national standard , Class 1 bonding quality to BS EN 314-2 , appearance class E to BS EN 635-2 with sanded grade finish Formica Laminate colour f2297 Terril plain colour.As per Architects details 470 and 471.
  - Adhesive: To BS EN 204 durability class D1.
  - Fixings: As per manufacturers fabrication drawings.
    - Fasteners: N/A.
  - Joinery workmanship: As section Z10.
  - Metalwork materials and workmanship: As section Z11.
  - Other requirements: None.

- 135A STORAGE UNITS To Reception Foyer,First-Aid room,Lifeguard tea room Multi-purpose Room cabinet housing,Staff room.Refer drawings 470 & 471.
- Item: Filing Cabinet.
  - Manufacturer: Viking.
    - Product reference: Viking 3DR-BK.
  - Dimensions: Refer Architects drawings.
  - Test level to BS 5459-3: H.
  - Doors/ Drawers:
    - Material: Steel Constuction with 2 smooth action drawers with polypropylene break-resistant handles..
    - Finish/ Colour: AS Manufacturers Standard..
  - Outer panels/ Plinths/ Shelves:
    - Material: Sheet steel powder coated as section Z33.
    - Finish/ Colour: T.B.C..
  - Frames/ Legs:
    - Material: Not required.
    - Finish/ Colour: T.B.C..
  - Other requirements: None.
- 160 SHELVING SYSTEM FOR GENERAL OFFICES, TEA ROOM,STAFF ROOMS.
- Manufacturer: Contractor's choice.
    - Product reference: N/A.
  - Shelves:
    - Material: Plastics laminate on 20mm thick blockboard.
    - Finish/ Colour: Refer drawings 523,526.528,529.
  - Other components: Support brackets.
- 160A SHELVING SYSTEM VENDING STORE,POOLSIDE STORES
- Manufacturer: Dexion Shelving.
    - Product reference: Economy.
  - Shelves:
    - Material: PowderCoated metal to RAL colour.
    - Finish/ Colour: Refer drawings 523,526.528,529.
  - Other components:
    - Back panels;
    - Feet; and
    - Support brackets.
- 165 OFFICE SHELVING SYSTEM GENERAL OFFICES
- Standard: To BS 5459-3.
  - Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
  - Test level: To BS 5459-3: H.
  - Shelves:
    - Material: Laminate on particleboard.
    - Finish/ Colour: Refer drawings 523.526,528,529.
  - Other components: End panels and Support brackets.
- 170 BENCHES FOR TEAM CHANGING ROOMS
- Manufacturer: Agrément certified.
    - Product reference: Refer Tile Supplier.
  - Material: Extruded Tile.
  - Finish/ Colour: Extruded Tile.
  - Fittings: Coat hooks and Numbering.

- 170A BENCHES AND LINKED SEATSTo Lifeguard Shower Cubicles
- Manufacturer: Armitage Venesta Washroom Systems Ltd.
  - Web: [www.armitage-venesta.co.uk](http://www.armitage-venesta.co.uk).
  - Email: [lockej@aseur.com](mailto:lockej@aseur.com).
  - Product reference: Cubicle benching with support frame
- 170B BENCH SEATING
- Manufacturer: Prospec Ltd.
  - Web: [www.prospec.co.uk](http://www.prospec.co.uk).
  - Email: [sales@prospec.co.uk](mailto:sales@prospec.co.uk).
  - Product reference: Marathon Bench Seating
  - Brackets/ Frame: Galvanized.
  - Colour: T.B.C..
  - Seats slats: Compact grade laminate.
  - Colour/ Species: T.B.C..
  - Fittings: Coat hooks.
  - Fixing: Direct to floor.
- 170D BENCHES AND LINKED SEATS TO POOL AREA: COMPETITOR , FAMILY , SPECTATOR SEATING.
- Manufacturer: Figueras- Web: [www.figuerasuk.com](http://www.figuerasuk.com)
  - Email: [info@figueras.com](mailto:info@figueras.com). Telephone -34 93 844 50 70
  - Product reference: Model B-92/201 seat mounted on riser brackets , Model BR-92 / 200 seat on floor mounted support.
  - Refer Architects drawings 517 , 518 & 519.
- 188 BATHROOM AND WASHROOM EQUIPMENT
- Item: BABY CHANGE BEDS.
  - Manufacturer: Magrini.
  - Product reference: MH42 refs BC-1.
  - Finish/ Colour: White Fleck.
  - Fixing: Plugged and screwed to wall.
  - Other requirements: As standard.
- 195 NOTICEBOARDS RECEPTION.
- Type: Wall mounted.
  - Use: Pins.
  - Manufacturer: As clause 195A.
  - Product reference: Firecover Noticeboard Ref 6815.
  - Size: Refer drawing 480.
  - Fire resistance: Class B.
  - Board:
  - Covering finish/ Colour: Aluminium framed with high impact resistant polycarbonate..
  - Frame: Aluminium.
  - Finish/ Colour: Satin silver anodized.
  - Other requirements: Hinged , lockable. Safety glazing..
- 195A NOTICEBOARD
- Manufacturer: Spaceright Europe Ltd.
  - Web: [www.spacerighteurope.com](http://www.spacerighteurope.com).
  - Email: [sales@spacerighteurope.com](mailto:sales@spacerighteurope.com).
  - Product reference: Firecover Noticeboard, Aluminium Framed.
  - Code: As schedule 480.
  - Colour: Wine.

**200 WORKTOPS To Tea Prep Areas and Staff Kitchens**

- **Manufacturer:** JTC Furniture Group  
Camperdown Works,  
27 Harrison Road,  
Dundee, DD2 3SN
- Telephone :- 01382-833832.
- Product reference: Beech laminate on particle board as per drawings 523, 528, 529..
- **Material:** Beech Laminate covered particleboard, 40mm bull-nose.
- **Dimensions:** Refer Architects drawings 523, 528 & 529. .
- **Exposed edges:** Beech laminate.
- **Support:** Batten support at walls.
- **Other requirements:** Batten support at walls, Haffit to end panel..

**220B LOCKERS**

- **Manufacturer:** Prospec Ltd.
- Web: [www.prospec.co.uk](http://www.prospec.co.uk).
- Email: [sales@prospec.co.uk](mailto:sales@prospec.co.uk).
- Product reference: Laminate Lockers
- **Size:**
  - Height: 1800 mm.
  - Width: 300 mm.
  - Depth: 520 mm.
- **Configuration/ Type:** Two tier, two equal height compartments with coat hooks.
- **Door finish/ materials:**
  - Colour: Refer drawing 473.
- **Door frame colour:** Satin silver.
- **Support Plinths:** Blockwork.
- **Locking system:** Coin operated.

**220C LOCKERS**

- **Manufacturer:** Prospec Ltd.
- Web: [www.prospec.co.uk](http://www.prospec.co.uk).
- Email: [sales@prospec.co.uk](mailto:sales@prospec.co.uk).
- Product reference: Laminate Lockers
- **Size:**
  - Height: 1800 mm.
  - Width: 300 mm.
  - Depth: 520 mm.
- **Configuration/ Type:** Three tier, three equal compartments.
- **Door finish/ materials:**
  - Colour: Refer drawing 473.
- **Door frame colour:** Satin silver.
- **Support Plinths:** Blockwork.
- **Locking system:** Coin operated.

## 220D LOCKERS

- Manufacturer: Prospec Ltd.
  - Web: [www.prospec.co.uk](http://www.prospec.co.uk).
  - Email: [sales@prospec.co.uk](mailto:sales@prospec.co.uk).
  - Product reference: Laminate Lockers
- Size:
  - Height: 1800 mm.
  - Width: 400 mm.
  - Depth: 520 mm.
- Configuration/ Type: two tier, unequal, one third-height compartment with coat hooks over two thirds-height.
- Door finish/ materials:
  - Colour: Refer drawing 473.
- Door frame colour: Satin silver.
- Support Plinths: Blockwork.
- Locking system: Coin operated.

## 270 MIRRORS TO POOL CHANGING

Clarks Safety Mirrors Ltd , Unit 302 , Queensway Business Park, Hadley park, Telford TF1 7UL

- Material: Acrylic , scratch resistant 6mm thick. .
- Quality: Free from tarnishing, discoloration, scratches and other defects visible in the designed viewing conditions. Reflection undistorted.
- Size: Varies refer drawing 473.
- Backing: Aluminium foil.
- Edges: White pvc edge trim at Vanity Units.
- Fixing: Grade 316 dome top screws with polyethylene sleeves and washers.
- Installation: Accurately with sides vertical.

## 270A MIRRORSTO STAFF CHANGING

- Manufacturer: HEWI (UK) Ltd.
  - Web: [www.hewi.com](http://www.hewi.com).
  - Email: [info@hewi.co.uk](mailto:info@hewi.co.uk).
  - Product reference: Sanitary Range 801 Mirrors
- Type: 801.01.100.
- Colour: 53 HEWI Ultramarine Blue.

## 270B MIRRORS FULL HEIGHT MIRRORS TO FITNESS SUITE

- Material: Acrylic with scratch resistant finish..
- Quality: Free from tarnishing, discoloration, scratches and other defects visible in the designed viewing conditions. Reflection undistorted.
- Size: 1200 x 2400mm panels , Refer Architects drawing.
- Backing: Aluminium foil on 15mm MDF board..
- Edges: Proprietary framing.
- Fixing: Fully bonded to 15mm MDF substrate with Dow Corning 817 mirror adhesive..
- Installation: Accurately with sides vertical.

- 270C MIRRORS TO POOL CHANGING & FITNESS CHANGING SUITE OVER WHB ON I.P.S. SYSTEM.  
Supplied by Clarkes Safety Mirrors Ltd, As clause 270
- Material: Acrylic , scratch resistant 6mm thick.
  - Quality: Free from tarnishing, discoloration, scratches and other defects visible in the designed viewing conditions. Reflection undistorted.
  - Size: 450mm Dia..
  - Backing: Aluminium foil.
  - Edges: Bevelled.
  - Fixing: 316 dome top screws with polyethylene sleeves and washers.
  - Installation: Accurately centred on panell.
- 290 MATWELL FRAMES To Main Entrance revolving door and East Whale Lane Entrance bi-parting doors.
- Manufacturer: jAs Clause 290A.
    - Product reference: Marshcall 522S.
  - Material: Aluminium.
    - Finish: Refer drawings.
  - Size: As drawing 94A & 95A.
  - Angles: Bevelled.
    - Corners: Mitred and welded.
    - Angle size: Refer drawings.
- 290A MATWELL FRAME
- Manufacturer: EMCO UK Ltd.
    - Web: [www.emcouk.co.uk](http://www.emcouk.co.uk).
    - Email: [enquiries@emcouk.co.uk](mailto:enquiries@emcouk.co.uk).
    - Product reference: EMCO Dirtwell Type 5000 with drainage system.
  - Size (mm): 25x 28mm.
- 300 ENTRANCE MATTING To Main Entrance and East Whale Lane Entrance
- Manufacturer: As Clause 290A .
    - Product reference: Marschall Type 522S/03GCB,DIPLOMAT 522S/03RCB  
ATTACHE RS ANTHRACITE .
  - Colour: Refer Drawings SKP 94A & SKP 95A .
  - Size: As drawing .
- 350 MISCELLANEOUS FITTINGS
- Item: Hoist.
  - Manufacturer: Liko.
    - Product reference: Overhead Traverse Lift .
  - Size/ Capacity: 200kg H.
  - Finish/ Colour: white PPC finish .
  - Fixing: As manufacturers requirements.
  - Other requirements: Sling .
- 350A TRACK SUSPENSION SYSTEMS
- Manufacturer: Liko UK.
    - Email: [info@liko.co.uk](mailto:info@liko.co.uk).
    - Product reference: Overhead Traverse Lift System.
  - Size: Refer Drawing 473.
  - Fixing: Direct ceiling fix.

- 350C MISCELLANEOUS FITTINGS
- Item: Swimsuit driers.
  - Manufacturer: Shoretan Leisure, Merrylees Industrial estate, Leicestershire , LE9 9FS.
    - Product reference: Suitmate swim dryer.
  - Size/ Capacity: Refer manufacturers data sheet.
  - Finish/ Colour: As standard.
  - Fixing: As per Manufacturers.
  - Other requirements: Token dispenser.
- 350D MISCELLANEOUS FITTINGS Queue Management System
- Item: Barrier rails to Queue Management system.
  - Manufacturer: Tensator Ltd. Danbury Court, Linford Wood , Milton Keynes , MK14 6TS.
    - Product reference: Tensabarrier.
  - Size/ Capacity: Refer manufacturers data sheet.
  - Finish/ Colour: P.P.C. As standard.
  - Fixing: Floor socket as per Manufacturers detail.
  - Other requirements: Fixed rail.
- 350E MISCELLANEOUS FITTINGS Hair driers at Vanity Units
- Item: Coin-operated hair drier.
  - Manufacturer: PHS Systems Ltd..
    - Product reference: PHS.
  - Size/ Capacity: Refer manufacturers data sheet.
  - Finish/ Colour: As standard.
  - Fixing: Wall mounted as per Manufacturers standard details.
  - Other requirements: None..
- 350F MISCELLANEOUS FITTINGS Baby Changing in Changing Village
- Item: Baby change bed.
  - Manufacturer: Magrini..
    - Product reference: MH42,bc 1.
  - Size/ Capacity: Refer manufacturers data sheet.
  - Finish/ Colour: White fleck.
  - Fixing: Wall mounted as per Manufacturers standard details.
  - Other requirements: None..

## 350G MISCELLANEOUS FITTINGS Turnstile / access gate in Entrance Foyer

ref dwg: 470

Reception Tripod turnstile

Manufacturer: Fastlane turnstiles

Finish : Stainless steel

3 arms controlled by an access control system and push button at the reception desk.

- Modes of operation -
  - Card / bar-coded wrist strap operated entry (flush mounted reader)
  - Exit typically via door GF-31 however turnstile to be able to be released from behind reception desk allow for fast track entry or exit.
  - In the event of power-fail or activation of the fire alarm the tripod turnstiles have a failsafe design they turn freely for emergency egress.
- Fastlane passgate
- Tbe in compliance with DDA recommendations .
- In the event of power-fail or activation of the fire alarm the tripod turnstiles have a failsafe design they turn freely for emergency egress.
- Main Contractor tProvide Mains cabling tTurnstile Pedestals

Entry & exit control systems as electrical engineers specification

Website link :

[www.fastlane-turnstiles.com](http://www.fastlane-turnstiles.com)

## 350H MISCELLANEOUS FITTINGS Turnstile restricting access to flumes

ref dwg: skp 151

Flume access Tripod turnstile

Manufacturer: Fastlane turnstiles

Finish: Powder coated

3 arms controlled both locally by wrist band reader with remote override from control panel located at lifeguard station.

In the event of power-fail or activation of the fire alarm the tripod turnstiles have a failsafe design so they turn freely for emergency egress.

Main Contractor to Provide Mains cabling to Turnstile Pedestals

Entry & exit control systems as electrical engineers specification

Website link :

[www.fastlane-turnstiles.com](http://www.fastlane-turnstiles.com)

- 350I MISCELLANEOUS FITTINGS Turnstile to Flume Access within Pool Area.Refer drawing 151.
- Item: Tripod Turnstile.
  - Manufacturer: Fastlane Turnstiles ..
    - Product reference: Tripod Turnstile.
  - Size/ Capacity: Refer manufacturers data sheet.
  - Finish/ Colour: Polyester Powder Coated..
  - Fixing: Floor mounted as per Manufacturers standard details.
  - Other requirements: Mains cabling required to turnstile pedestal as per Electrical Engineers Specification.
- Control panel located at Lifeguard Station...

- 350L MISCELLANEOUS FITTINGS Water Polo Safety Nets

ref dwg: skp-151

Item: Water Polo safety Net at ends of Competition Pool  
 Net 01:length 3.6m height 9.5m  
 Net: 02: length 18.6m height 9.5m  
 Net 03: length 33m height 11.2m  
 Manufacturer: Lion Trading (GB) Ltd  
 Bloomhill Road, Moorends,  
 Doncaster DN8 4SP  
 Tel: +44 (0) 1405 817557

Manufacturers classification: Cricket / Tennis netting

Construction Knotted polypropylene.  
 Colour: Black  
 Mesh size : 1.8mm x 50mm

Support track: Hand Operated Curtain Pole System , Silent Gliss® 6100M Metroflat 36mm  
 6100M  
 Colour: WHITE  
 Manufacturer: Silent Gliss Limited  
 Pyramid Business Park  
 Poorhole Lane  
 Broadstairs  
 Kent CT10 2PT  
 Tel: 01843 863571

- 460 SEALANT To worktops
- Standard: To BS EN ISO 11600, class F20 HM.
  - Type: One part silicone.
    - Manufacturer: Agrément certified.
    - Product reference: Contractor's choice.
  - Colour: white.

#### EXECUTION

- 710 MOISTURE CONTENT OF WOOD AND WOOD BASED BOARDS
- Temperature and humidity: During delivery, storage, fixing and to handover maintain conditions to suit specified moisture contents of timber components.
  - Testing: When instructed, test components with approved moisture meter to manufacturer's recommendations.

## 720 INSTALLATION GENERALLY

- General: As Preliminaries section A33.
- Fixing and fasteners: As section Z20.
- Services: As Engineering Services specification.

## 760 SEALANT BEDDING AND POINTING

- Application: As section Z22.
- Bedding: Sink to top of worktop.
- Pointing: Between units 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: Ensure that all functions and features work correctly.
- Documentation: Submit guarantees, instruction manuals, etc.

**N**  
**Furniture/Equipment**

**N11**

**Domestic kitchen fittings, furnishings and equipment**

## N11 Domestic kitchen fittings, furnishings and equipment

To be read with Preliminaries/ General conditions.

### 200A WORKTOPS

- Manufacturer: JTC Furniture Group.
  - Web: [www.jtc.co.uk](http://www.jtc.co.uk)
  - Email: [reception@jtcfurnituregroup.com](mailto:reception@jtcfurnituregroup.com)
  - Product reference: Cosmopolitan Range Beech Block
- Grade: Standard.
- Sheet thickness: 40 mm with bull-nose edge.
- Colour: Beech.
- Finish: Matt.

### PRODUCTS

### 310 FITTED BASE UNITS GENERALLY TO ALL TEA PREP AREAS

- Standard: To BS 6222 -2 and -3, and BS EN 14749.
- Manufacturer: JTC Furniture Group
  - Camperdown Works, 27 Harrison Road , Dundee , DD2 3SN
  - Telephone 01382-833832 , e-mail [reception@jtcfurnituregroup.com](mailto:reception@jtcfurnituregroup.com).
  - Product reference: SFB56 , FB46 , CD8106P, CFB106P, FB56, SCFB106P, M3D66.
- Structural performance: To BS 6222-2, grade H.
- Dimensions: To BS EN 1116.
- Surface finishes: To BS 6222-3.
- Doors and drawer fronts:
  - Material: Plastics laminate Beech finish.
  - Finish and colour: Beech.
  - Edges: Beech.
  - Other requirements: Handles HLE68.
- Side panels, plinths and shelves:
  - Material: Plastics laminate Beech finish.
  - Finish and colour: Beech.
  - Edges: Plastics strip Beech finish.
- Accessories: Legs and Beech plinths .

### 310A FITTED BASE UNITS

- Manufacturer: JTC Furniture Group.
  - Web: [www.jtc](http://www.jtc)
  - Email: [reception@jtcfurnituregroup.com](mailto:reception@jtcfurnituregroup.com)
  - Product reference: JTC Cosmopolitan Range Beech Base Units
- Base unit type: Cosmopolitan range :Beech.
- Doors: Solid, flush.

## 320 FITTED WALL UNITS GENERALLY

- Standard: To BS 6222 -2 and -3, and BS EN 14749.
- Manufacturer: JTC Furniture Group , Camperdown Works , 27 Harrison Road , Dundee , DD2 3SN , Telephone 01382-833832 , e-mail reception@jtcfurnituregroup.com
  - Product reference: WC67,WC57, CWC67PR , WC37,IPWall.
- Structural performance: To BS 6222-2, grade H.
- Dimensions: To BS EN 1116.
- Surface finishes: To BS 6222-3.
- Doors and drawer fronts:
  - Material: Plastics laminate : Beech.
  - Finish and colour: Beech.
  - Edges: Plastics strip Beech.
  - Other requirements: None.
- Side panels and shelves:
  - Material: Plastics laminate.
  - Finish and colour: Beech.
  - Edges: Plastics strip Beech finish.
- Accessories: Handles HLE68.

## 340 WORKTOPS To ALL TEA PREP , STAFF ROOMS

- Standard: To BS 6222-3.
- Manufacturer: As Clause 320.
  - Product reference: Submit proposals.
- Material: Solid wood - beech.
- Dimensions: As Drawings.
- Exposed edges: Solid wood 40mm Bullnosed.
- Support: Base Units.
- Other requirements: Sink Apertures , Aluminium Jointing Strips.

## 350 SINKS, TAPS, TRAPS AND WASTES GENERALLY

- Sinks:
  - Standard: To BS EN 13310.
  - Manufacturer: JTC.  
Product reference: EL9501/AD20.
  - Configuration: Single sink with drainer.
  - Overall size: 1000 x 600.
  - Material: Stainless steel .  
Colour and finish: Brushed steel.
- Tap/ chainstay/ overflow holes: One tap hole, centre. and Overflow hole..
- Taps: Mixer.
  - Manufacturer: JTC.  
Product reference: Aquadisc Chrome Tap & Waste.
  - Operation: cross head hand wheel.
  - Material: Chromed steel.
- Wastes: Plug and chain.
  - Standard: To BS EN 274-1, -2 and -3.
  - Manufacturer: JTC.  
Product reference: AD20.
  - Size: To fit sink .
  - Material: Chromed steel.
  - Tail: Unslotted.
- Traps: Tubular, P type.
  - Standard: To BS EN 274-1, -2 and -3.
  - Manufacturer: Contractors choice.  
Product reference: N/A.
  - Size: To fit waste.
  - Material: Plastic.
  - Depth of seal (minimum): 75 mm.
- Accessories: None.

## 360 APPLIANCES

- Item: Refrigerator.
- Manufacturer: Caple Silver Free Standing Fridge Freezer.
  - Product reference: RFF551.
- Colour and finish: Silver.
- Service connections: Mains electricity.

## 390 SEALANT

- Standard: To BS EN ISO 11600, class F20 HM.
- Type: One part silicone.
  - Manufacturer: As Clause 390A.  
Product reference: Acrylic 100.
- Colour: White.

## 390A SEALING COMPOUND

- Manufacturer: Remmers (UK) Ltd.
  - Web: [www.remmers.co.uk](http://www.remmers.co.uk).
  - Email: [sales@remmers.co.uk](mailto:sales@remmers.co.uk).
  - Product reference: Acrylic 100
- Primer: Not required.
- Backing rods: Not required.
  - Diameter: 6 mm.
- Colour: White.

**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 sections S90 and V90.
- 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 6700 and BS EN 806-2.
  - 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.

**N**  
**Furniture/Equipment**

**N13**

**Sanitary appliances and fittings**

## N13 Sanitary appliances and fittings

To be read with Preliminaries/ General conditions.

### PRODUCTS

#### 99A URINALS AND CISTERNS

- Manufacturer: Armitage Shanks.
  - Web: [www.thebluebook.co.uk](http://www.thebluebook.co.uk).
  - Email: [info@thebluebook.co.uk](mailto:info@thebluebook.co.uk).
  - Product reference: S6110 (UR H) Contour urinal, 670 mm
- Wastes: S8850 1½" plastics domed strainer waste, 45 mm unslotted tail.
- Tubular traps: S8970 1½" plastics P trap with 75 mm seal, multi-purpose outlet suitable for plastics and BS copper pipe.
- Cistern: S6215 Conceala, 4.5 litres, with cover, auto syphon and petcock.
- Flushing pipe: S6226 Concealed, metal, for single bowl urinal.
- Accessories:
  - S6120 Vitreous china division, with screw and hanger;
  - S6286 Back inlet spreader;
  - S9275 Concealed steel hangers; and
  - S9276 Toggle bolts to suit maximum 25 mm panel thickness.
- Flushing systems: A4854Aa Sensorflow 21 Electronic urinal flushing valve with concealing plate, chromium plated – mains and A4855AA Sensorflow 21 Electronic urinal flushing valve with concealing plate, chromium plated – link.

#### 109 ANCILLARY ITEMS

S6120(01)

Vitreous china urinal division with hanger & Domex screw

#### 119 SHOWER VALVE

A4185(AA)

Sensorflow 21 Electronic concealed shower valve & sensor - mains

#### 129 URINAL MAINS FLUSHING

A4186(AA)

Sensorflow 21 Electronic concealed shower valve & sensor - link

- 300A WCS AND CISTERNS To Basement WC Compartment
- Manufacturer: Armitage Shanks.
    - Web: [www.thebluebook.co.uk](http://www.thebluebook.co.uk).
    - Email: [info@thebluebook.co.uk](mailto:info@thebluebook.co.uk).
    - Product reference: Sandringham Plus floor standing WC suite
  - Pan: E2910 Sandringham, horizontal outlet
    - Colour: White.
  - Seat and cover: S4033 Orion Plus Seat only with metal pillars
    - Colour: White.
  - Pan connector: S4300 Panekta, finned pattern, to convert horizontal outlet to S or turned P trap.
  - Cistern: S3920(01) Universal; Group cistern & cover, 6 litre, bottom supply, and internal overflow, Freeflo syphon, Microvalve ballvalve & Whisperflo, CC plate & bolts, Chrome plated front lever..
    - Colour: White.
  - Accessories: S9101 Domex screws (pair).
- 300B WCS AND CISTERNS To Disabled WCs and Assisted Changing Rooms
- Manufacturer: Armitage Shanks.
    - Web: [www.thebluebook.co.uk](http://www.thebluebook.co.uk).
    - Email: [info@thebluebook.co.uk](mailto:info@thebluebook.co.uk).
    - Product reference: Contour 21 close coupled raised height WC suite
  - Pan: S3054 Contour 21, floor fixing kit, horizontal outlet
  - Seat and cover: S4066 (36) Contour 21 seat no cover, top fixing hinges and retaining buffers.
  - Pan connector: S4300 Panekta, to convert horizontal outlet to S or turned P trap.
  - Cistern: S3654 Contour 21 close coupled with secure cover, 4.5 litre, with Freeflo syphon, bottom supply Microvalve HP/ LP ballvalve with Whisperflo refill unit, internal overflow, close coupling fitment.
    - Operation: S4420 Spatula type reversible side lever assembly.
- 300E WCs & CISTERNS - WALL MOUNTED To Changing Village & Cafe Toilets
- S3076(01)  
Contour 21 rimless wall mounted WC pan, horizontal outlet standard projection
- S9139(67)  
Support bracket, raised height with bolts
- S4066(01)  
Contour 21 seat no cover, top fixing hinges and retaining buffers
- S3639(67)  
Sensorflow 21 WC flushing device with Conceala 4.5 litre bottom inlet cistern and panel mounted sensor - water saving delay fill valve

- 301 WC/ I.P.S. PANEL: To Swimming Pool Changing Area Toilets and Fitness Suite Toilets  
 -Panel system as clause 402. Sanitary appliances site-fixed and sealed to IPS System panel by Plumber unless stated elsewhere.  
 -WC arrangement: Back to wall wc with concealed cistern.  
 -Pan: S3076 Contour 21 , horizontal outlet..  
 Seat: S4066(36) Contour 21 ,with stainless steel rod and chrome plated metal pillar hinges  
 Pan connector: Panekta pan connector Ref: S4300 (converts to P trap).  
 -Cistern/Flush pipe: Armitage Shanks Conceala plastic concealed cistern with internal overflow.  
 Flush volume: 4.5 litres  
 -Other accessories: Armitage Shanks S4505 Simpla inlet connector.  
 Sealing: Joint between wc and panel as clause 750
- Operating mechansim options:  
 S4446 Pneumatic stainless steel panel mounted push button
- 311B DOCUMENT M PACKAGES (MINUS MIXER VALVES & MONOBLOCK TAP).
- Manufacturer: Armitage Shanks.
    - Web: [www.thebluebook.co.uk](http://www.thebluebook.co.uk).
    - Email: [info@thebluebook.co.uk](mailto:info@thebluebook.co.uk).
    - Product reference: S6955 Doc M close coupled pack with grab rails and hinged arm support with toilet roll holder
  - Position: Left hand & Right Hand as per drawings 473 and 474.
  - Colour: Easy grip blue.
  - Accessories: S4305 Panekta outlet connector, finned pattern to convert horizontal outlet WCs to P trap.
- 311C DOCUMENT M PACKAGES DISABLED TOILET PACKAGE MINUS MIXER VALVE & MONOBLOCK
- Manufacturer: Armitage Shanks, Armitage, Rugeley, Staffordshire WS15 4BT. Tel: 01543 490253, Fax: 01543 491677. Email: [general.info@thebluebook.co.uk](mailto:general.info@thebluebook.co.uk) Web: [www.thebluebook.co.uk](http://www.thebluebook.co.uk) .
    - Product reference: S687201 Doc close coupled Pack, with white WC, exposed cistern and washbasin, and dark blue grab rails, seat and hinged arm support.  
 Pack comprises:  
 S3054 Contour 21 raised height close coupled WC pan 75cm projection with floor fixing kit..  
 S3654 Contour 21 close coupled cistern , 4.5 litre syphon bottom supply and internal overflow,secure cover fastener..  
 S4420 Reversible Spatula side lever assembly, chromium plated.  
 S4066 Contour 21 (36) toilet seat , no cover , top fixing hinges.  
 S9101 Domex screws (pair).  
 S2122 Contour 21 37cm hand rinse basin,no tap-hole , no overflow or chain hole.  
 S9110 Concealed hangers for wall fixing.  
 NOTE :- Refer Services Engineer Specification for mixer with volume controls and combined isolator/ check valves.  
 S8810 Plastic strainer waste, with unslotted tail.  
 S8910 Self colour plastic bottle trap, with multi-purpose outlet.
- S6454 LI 600 mm Easy grip blue grab rail (4 No.)  
 S6452 LI 450 mm Easy grip blue pull rail for back of door.  
 S6467 LI Hinged Easy grip blue support rail.  
 S6468 toilet roll holder for hinged support.
- Type approval certificate: Submit.

## 311D DOCUMENT M PACKAGES ASSISTED CHANGING / SHOWER ROOMS

- Manufacturer: Armitage Shanks, Armitage, Rugeley, Staffordshire WS15 4BT. Tel: 01543 490253, Fax: 01543 491677. Email: general.info@thebluebook.co.uk Web: www.thebluebook.co.uk .

- Product reference: S6960AC Doc M close coupled Pack ( MINUS thermostatic mixer valves and isolators), with white WC, exposed cistern and washbasin, and dark blue grab rails, seat and hinged arm support.

Pack comprises:

S3054 Contour 21 raised height close coupled WC pan 75cm projection with floor fixing kit..

S3654 Contour 21 close coupled cistern , 4.5 litre syphon bottom supply and internal overflow,secure cover fastener..

S4420 Reversible Spatula side lever assembly, chromium plated.

S4066 Contour 21 (36) toilet seat , no cover , top fixing hinges.

S9101 Domex screws (pair).

S2122 Contour 21 37cm hand rinse basin,no tap-hole , no overflow or chain hole.

S9110 Concealed hangers for wall fixing.

NOTE:- Refer Services Engineer Specification for mixer with volume controls and combined isolator/ check valves.

S8810 Plastic strainer waste, with unslotted tail.

S8910 Self colour plastic bottle trap, with multi-purpose outlet.

Refer Services Engineers

S6454 LI 600 mm Easy grip blue grab rail (4 No.)

S6452 LI 450 mm Easy grip blue pull rail for back of door.

S6467 LI Hinged Easy grip blue support rail.

S6468 toilet roll holder for hinged support.

..

- Type approval certificate: Submit

Shower Pack Neatdek3 by NEACO , Norton Grove Industrial Estate,Norton Malton , N Yorkshire YO17 9HQ,EngShower Pack Neatdek3 by NEACO , Norton Grove Industrial Estate,Norton Malton , N Yorkshire YO17 Eng land. Tel 01653 695721, Fax:01653 600418 sales@neaco.co.uk

Neatdek3 NDK3006CP pack comprises:-

1524 x 860 mmgrille and tray ,LH fixed panel.

Half height enclosures

Curtain and Curtain Rail

Waste Outlet

3 No. 600mm Freedom Grab Rails. Colour: Blue

Freedom Hinged Shower Seat (DF 5805)

Type approval certificate: Submit.

## 315A URINALS AND AUTO FLUSHING CISTERNS

- Manufacturer: Armitage Shanks.
    - Web: [www.thebluebook.co.uk](http://www.thebluebook.co.uk).
    - Email: [info@thebluebook.co.uk](mailto:info@thebluebook.co.uk).
    - Product reference: S6110 (UR H) Contour urinal, 670 mm
  - Wastes: S8850 1½" plastics domed strainer waste, 45 mm unslotted tail.
  - Tubular traps: S8970 1½" plastics P trap with 75 mm seal, multi-purpose outlet suitable for plastics and BS copper pipe.
  - Cistern: S6215 Conceala, 4.5 litres, with cover, auto syphon and petcock.
  - Flushing pipe: S6226 Concealed, metal, for single bowl urinal.
- Accessories:
- S6286 Back inlet spreader;
  - S9275 Concealed steel hangers; and
  - S9276 Toggle bolts to suit maximum 25 mm panel thickness.

## 315B URINALS &amp; AUTO FLUSHING CISTERNS

S6110(01)

Contour urinal, back inlet, concealed outlet

S6286(AA)

Back inlet spreader for Sanura/Contour urinals

S9276(67)

Toggle bolts for Contour urinal

S9275(67)

Concealed hangers for vitreous china bowl urinal

S6226(NU)

Concealed metal flushpipe for single bowl urinal

S8850(67)

1 1/2" plastics domed urinal waste 50mm unslotted tail

S8970(67)

1 1/2" plastic swivel P trap, 75mm seal multipurpose outlet, suitable for plastic or copper tube

S6215(67)

Conceala plastic concealed automatic cistern &amp; cover, 4.5 litres with fittings

## 331A SINKS To Cleaners Stores

- Manufacturer: Armitage Shanks.
  - Web: [www.thebluebook.co.uk](http://www.thebluebook.co.uk).
  - Email: [info@thebluebook.co.uk](mailto:info@thebluebook.co.uk).
  - Product reference: S5900(01) Alder sink, with 310 mm high splashback, bucket grating and hardwood pad
- Wall mounted bib taps: S7190 Alterna quadrant bib taps.
- Wastes: S8726 (WT2) Chrome plated, 1½" unslotted strainer waste, 80 mm tail.
- Traps: S8925 1½" self colour plastics resealing bottle trap with 75 mm seal, multi-purpose outlet.
- Accessories:
  - S9233 Stainless steel legs 350 mm high with screw to wall aluminium alloy bearers, 355mm overall, 305 mm stud (pairs);
  - S9101 Domex screws (pair); and
  - S8331 ½" wall mounts for exposed plumbing (pair).

## 331C WASH BASINS

- Manufacturer: Armitage Shanks.
  - Web: [www.thebluebook.co.uk](http://www.thebluebook.co.uk).
  - Email: [info@thebluebook.co.uk](mailto:info@thebluebook.co.uk).
  - Product reference: S2624 Troon 2 washbasin 390 mm, fixing clips, no overflow
- Water supply fittings: B8260(AA) Piccolo 21 single lever basin monoblock..
- Wastes: S8811 1¼" plastics strainer waste, 50 mm unslotted tail.
- Traps: S8920 1¼" Resealing bottle trap, self colour plastics, multi-purpose outlet, 75 mm seal.

## 335A WASH BASINS STAFF TOILETS.

- Manufacturer: Armitage Shanks.
  - Web: [www.thebluebook.co.uk](http://www.thebluebook.co.uk).
  - Email: [info@thebluebook.co.uk](mailto:info@thebluebook.co.uk).
  - Product reference: S2157(01) Portman 21 400 mm Washbasin with single taphole, overflow, no chainstay hole.
- Water supply fittings: Refer Services Engineer specification.
- Wastes: S8722 Chrome plated, 1¼" strainer waste, 80 mm slotted tail.
- Bottle traps: S8920 (TRR1/P) 1¼" White plastic resealing bottle trap with 75 mm seal.
- Accessories: S9138 Concealed bracket with clamps and centre waste support for Portman 21, 40 cm washbasins and S9316 Wall outlet for concealed supply, projection 23 cm with anti-splash nozzle.

## 335B WASH BASINS PUBLIC MALE AND FEMALE TOILETS

- Manufacturer: Armitage Shanks.
  - Web: [www.thebluebook.co.uk](http://www.thebluebook.co.uk).
  - Email: [info@thebluebook.co.uk](mailto:info@thebluebook.co.uk).
  - Product reference: E0013 White 450 mm washbasin back outlet, no tapholes
- Water supply fittings: E0063 Silver ½" quarter turn wall basin single flow mixer, with 150 mm projection spout in chrome.
- Wastes: E0091 1¼" Waste outlet adapter with strainer.
- Bottle traps: S8920 1¼" Resealing bottle trap, self colour plastics, multi-purpose outlet, 75 mm seal.
- Accessories: E0062 Wall fixing set for panel use and Refer Services Engineer Specification for under basin thermo valve.

## 335C WASH BASIN / I.P.S. PANEL: To Male and Female Toilets

Panel system as clause 521 . Sanitary appliances site-fixed and sealed to IPS panel by Lam-Art Dundee Limited unless stated elsewhere.

Wash basin: Ideal Standard E0013 White 450 vitreous china basin, no tap holes, no chain hole, with overflow, Back-outlet waste.

Taps: Ideal Standard E0063 Ideal Standard panel-mounted spout 150mm spout.

Refer Services Engineer Specification for Mixer valve and isolator requirements.

Waste: Ideal Standard E0091 1¼" waste outlet adaptor with strainer for back-outlet basin.

Trap: Armitage Shanks S8920 1¼" plastics re-sealing bottle trap with 75mm seal and multi-fit outlet.

Other accessories: Aluminium alloy hangers and fixing clamps.

Sealing: Joint between basin and panel sealed with white silicone sealant by Armitage Venesta.

Refer Services Engineer Specification for thermostatic mixer valve and isolator requirements..

- 335D WASH BASINS To Disabled W.C.
- Manufacturer: Armitage Shanks.
    - Web: [www.thebluebook.co.uk](http://www.thebluebook.co.uk).
    - Email: [info@thebluebook.co.uk](mailto:info@thebluebook.co.uk).
    - Product reference: S2122 Contour 21 37cm back outlet washbasin in vitreous china, , one centre tapholes, no overflow, no chainstay hole.
  - Water supply fittings: S8244 (TB H6) Markwik ½" integral thermostat, wall mounted, proximity sensor mixer, horizontal outlet.
  - Wastes: S8720AA Plastic waste grating, chain, plug and screw stay.
  - Traps: S8920(67) 1¼" Resealing bottle trap, self colour plastics, multi-purpose outlet, 75 mm seal.
  - Accessories: A4180 Sensorflow 21 tubular panel mounted 150 mm projection spout, anti splash or aerated outlet, remote panel sensor – mains and S9110 Concealed hangers, toggle bolts and clips.
- 335E WASHBASIN - SEMI COUNTERTOP (MALE & FEMALE TOILETS , VANITY UNITS)  
E0014(01)  
White 45cm semi-countertop basin, single centre taphole with overflow, no chainstay hole
- S8920(67)  
1 1/4" plastic resealing bottle trap 75mm seal, multi purpose outlet
- S8722(AA)  
1 1/4" strainer waste 80mm slotted tail
- 335F WASH BASINS Washbasin to Basement W.C.
- Manufacturer: Armitage Shanks.
    - Web: [www.thebluebook.co.uk](http://www.thebluebook.co.uk).
    - Email: [info@thebluebook.co.uk](mailto:info@thebluebook.co.uk).
    - Product reference: S2714 Sandringham/ Dorex 450 mm handrinse basin, single right hand taphole, no overflow or chainstay hole.
  - Colour: White.
  - Water supply fittings: S7031 Sandringham ½" basin pillar taps, chrome plated.
  - Wastes: S8720 (WT1) chrome plated, 1¼" strainer waste, 90 mm unslotted tai with backnut and washer.l.
  - Traps: S8920 1¼" Resealing bottle trap, self colour plastics, multi-purpose outlet, 75 mm seal.
  - Accessories: S9110 Concealed steel hangers.
- 335G WASH BASINS To First Aid Room
- Manufacturer: Armitage Shanks.
    - Web: [www.thebluebook.co.uk](http://www.thebluebook.co.uk).
    - Email: [info@thebluebook.co.uk](mailto:info@thebluebook.co.uk).
    - Product reference: S2311 Portman 21 500 mm Washbasin with single taphole, overflow, no chainstay hole.
  - Water supply fittings: S7446 (AA) Spray mixer lever action spray, mixer tap with laminar flow outlet, volume controls , 10mm flexible inlet tails for 15mm copper..
  - Wastes: S8722 Chrome plated, 1¼" strainer waste, 80 mm slotted tail.
  - Bottle traps: S8920 (TRR1/P) 1¼" White plastic resealing bottle trap with 75 mm seal.
  - Accessories: S9137 Concealed bracket with clamps and centre waste support for Portman 21, 60 cm washbasins.
  - Sensorflow: None.

- 341A Vanity Unit to suit Semi-Countertop WHB to Male and Female Toilets 2nd Floor:
- Manufacturer and reference: Lam-Art (Dundee) Ltd, Compact Vanity Unit  
 Product reference: Semi-recessed Vanity Unit  
 Top: 10 mm thick Compact Laminate with Integral Downstand  
 250mm and Upstand 100mm, 350mm Bed.  
 Under-panels: 13mm Polyrey Compact.  
 Material: Solid Grade Laminate  
 Sanitized from the 2600mm x 2050mm sheet sizes  
 Finish: UK Stock Colour Range.  
 Colour: Cubicle and Washroom Range.  
 Edge treatment: Polished black core, eased arris.  
 Support System: Metal track and channel system with 13mm thick compact  
 laminate shadow gap. Unit height 850mm  
 Ironmongery/ Accessories: Lift-Off access panels  
 Other requirements: Basin: To be confirmed  
 Taps: To be confirmed
- 375A SHOWER/ I.P.S. PANEL:Within Shower Areas  
 Panel system as clause 402. Sanitary appliances site-fixed and sealed to IPS Panel by  
 Plumber unless stated elsewhere.  
 Shower fittings: Armitage Shanks S9313 short projection shower head chromium plated,  
 Refer Services Engineer Specification for TMV and isolator requirements..  
 Shower Arm: None required..  
 Shower Head Triton S9313 short projection shower head for concealed supply, chrome  
 plated.  
 Sealing: as clause 755.  
 Special Notes: Designed to be supplied with pre-mixed water via a thermostatic valve.  
 Operating head min 0.15 bar, max 4.0 bar.
- 376 SHOWER UNITS EMERGENCY DRENCH SHOWER
- Shower fittings: Fixed adjustable spray head.
    - Manufacturer: Hughes Safety Showers Ltd., Whitefield Road , Bredbury , Stockport ,  
 Cheshire , SK6 2SS , England  
 Telephone 0161 430 6618 E-mail:- Info@hughes-safety-  
 showers.co.uk .
    - Product reference: Hughes Indoor Emergency Safety Showers.
    - Finish: Stainless Steel;
    - Operating control: Manual.
  - Accessories: ABS Shower Rose, Standard Sign.
- 377 SHOWER UNITS WALL MOUNTED (POOL PRE SWIM)
- Shower fittings: Thermostatic shower mixer, concealed , refer to Services Engineer  
 Specification for TMV and isolator requirements..
    - Manufacturer: Hower Components Armitage Shanks , Old Road , Armitage , Rugeley ,  
 Staffordshire , WS15 4BT , Telephone 01543-490253  
 Note: solid grade laminate panels and channel supports by Lam-Art  
 Dundee Ltd. .
    - Product reference: S9313 short projection shower head ,chrome plated.
    - Finish: Chrome plated.
    - Operating control: Proximity sensor units 4185(AA) and 4186 (AA).
  - Accessories: None.

- 378 SHOWER UNITS WALL MOUNTED (POOL, POST SWIM)
- Shower fittings: Thermostatic shower mixer, concealed. refer Services Engineer Specification for TMV and Isolator requirements..
    - Manufacturer: Shower components Armitage Shanks , Old Road , Armitage , Rugely , Staffordshire , WS15 4BT , Telephone 01543-490253
    - Note: Solid grade laminate panels and support channels by Lam-Art Dundee Ltd. .
    - Product reference: S9313 short projection shower head, chrome plated. .
    - Finish: Chrome plated.
    - Operating control: Proximity Sensorflow units 4185(AA) and 4186 (AA).
  - Accessories: None.
- 379 DRINKING FOUNTAINS - WALL MOUNTED
- Manufacturer: As Clause 379A.
    - Product reference: S5435 accessible drinking fountain.
  - Material: Stainless steel, polished.
  - Jet and valve: Shrouded jet, rotating operating handle.
    - Manufacturer: Armitage Shanks.
    - Product reference: Submit proposals.
  - Wastes: Grated.
    - Standards: To BS EN 274-1, -2 and -3.
    - Manufacturer: As Drinking fountain.
    - Product reference: Submit proposals.
    - Size: DN 30.
    - Material: Plastics, chrome plated.
    - Tail: Unslotted.
  - Traps: Tubular, P type.
    - Standards: To BS EN 274-1, -2 and -3.
    - Manufacturer: As Drinking fountain.
    - Product reference: Armitage Shanks.
    - Size: DN 30.
    - Material: Copper.
    - Depth of seal (minimum): 75 mm.
  - Accessories: Concealed installation frame.
- 379A DRINKING FOUNTAINS
- Manufacturer: Armitage Shanks.
    - Web: [www.thebluebook.co.uk](http://www.thebluebook.co.uk).
    - Email: [info@thebluebook.co.uk](mailto:info@thebluebook.co.uk).
    - Product reference: S5435 Purita drinking fountain complete with self-closing non-concussive valve with push button operation, flow control and 1¼" chrome plated brass strainer waste.

379B DRINKING FOUNTAINS CHILLED WATER COOLERS FREESTANDING TO SECOND FLOOR FITNESS CHANGING ROOMS.LIFEGUARD CHANGING ROOM

- Manufacturer: AZURE UK telephone 0845 450 3090  
fax 0870 381 8273  
e-mail:- sales@azureuk.co.uk.
  - Product reference: Borg & Overstrom Elite.
- Material: Stainless steel, polished.
- Jet and valve: N/A.
  - Manufacturer: Contractor's choice.
  - Product reference: Submit proposals.
- Wastes: INTEGRAL.
  - Standards: To BS EN 274-1, -2 and -3.
  - Manufacturer: N/A.
  - Product reference: Submit proposals.
  - Size: DN 30.
  - Material: Plastics, self colour.
  - Tail: Unslotted.
- Traps: As Standard.
  - Standards: To BS EN 274-1, -2 and -3.
  - Manufacturer: As Cooler.
  - Product reference: N/A.
  - Size: DN 30.
  - Material: As Standardr.
  - Depth of seal (minimum): 75 mm.
- Accessories: None.

402 BACK PANEL LINING AND FRAMING TO WC / WHB / URINAL / SHOWERS

Manufacture and reference: Lam-Art (Dundee) Ltd  
 Product reference: Compact IPS Style Duct Panel System  
 Panels/ Doors: 13mm Polyrey Compact.  
 Core material: Solid Grade Laminate  
 Sanitized from the 2600mm x 2050mm sheet sizes  
 Finish: UK Stock Colour Range.  
 Colour: Cubicle and Washroom range.  
 Edge treatment: Polished black core, eased arris.  
 Support System: Metal track and channel system with 13mm thick compact laminate shadow gap  
 Ironmongery/ Accessories: Lift-Off access panels  
 Other requirements: Pre-Swim Showers - for free standing situations supports to extend to structural soffit

420 PROXIMITY SENSOR CONTROL UNITS To Changing Room wash basins

- Manufacturer: As clause 420A.
  - Product reference: A4846(AA) & A4847(AA).
- Location: Above wash basins.
- Basin outlets: Panel-mounted over.
- Shower outlets: Panel-mounted over.
- Urinal flushing: N/A.
- WC flushing: N/A.
- Bidet outlets: N/A.

- 420B PROXIMITY SENSOR CONTROLS (Over Panel To Wash Hand Basins)  
A4846(AA)  
Sensorflow 21 compact tubular panel mounted spout, 15cm projection, fitted aerator outlet & alternative flow straightener, with integral sensor, solenoid valve, flexible inlet, combined servicing valve & filter, 2 metre mains, sensor and solenoid cables - mains
- 420C PROXIMITY SENSOR CONTROLS ( Over Panel to Wash Hand Basins)  
A4847(AA)  
Sensorflow 21 compact tubular panel mounted spout, 15cm projection, fitted aerator outlet & alternative flow straightener, with integral sensor, solenoid valve, flexible inlet, combined servicing valve & filter, 2 metre mains, sensor and solenoid cables, link-box (up to 5 per A4846AA)
- 420D PROXIMITY SENSOR CONTROLS Urinals  
A4854(AA)  
Sensorflow 21 urinal flush, panel mounted - mains
- 420E PROXIMITY SENSOR CONTROLS (Urinals)  
A4855(AA)  
Sensorflow 21 urinal flush, panel mounted - link
- 420F PROXIMITY SENSOR CONTROLS (Staff Toilets)  
A4798(AA)  
Sensorflow 21 compact washbasin mounted spout with integral sensor, flexible inlet tail, solenoid valve, combined servicing valve & filter with 2 metres mains, sensor and solenoid cables - mains
- 420G PROXIMITY SENSOR CONTROLS (Washbasin Mounted)  
A4852(AA)  
Sensorflow 21 compact washbasin mounted spout with integral sensor, flexible inlet tail, solenoid valve, combined servicing valve & filter with 2 metres mains, sensor and solenoid cables - mains
- 420H PROXIMITY SENSOR CONTROLS (Washbasin Mounted)  
A4853(AA)  
Sensorflow 21 compact washbasin mounted spout with integral sensor, flexible inlet tail, solenoid valve, combined servicing valve & filter with 2 metres solenoid cables - Link
- 429B CLOTHES HOOKS
- Manufacturer: HEWI (UK) Ltd.
    - Web: [www.hewi.com](http://www.hewi.com).
    - Email: [info@hewi.co.uk](mailto:info@hewi.co.uk).
    - Product reference: Sanitary Range 477 Clothes Hooks
  - Type: 477.90.045 .
  - Colour: 53 HEWI Ultramarine Blue.

- 436A **HANDRAILS AND GRAB BARS**
- Manufacturer: Armitage Shanks.
    - Web: [www.thebluebook.co.uk](http://www.thebluebook.co.uk).
    - Email: [info@thebluebook.co.uk](mailto:info@thebluebook.co.uk).
    - Product reference: S6467 Contour 21 hinged support rail, 800 x 35 mm O.D.
  - Finish: Blue.
  - Accessories: S6468 Toilet roll holder for Contour 21 hinged arm rail.
- 436C **HANDRAILS AND GRAB BARS**
- Manufacturer: Armitage Shanks.
    - Web: [www.thebluebook.co.uk](http://www.thebluebook.co.uk).
    - Email: [info@thebluebook.co.uk](mailto:info@thebluebook.co.uk).
    - Product reference: S6452 Contour 21 grab rail, straight 450 mm long x 35 mm diameter.
  - Finish: Blue.
  - Accessories: S6736 Shower curtain, 780 mm drop and fittings to fit support arm.
- 436D **HANDRAILS AND GRAB BARS**
- Manufacturer: Armitage Shanks.
    - Web: [www.thebluebook.co.uk](http://www.thebluebook.co.uk).
    - Email: [info@thebluebook.co.uk](mailto:info@thebluebook.co.uk).
    - Product reference: S6457 Contour 21 grab rail, straight 800 mm long x 35 mm diameter.
  - Finish: Blue.
  - Accessories: S6659 Toilet roll holder, for Multi system support arm.
- 436E **HANDRAILS AND GRAB BARS**
- Manufacturer: Armitage Shanks.
    - Web: [www.thebluebook.co.uk](http://www.thebluebook.co.uk).
    - Email: [info@thebluebook.co.uk](mailto:info@thebluebook.co.uk).
    - Product reference: S6454 Contour 21 grab rail, straight 600 mm long x 35 mm diameter.
  - Finish: Blue.
  - Accessories: S6659 Toilet roll holder, for Multi system support arm.
- 438 **MIRRORS TO TOILET AREAS VANITY UNITS, STAFF TOILETS**
- Manufacturer: Clarkes Safety Mirrors Ltd, Unit 302 , Queensway Business Park, Hadley Park, Telford , TF1 7UL..
    - Product reference: Submit proposals.
  - Material: Acrylic 6mm thick.
  - Finish: scratch resistant coating, framed with 6mm pvc trim.
- 448 **SEATS Baby Seat**
- Manufacturer: MAGRINI Ltd..
    - Product reference: Stay-Safe Baby Seat KBPS.
  - Material: Polyethylene.
  - Finish: White Flek.
- 449 **SHELVES WITHIN FIRST AID ROOM , STAFF OFFICES**
- Manufacturer: Contractor's choice.
    - Product reference: Contractor's choice.
  - Material: Laminate on particle board.
  - Finish: White laminate.

## 472 HAND DRIERS TO PUBLIC TOILETS

- Type: High velocity air.
- Manufacturer: Dyson Ltd, Tetbury Hill, Malmesbury, Wiltshire. SN16 0RP.
  - Product reference: Air Blade hand dryer.
- Electrical supply: 230 - 240 V AC, single phase 50Hz.

## 474 WASTE BINS TO PUBLIC TOILETS

- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Material: Stainless steel.
- Finish: To be confirmed.

## 521 I.P.S PANEL LINING SYSTEM: To Toilets and Shower cubicles at Changing Village and Cafe Toilets

Drawing reference(s): 473 , 474.

Manufacturer and reference: Lam-Art Dundee Limited , 122 Liff Road , Dundee , DD2 2TL  
Tel 01382-612222 , e-mail sales@lam-art.co.uk

Lam-Art compact laminate washroom system.

Panel: 13mm thick compact laminate. Panels have radiused and polished edges. Each panel section fitted to subframe with concealed BZP mild steel joggle clips, panel sections joined together with locating dowels.

Subframe: Rolled metal section subframe with chipboard bracing board, fitted to site frame with nylon click-fix location brackets.

Site framing: Extruded aluminium base, headrail sections, rolled metal wall channels.

Flashgaps: 13mm thick compact laminate bonded to 6mm thick mdf.

Pre-plumbing: Sanitary appliances pre-fixed and sealed to IPS Lam-Art System panels on site, unless stated otherwise, all components by Lam-Art

Colours: Refer to Lam-Art for standard laminate colour range.

- 545A WASH BASINS - PREPLUMBED PANELS I.P.S Lam-Art System to Changing Room Toilets402
- Basins:
    - Manufacturer: Armitage Shanks .  
Product reference: Armitage Shanks E001301 white round 45 back outlet vitreous china basin, no tap holes, no chain hole, concealed waste.  
Panel system: as clause 402.
    - Size: As scheduled.
    - Material: Vitreous china, white.
    - Tap/ Chainstay/ Overflow holes: No chainstay hole.
  - Water supply fittings: Wall mounted spray.
    - Manufacturer: Armitage Venesta Washroom Systems, Chartwell Court, West Mill, Imperial Business Park, Gravesend, Kent. DA11 0DL. Tel: 01474 353333.  
Product reference: Refer Services Engineer Specification for Mixer valve and isolator requirements. .
    - Operation: Proximity sensor.
  - Wastes: S8722 strainer waste..
    - Standards: To BS EN 274-1, -2 and -3.
    - Manufacturer: Armitage Venesta Washroom Systems, Chartwell Court, West Mill, Imperial Business Park, Gravesend, Kent. DA11 0DL. Tel: 01474 353333.  
Product reference: Armitage Shanks S8750 1 1/4" waste outlet adaptor with S8745plastic waste grating , chain , plug and screw stay...
    - Size: DN 40.
    - Material: Plastics, self colour.
    - Tail: Slotted.
  - Traps: Bottle.
    - Standards: To BS EN 274-1, -2 and -3.
    - Manufacturer: Armitage Venesta Washroom Systems, Chartwell Court, West Mill, Imperial Business Park, Gravesend, Kent. DA11 0DL. Tel: 01474 353333.  
Product reference: Armitage Shanks S8920 1 1/4" plastics re-sealing bottle trap with 75mm seal..Size: DN 40.  
Material: Plastics, self colour.  
Depth of seal (minimum): 75 mm.
  - Accessories: Armitage Shanks S9161 concealed hangers, toggle bolts and clips.  
Valve: Refer Services Engineer Specification for Mixer valve and isolator requirements.  
Sealing: joint between basin and panel sealed with white silicone sealant by Armitage Venesta.

- 550 VANITY UNITS - PREPLUMBED PANELS Lam-Art panels to First Floor Cafe Toilets vanity units
- Counter top size: As scheduled.
  - Basins:
    - Manufacturer: As clause 545A.  
Product reference: White 45cm semi-countertop basin, single centre tap-hole with overflow, no chainstay hole..
    - Quantity: 3 + 2.
    - Size: As scheduled.
    - Material: Vitreous china, white.
    - Tap/ Chainstay/ Overflow holes: Combined chainstay and overflow hole.
  - Water supply fittings: Wall mounted spray heads, one per basin.
    - Manufacturer: Submit proposals.  
Product reference: Refer Services Engineer Specification for Mixer valve and isolator requirements..
    - Operation: Proximity sensor.
  - Wastes: Grated, one per basin.
    - Standards: To BS EN 274-1, -2 and -3.
    - Manufacturer: Submit proposals.  
Product reference: S8722 AA 1.25 inch strainer waste 80mm slotted tail...
    - Size: DN 40.
    - Material: Stainless steel.
    - Tail: Unslotted.
  - Traps: Bottle, one per basin.
    - Standards: To BS EN 274-1, -2 and -3.
    - Manufacturer: As WHB.  
Product reference: S8911 32mm plastic resealing bottle trap with 75mm seal, anti-siphon.
    - Size: DN 40.
    - Material: Plastics, self colour.
    - Depth of seal (minimum): 75 mm.
  - Accessories: Proximity Sensor.
- 580 SEALANT FOR POINTING
- Standard: to BS EN ISO 11600.
    - Class: F20 HM.
  - Type: High Modulus one part Silicone Sealant.
    - Manufacturer: As clause 58A.
    - Product reference: Arbosil 1081.
  - Colour: White.
- 580A SEALANT
- Manufacturer: Adshead Ratcliffe & Co Ltd.
    - Web: [www.arbo.co.uk](http://www.arbo.co.uk).
    - Email: [arbo@arbo.co.uk](mailto:arbo@arbo.co.uk).
    - Product reference: Arbosil 1081
  - Code: SL8130CWH.
  - Accessories: Arbo Primer 2172.

**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.
- 613 **COMPATIBILITY OF COMPONENTS**
- General: Each sanitary assembly must consist of functionally compatible components, preferably obtained from a single manufacturer.
    - Exceptions: Water supply fittings, wastes and traps.
- 620 **NOGGINGS AND BEARERS**
- Noggings, bearers, etc. to support sanitary appliances and fittings: Position accurately. Fix securely.
- 625 **FRAMING FOR PREPLUMBED PANEL SYSTEM**
- General: Position accurately. Fix securely.
- 630 **TILED BACKGROUNDS OTHER THAN SPLASHBACKS**
- Timing: Complete before fixing appliances.
  - Fixing appliances: Do not overstress tiles.
- 650 **INSTALLING WC PANS**
- Floor mounted pans: Screw fix and fit cover caps over screw heads. Do not use mortar or other beddings.
  - Seat and cover: Stable when raised.
- 670 **INSTALLING CISTERNS**
- Cistern operating components: Obtain from cistern manufacturer.
    - Float operated valve: Matched to pressure of water supply.
  - Overflow pipe: Fixed to falls and located to give visible warning of discharge.
    - Location: Agreed, 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.
- 755 **SEALANT BEDDING AND POINTING**
- Bedding: Bed and point basins to underside of vanity units. .
  - Pointing: Joints between appliances and walls and joints between appliances and floors. .

N  
Furniture/Equipment

**N14**

**General signage systems**

## N14 General signage systems

To be read with Preliminaries/ General conditions.

### GENERAL

### GENERAL

#### 110 SIGNAGE SYSTEM - MODULAR DOOR DESIGNATION

- System manufacturer: As Clause 110a .
  - Product reference: Orbis Classic system .
- Layout and dimensions: Submit proposals .
- Lettering:
  - Language: English .
  - Font: Helvetica medium .
  - Colour: Manufacturer's standard range .
  - Size: 15 mm .
- Symbols and graphics: Manufacturer's standard range .
  - Colour: Manufacturer's standard range .
  - Size: Manufacturer's standard range .
- Background colour: Manufacturer's standard range .
- Sign type: Submit proposals .
  - Inserts: Composite metal and plastics .
  - Manufacturing process: Manufacturer's standard .
- Supports/ Fixings: Door mounted, screw fixed .
- Accessories: Not required .

#### 110A SIGNAGE SYSTEM

- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Orbis Signage System
- Type: As drawing 408.

#### 110C STAINLESS STEEL SIGNS

- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Orbis Classic Stainless Steel Signs
- Type: 60 605.
- Finish: SS.

#### 110D STAINLESS STEEL SIGNS

- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Orbis Classic Stainless Steel Signs
- Type: 60 606.
- Finish: SS.

- 110E STAINLESS STEEL SIGNS
- Manufacturer: Laidlaw Solutions Ltd.
    - Web: [www.laidlaw.net](http://www.laidlaw.net).
    - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
    - Product reference: Orbis Classic Stainless Steel Signs
  - Type: 60 607.
  - Finish: SS.
- 112 SIGNAGE SYSTEM - MODULAR UNIT LETTERING AND BOARD
- System manufacturer: As Clause 110a .
    - Product reference: Orbis Classic system .
  - Layout and dimensions: Submit proposals .
  - Lettering:
    - Language: English .
    - Font: Helvetica medium .
    - Colour: Manufacturer's standard range .
    - Size: 50 mm .
  - Symbols and graphics: Manufacturer's standard range .
    - Colour: Manufacturer's standard range .
    - Size: Manufacturer's standard range .
  - Background colour: Manufacturer's standard range .
  - Sign type: Submit proposals .
    - Inserts: Composite metal and plastics .
    - Manufacturing process: Manufacturer's standard .
  - Supports/ Fixings: Door mounted, screw fixed .
  - Accessories: Not required .
- 120 INCLUSIVE SIGNAGE SYSTEMS - MODULAR TACTILE
- System manufacturer: As Clause 120A .
    - Product reference: Orbis Tactile Sign System .
  - Layout and dimensions: As drawing 480 .
  - Surface: Nonreflective with maximum gloss factor of 15% when tested to BS 2782-5 or BS EN ISO 2813.
  - Lettering:
    - Language: English.
    - Font: Helvetica medium .
    - Colour: Manufacturer's standard range .
  - Characters and symbols: Tactile symbols male, female, disabled and Tactile symbols up, down arrows and floor levels .
    - Position: Manufacturer's standard range .
    - Characters: Raised between 1 and 1.5 mm with stroke width that allows both sides of the character to be felt with the fingers at a single pass.
    - Colour: Manufacturer's standard range .
    - Size: Manufacturer's standard range .
  - Background colour: Dark blue RAL ??? .
  - Sign type: Stainless steel plate .
    - Inserts: Composite metal and plastics .
    - Manufacturing process: Manufacturer's standard .
  - Supports/ Fixings: Door mounted, screw fixed .
  - Accessories: Not required .

- 120A INCLUSIVE SIGNAGE SYSTEMS
- Manufacturer: Laidlaw Solutions Ltd.
    - Web: [www.laidlaw.net](http://www.laidlaw.net).
    - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
    - Product reference: Orbis Tactile Signage System
  - Type: 60.001.1, 60.001.2, 60.001.3, 60.001.4, 60.001.7.
- 140 ROAD SIGNAGE SYSTEM - RETROREFLECTIVE R2 - Directional / Informatory Signage
- Standard: To BS EN 12899-1
    - Piercing of signs: P3 .
    - Sign edges: E1 .
    - Surface protection: SP1 .
  - System manufacturer: Submit proposals .
    - Product reference: Submit proposals .
  - Layout and dimensions: As drawings .
  - Lettering:
    - Language: English .
    - Font: In accordance with DFT 'Traffic signs manual' .
    - Colour: In accordance with DFT 'Traffic signs manual' .
    - Size: In accordance with DFT 'Traffic signs manual' .
  - Symbols and graphics: In accordance with DFT 'Traffic signs manual' .
    - Colour: In accordance with DFT 'Traffic signs manual' .
    - Size: In accordance with DFT 'Traffic signs manual' .
  - Background colour: In accordance with DFT 'Traffic signs manual' .
  - Sign type: Retroreflective R2 .
    - Manufacturing process: Manufacturer's standard .
  - Supports/ Fixings: Posts for road signs .
  - Accessories: Not required .
- 140A ROAD SIGNAGE SYSTEM - RETROREFLECTIVE R1 - Bus Stop / Clearway Signage
- Standard: To BS EN 12899-1
    - Piercing of signs: P3 .
    - Sign edges: E1 .
    - Surface protection: SP1 .
  - System manufacturer: Submit proposals .
    - Product reference: Submit proposals .
  - Layout and dimensions: As drawings .
  - Lettering:
    - Language: English .
    - Font: In accordance with DFT 'Traffic signs manual' .
    - Colour: In accordance with DFT 'Traffic signs manual' .
    - Size: In accordance with DFT 'Traffic signs manual' .
  - Symbols and graphics: In accordance with DFT 'Traffic signs manual' .
    - Colour: In accordance with DFT 'Traffic signs manual' .
    - Size: In accordance with DFT 'Traffic signs manual' .
  - Background colour: In accordance with DFT 'Traffic signs manual' .
  - Sign type: Retroreflective R1 .
    - Manufacturing process: Manufacturer's standard .
  - Supports/ Fixings: Posts for road signs .
  - Accessories: Not required .

140B ROAD SIGNAGE SYSTEM - NON-RETROREFLECTIVE NR1- Waiting and Loading Restrictions Signage

- Standard: To BS EN 12899-1
  - Piercing of signs: P3 .
  - Sign edges: E1 .
  - Surface protection: SP1 .
- System manufacturer: Submit proposals .
  - Product reference: Submit proposals .
- Layout and dimensions: As drawings .
- Lettering:
  - Language: English .
  - Font: In accordance with DFT 'Traffic signs manual' .
  - Colour: In accordance with DFT 'Traffic signs manual' .
  - Size: In accordance with DFT 'Traffic signs manual' .
- Symbols and graphics: In accordance with DFT 'Traffic signs manual' .
  - Colour: In accordance with DFT 'Traffic signs manual' .
  - Size: In accordance with DFT 'Traffic signs manual' .
- Background colour: In accordance with DFT 'Traffic signs manual' .
- Sign type: Nonretroreflective NR1 .
  - Manufacturing process: Manufacturer's standard .
- Supports/ Fixings: Posts for road signs .
- Accessories: Not required .

150 ROAD SIGNAGE SYSTEM [Microprismatic (Highly Reflective) - Warning / Regulatory Signage]

Standard: To BS 8408 - 2005

- Piercing of signs: [P3] .
- Sign edges: [E1] .
- Surface protection: [SP1] .
- System manufacturer: [Submit proposals] .
- Product reference: [Submit proposals] .
- Layout and dimensions: [As drawings] .
- Lettering:
  - Language: [English] .
  - Font: [In accordance with DFT 'Traffic signs manual'] .
  - Colour: [In accordance with DFT 'Traffic signs manual'] .
  - Size: [In accordance with DFT 'Traffic signs manual'] .
- Symbols and graphics: [In accordance with DFT 'Traffic signs manual'] .
  - Colour: [In accordance with DFT 'Traffic signs manual'] .
  - Size: [In accordance with DFT 'Traffic signs manual'] .
- Background colour: [In accordance with DFT 'Traffic signs manual'] .
- Sign type: [Microprismatic] .
- Manufacturing process: [Manufacturer's standard] .
- Supports/ Fixings: [Posts for road signs] .
- Accessories: [Not required] .

### SYSTEM PERFORMANCE

210 GENERAL REQUIREMENTS

- Signage system: Complete to BS 559, including facing information, components, inserts, accessories and fixings necessary to complete the system.
  - Comply with the requirements of: Fire strategy report and Building operation report .
- Geometric shapes, colours and layout: In accordance with BS 8501.
- Design standard for the disabled: In accordance with BS 8300.
- Proposals: Submit drawings, schedules, technical information, calculations and manufacturer's literature.

- 220 **ROAD SIGNAGE REQUIREMENTS**
- Signage system: Complete in accordance with relevant parts of BS 12899-1 and the Department for Transport 'Traffic signs manual'.
  - Product testing standard: To BS 8442.
  - Proposals: Submit drawings, schedules, technical information, calculations and manufacturer's literature.
- 230 **STRUCTURAL PERFORMANCE OF EXTERNAL SIGNAGE SYSTEM**
- Wind loads:
    - Standard: To BS 6399-2 .
- 240 **FIRE REACTION OF SIGNAGE SYSTEM : DIRECTIONAL**
- Non flammable surface:
    - Standard: Class 1 to BS 476-7 .
- 280 **DESIGN LIFE OF SIGNAGE SYSTEM : DIRECTIONAL**
- Duration: 10 years .
    - Subject to reasonable wear and tear.
  - Environment: Internal .
  - Condition of use: Subject to regular maintenance.
- 290 **SIGNAGE SAMPLES**
- Sign type: Inclusive signage Tactile .
    - Action: Submit labelled samples.
    - Conformity: Retain samples on site for the duration of the contract or until instructed to remove.
    - Delivered product: To conform with labelled samples.
- 295 **SIGNAGE SAMPLES BOARD**
- Samples board: Submit.
    - Content: Selected labelled signs, showing methods of fixing.
    - Conformity: Retain samples on site for the duration of the contract or until instructed to remove.
    - Delivered product: To conform with labelled samples.
- PRODUCTS**
- 305 **PRODUCTS GENERALLY**
- Standard: To BS 559.
- 320 **ALUMINIUM PLATES**
- Manufacturer: Laidlaw Solutions Ltd. .
    - Product reference: Orbis centurion Aluminium Signs .
  - Component thickness: 6 mm, 2 mm facing on 4 mm backing panel .
  - Finish: Anodized to BS 3987 .
  - Perimeters: Manufacturer's standard .
- 320A **ALUMINIUM SIGNS**
- Manufacturer: Laidlaw Solutions Ltd.
    - Web: [www.laidlaw.net](http://www.laidlaw.net).
    - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
    - Product reference: Orbis Centurion Aluminium Signs
  - Type: 60 700.9.

- 420 POSTS FOR ROAD SIGNS
- Standard: To BS 873-7.
  - Manufacturer: Submit proposals .
    - Product reference: Submit proposals .
  - Material: Steel .
  - Size: 76 mm diameter 3250 mm long .
  - Finish: Galvanized .
  - Colour: Grey .
  - Base: None. .

#### EXECUTION

- 610 FIXING SIGNS GENERALLY
- Installation: To BS 559.
    - Secure, plumb and level.
  - Strength of fasteners: Sufficient to support all live and dead loads.
  - Fasteners and or adhesives: As section Z20.
  - Fasteners for external signs: Corrosion resistant material or with a corrosion resistant finish. Isolate dissimilar metals to avoid electrolytic corrosion.
  - Fixings showing on surface of sign: Must not detract from the message being displayed.
- 620 FIXING SIGNS FOR THE VISUALLY IMPAIRED
- Protection of users:
    - Fasteners for tactile/ Braille signs must not have sharp edges or protrusions that would cause confusion or injury to users.
- 630 FIXING ROAD SIGNS
- Protrusion of post top above sign: Not permitted unless supporting a luminaire.
  - Drilling of components:
    - Ferrous components: Drilled before the application of any finish.
    - Plastics sheeting: Apply clear lacquer recommended by plastics sheet manufacturer to edges of holes to prevent ingress of moisture damaging the lamination.
  - Erection: In accordance with the DFT 'Traffic signs manual,' Chapter 1.
  - Fixing: Austenitic stainless steel fasteners recommended for the purpose by the sign manufacturer.
- 640 FOUNDATIONS FOR EXTERNAL POSTS
- Type: Mass concrete block with 300mm square x 500mm deep post hole .
  - Size: 300 x 300 x 500mm deep with top 150mm below finished ground surface .
  - Concrete: To BS 8500-2.
    - Designated type: GEN 1 .
    - Admixtures: Submit proposals.
    - Prohibited: Calcium chloride and admixtures containing calcium chloride.
  - Consistence class: Contractor's choice.
  - Other requirements: None .
- 660 EXPOSED CONCRETE FOUNDATIONS TO POSTS
- Finish: Compact until air bubbles cease to appear on the upper surface, then weather to shed water and trowel smooth.
- 670 ELECTRICAL AND DATA SERVICES
- Services connection required: Power for lighting .
  - Standard: To BS 7671.
  - Coordinate with services trades.

**COMPLETION****910 DOCUMENTATION**

- Submit:
  - Manufacturer's maintenance instructions.
  - Guarantees, warranties, test certificates, record schedules and log books.

**920 SPARES**

- Supply as follows:
  - Type: Inclusive signage system Orbis Tactile Sign System , Nameplate Inserts .
  - Quantity: 5 modular sets containing all alpha and numeral characters .

**930 SPECIALIST TOOLS**

- Supply as follows: 2 sets of nameplate adjustment tools .

N  
Furniture/Equipment

**N15**

**Fire and safety signage systems**

## N15 Fire and safety signage systems

To be read with Preliminaries/ General Conditions.

### GENERAL

#### 110 FIRE SIGNAGE SYSTEMS FOR ESCAPE ROUTE

- System manufacturer: Submit proposals .
  - Product reference: Submit proposals .
- Layout and dimensions: As schedule 480 and Layout Drawings 482,483 and 484 .
  - Language: English
- Sign type: Self luminous .
  - Manufacturing process: Manufacturer's standard .
- Supports/ Fixings: Wall mounted, screw fixed .
- Accessories: Not required .

#### 120 SAFETY SIGNAGE SYSTEMS - HAZARD

- System manufacturer: Submit proposals .
  - Product reference: Submit proposals .
- Layout and dimensions: As schedule 480 and Layout Drawings 482,483 & 484 .
  - Language: English
- Sign type: Adhesive vinyl sheet .
  - Manufacturing process: Manufacturer's standard .
- Supports/ Fixings: Wall mounted, self adhesive .
- Accessories: Not required .

### SYSTEM PERFORMANCE

#### 210 GENERAL REQUIREMENTS

- Signage system design:
  - Complete to: BS 559 and BS ISO 16069.
  - Comply with the requirements of: Building Operation Report and Fire Strategy Report .
- Proposals: Submit drawings, schedules, technical information, calculations and manufacturer's literature.

#### 240 SIGNAGE SYSTEM SPECIFICATION

- Content: Signs including facing information, components, inserts, accessories and fixings necessary to complete the system.
- Geometric shapes, colours and layout: To BS 5499-1.
  - Font: Helvetica medium.
- Escape route: In accordance with BS 5499-4 and BS ISO 16069
- Safety meaning: In accordance with BS 5499-5.
- Water safety: In accordance with BS 5499-11.

#### 270 FIRE REACTION OF FIRE SIGNAGE SYSTEM

- Non flammable surface:
  - Standard: Class 1 to BS 476-7 .

- 280 DESIGN LIFE OF SAFETY SIGNAGE SYSTEM
- Duration: 15 years .
    - Subject to reasonable wear and tear.
  - Environment: Internal .
  - Condition of use: Subject to regular maintenance.
- 290 SIGNAGE SAMPLES
- Sign type: Safety .
    - Action: Submit labelled samples.
    - Conformity: Retain samples on site for the duration of the contract or until instructed to remove.
    - Delivered products: To conform with labelled samples

## PRODUCTS

- 305 SIGNAGE PRODUCTS GENERALLY
- Standard: To BS 559.
  - Colorimetric and photometric properties: To BS 5378-2.
- 310 ADHESIVE VINYL SHEET FOR ESCAPE ROUTE SIGNS
- Manufacturer: As Clause 310A .
    - Product reference: Orbis Fire Door Signs .
  - Component thickness: 2 mm .
  - Finish: Matt .
- 320 ALUMINIUM PLATE FOR ESCAPE ROUTE SIGNS
- Manufacturer: As Clause 320a .
    - Product reference: Orbis Aluminium Exit Signs .
  - Component thickness: 2 mm .
  - Finish: Manufacturer's standard .
  - Perimeters: Manufacturer's standard .
- 320A FIRE EXIT SIGNS
- Manufacturer: Laidlaw Solutions Ltd.
    - Web: [www.laidlaw.net](http://www.laidlaw.net).
    - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
    - Product reference: Orbis Aluminium Fire Exit Signs
  - Type: As schedule 480 .
  - Fixing: Self adhesive.
  - Photoluminescent: Not required.
- 320B STAINLESS STEEL PLATE FIRE DOOR SIGNS
- Manufacturer: Laidlaw Solutions Ltd.
    - Web: [www.laidlaw.net](http://www.laidlaw.net).
    - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
    - Product reference: Orbis Classic Circular Fire Door Signs
  - Type: 60 601.
  - Finish: SS.

## 330 PLASTICS SHEET FOR HAZARD SIGNS

- Material: Acrylic.
- Manufacturer: As Clause 330A .
  - Product reference: Submit proposals .
- Component thickness: To BS 559 .
- Finish: Manufacturer's standard .
- Perimeters: Manufacturer's standard .

## 330A PLASTIC FIRE EXIT SIGNS

- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Orbis Plastic Fire Exit Signs
- Type: As schedule ???.
- Fixing: Wood screw.
- Photoluminescent: Not required.

**EXECUTION**

## 610 FIXING SIGNS GENERALLY

- Installation: To BS 559.
  - Secure, plumb and level.
- Fasteners and adhesives: As section Z20.
- Strength of fasteners: Sufficient to support live and dead loads.
- Fasteners for external signs: Corrosion resistant material or with a corrosion resistant finish. Isolate dissimilar metals to avoid electrolytic corrosion.
- Fixings showing on surface of sign: Must not detract from the message being displayed.

**COMPLETION**

## 910 DOCUMENTATION

- Submit:
  - Manufacturer's maintenance instructions.
  - Guarantees, warranties, test certificates, record schedules and logbooks.

## 920 SPARES

- Supply as follows:
  - Type: Escape route signs ??? and Hazard signs ??? .
  - Quantity: 1 set .

## 930 SPECIALIST TOOLS

- Supply as follows: 1 set suspension adjustment tools .

**N  
Furniture/Equipment**

**N17**  
**Portable fire fighting systems**

## N17 Portable fire fighting systems

To be read with Preliminaries/ General Conditions.

### GENERAL

- 110 PORTABLE FIRE EXTINGUISHER SYSTEM REFER ARCHITECTS DRAWINGS 480-484 FOR LOCATION
- Type: Carbon dioxide .
    - Capacity: 5 kg.
    - Supports: Submit proposals.
- 110A PORTABLE FIRE EXTINGUISHER SYSTEM REFER ARCHITECTS DRAWINGS 480-484 FOR LOCATION
- Type: Wet chemical.
    - Capacity: 6 L.
    - Supports: Submit proposals.
- 110B PORTABLE FIRE EXTINGUISHER SYSTEM REFER ARCHITECTS DRAWINGS 480-484 FOR LOCATION
- Type: Dry powder .
    - Capacity: 6 kg.
    - Supports: Submit proposals.
- 110C PORTABLE FIRE EXTINGUISHER SYSTEM REFER ARCHITECTS DRAWINGS 480-484 FOR LOCATION
- Type: Foam .
    - Capacity: 6 L.
    - Supports: Submit proposals.
- 110D PORTABLE FIRE EXTINGUISHER SYSTEM REFER ARCHITECTS DRAWINGS 480-484 FOR LOCATION
- Type: Carbon dioxide .
    - Capacity: 2 kg.
    - Supports: Submit proposals.
- 150 FIRE BLANKET SYSTEM REFER ARCHITECTS DRAWINGS 480-484 FOR LOCATION
- Type: Heavy duty.
  - Size: Submit proposals.
  - Supports: Mounting brackets.
- 160 FIRE BUCKET SYSTEM TO SERVICE YARD AREA
- Type: Steel with lid.
  - Supports: Fixing bracket.

### 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

- 310 CARBON DIOXIDE EXTINGUISHERS
- Standard: To BS EN 3-6.
  - Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
- 320 DRY POWDER EXTINGUISHERS
- Standard: To BS EN 3-6.
  - Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
- 330 FOAM EXTINGUISHERS
- Standard: To BS EN 3-6.
  - Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
- 350 WET CHEMICAL EXTINGUISHERS
- Standard: To BS 7937.
  - Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
- 410 FIRE BLANKETS - LIGHT DUTY
- Standard: To BS EN 1869.
  - Manufacturer: Submit proposals.
    - Product reference: Submit proposals. Refer to Architects drawings 480-484 for locations..
- 420 FIRE BLANKETS - HEAVY DUTY
- Standard: To BS 7944.
    - Type: 1.
  - Manufacturer: Submit proposals.
    - Product reference: Submit proposals. Refer to Architects drawings 480-484 for locations..
- 450 FIRE BUCKETS
- Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
  - Sand: Clean.

#### EXECUTION

- 610 INSTALLING PORTABLE FIRE EXTINGUISHERS
- Mounting height above finished floor level: Submit proposals.
- 650 INSTALLING FIRE BLANKETS
- Mounting height above finished floor level: Submit proposals.

- 670    **INSTALLING FIRE BUCKETS**
- Mounting height above finished floor level: Submit proposals.
  - Contents: Fill bucket with clean sand.

**COMPLETION**

- 910    **CLEANING**
- Protective wrappings: Remove.
  - Cleaning: Clean off and wipe down container finishes.
- 920    **TESTING**
- Test standard: To BS 5603-0.
  - Test times: Submit proposals.
  - 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.

**N  
Furniture/Equipment**

**N25**

**Permanent access and safety equipment**

## N25 Permanent access and safety equipment

To be read with Preliminaries/ General conditions.

### 90 Fall Restraint System

The specialist contractor will be responsible for design, supply, installation, commissioning and testing of the fall restraint systems the scope of which are described in the Architects Drawing of Intent (dwg no 497). All in accordance with EN 363. The contractor will also be responsible for the co-ordination of the elements of the system with the adjoining materials at all interfaces.

#### TYPES OF SYSTEM/ EQUIPMENT

### 210 GUIDED TYPE FALL ARREST SYSTEM TO POOL ROOF

- Manufacturer: Latchways plc tel: 01380 732700.
  - System reference: Category B1 system, fall restraint (approved and tested for fall arrest) system to be used for building maintenance operations by basic trained personnel using standard PPE system located 2m from roof edge to provide safe access on roof for 2 users..
- Anchorage device: Latchways Mansafe horizontal stainless steel cable, conforming to BS MA 29. Anchorage points: Latchways constant force posts for Keybemo 400 roofing. Top fixed to the seams of the panel using 4 clamp blocks per post..
- Overall system length: refer to architects roof drawings.
- Intermediate support spacing: Refer System design drawings.
- Accessories/ Other requirements: PPE harnesses + lanyards to be supplied and stored on site for maintenance use. Personnel trained to have operational knowledge of harness and system and regulation/safety legislation. System must limit the load to a constant force of 10kN in the event of a fall and absorb the energy integrally..
- Installation: To BS 7883 by the system manufacturer or a contractor approved by the system manufacturer.
- Structural anchors: Type recommended by the system manufacturer to suit the structure/ fabric into which they will be fixed.

### 212 GUIDED TYPE FALL ARREST SYSTEM TO FOYER ROOF

- Manufacturer: Latchways plc tel: 01380 732700.
  - System reference: Category B1 system, fall restraint (approved and tested for fall arrest) system to be used for building maintenance operations by basic trained personnel using standard PPE system located 2m from roof edge to provide safe access on roof for 2 users..
- Anchorage device: Latchways Mansafe horizontal stainless steel cable, conforming to BS MA 29. Anchorage points: Latchways constant force posts for Curtain Walling roof. Top fixed as per Latchways detail design..
- Overall system length: refer to architects roof drawings.
- Intermediate support spacing: Refer System Design drawings.
- Accessories/ Other requirements: PPE harnesses + lanyards to be supplied and stored on site for maintenance use. Personnel trained to have operational knowledge of harness and system and regulation/safety legislation. System must limit the load to a constant force of 10kN in the event of a fall and absorb the energy integrally..
- Installation: To BS 7883 by the system manufacturer or a contractor approved by the system manufacturer.
- Structural anchors: Type recommended by the system manufacturer to suit the structure/ fabric into which they will be fixed.

- 220 SINGLE POINT ANCHORAGE DEVICES To Pool Roof Perimeter as drawings
- Standard: To BS EN 795.
  - Manufacturer: As clause 220A.
    - Product reference: Constant Force Post 51001-00.
  - Type: Refer latchways drawing 3310-01A.
  - Material/ Finish: Stainless Steel.
  - Locations: As per contractors drawings.
  - Installation: To BS 7883.
  - Other requirements: Provide with each anchor:
    - A backing disc giving the manufacturer's name and telephone number and the date of installation.
    - A certificate of compliance with testing and examination requirements of BS EN 365.
- 220A SINGLE POINT ANCHORAGE DEVICES
- Manufacturer: Latchways plc.
    - Web: [www.latchways.com](http://www.latchways.com).
    - Email: [info@latchways.com](mailto:info@latchways.com).
    - Product reference: Pushlock Safety Eyebolt System
  - Socket cap finish: Stainless steel.
- 220B SAFETY GUARDRAIL Between Accommodation Block and Pool Roof
- Manufacturer: Latchways plc.
    - Web: [www.latchways.com](http://www.latchways.com).
    - Email: [info@latchways.com](mailto:info@latchways.com).
    - Product reference: VersiRailFixed
  - Uprights: Versirail Curved Upright.
    - Centres: 2000 mm .
  - Handrails and kneerails: As drawing LWD/1 9 12.
    - Corner sections: Not required.
  - End parts: 22063-00 .
    - Access gates: Not required.
    - Connecting elements: As drawing LWD/1 9 12.
    - Kneerail centres, vertical: 500 mm .
  - Kickboards: Not required.
  - Mounting plates: 22042-00 .
  - Sealing collars: Not required.
  - RAL colour: As drawing ???.
  - Other requirements: As drawing ???.

#### DESIGN/ PERFORMANCE REQUIREMENTS

- 410 WIND LOADING
- General: Design access/ safety system to withstand calculated wind loads with equipment in position of maximum exposure and in parked position.
  - Wind loads: Calculate in accordance with BS 6399-2, Standard Method:
    - Basic wind speed (Vb): 24m/s.
    - Altitude factor (Sa): 1.025.
    - Direction factor (Sd): 1.
    - Seasonal factor (Ss): 1.
    - Probability factor (Sp): 1.
    - Terrain and building factor (Sb), determined from BS 6399-2, table 4 1.742.

## 430 SAFETY

- General: The equipment as installed must have no irregularities/ projections capable of inflicting personal injury.
- Finished surfaces and edges of all accessible parts: Regular and smooth.

## 440 DESIGN LIFE/ MAINTENANCE PROGRAMME

- Design life of access/ safety system: Not less than 15 years.
- Schedule for maintenance and for replacement of components: Submit.

## 460 ASSESSMENT/ TESTING OF FIXING POINTS FOR ANCHOR DEVICES

- Design and installation of fixings in steelwork or timber: Verified by calculation to be capable of sustaining the relevant static and dynamic test forces specified in BS EN 795, clause 4.3.
- Fixings in other materials: Verify suitability by carrying out a test in a sample of the material. The sample must be capable of sustaining the relevant static and dynamic test forces specified in BS EN 795, clause 4.3. Thereafter, each structural anchor installed in that material must be subjected to an axial pull out force of 5 kN to confirm the soundness of the fixing. The structural anchor must sustain the force for a minimum of 15 seconds.

**FABRICATION, ASSEMBLY AND INSTALLATION**

## 510 FABRICATION AND ASSEMBLY GENERALLY

- Machine cutting, drilling and assembly: Carry out as much as possible in the workshop. Obtain approval for any reassembly on site.
- Dissimilar metal surfaces of assembly components/ supports/ fixings: Isolate to prevent electrolytic corrosion.

## 520 PROTECTION

- General: Do not deliver to site any components or assemblies that cannot be installed immediately or unloaded into a suitable well protected storage area.

## 530 SUITABILITY OF STRUCTURE/ FABRIC

- Visual and geometric survey of supporting structure and fabric: Carry out before commencing installation of access/ safety system. Report immediately if structure/ fabric will not allow required accuracy/ security of erection/ fixing.

## 535 EXECUTION GENERALLY

- Structural members: Do not modify, cut notch or make holes in structural members without permission.
- Frameworks: Assemble and brace, including temporary members required for installation.
  - Temporary support: Do not use access systems as temporary support or strutting for other work.
- Bolted joints:
  - Contact between dissimilar metals: Avoid.
  - Bolts and washers: Select types, sizes and quantities of fasteners or packings and spacings to retain supported components without distortion or loss of support.
- Welded joints: Comply with latest edition of National Structural Steelwork Specification (NSSS), Section 5.
- Finished components: Smooth, free from distortion, cracks, burrs and sharp arrises.

- 540 MECHANICAL FIXINGS
- Materials: Unless otherwise recommended by equipment manufacturer:
    - Connecting bolts and other fixings fully accessible for inspection: Mild steel hot dip galvanized to BS 7371-6.  
Nuts: Tapped after galvanizing.
    - Cast-in anchors and other fixings not accessible for routine inspection: Austenitic stainless steel, grade 1.4401 (316) to BS EN 10088-1.
- 550 FASTENERS, INSERTS AND BOLTS FOR BUILDING IN
- Supplier: Equipment manufacturer/ supplier.
- 560 FIXINGS FOR SECURING EQUIPMENT
- Adjustment capability: Adequate three dimensional adjustment to accommodate building structure/ fabric irregularities.
- 570 FIXING ANCHOR INSTALLATION
- Site drilling or cutting into structure/ fabric: Permitted only in approved locations.
  - Distance between all fixing devices and edges of supporting material: Not less than recommended by fixing manufacturer.
- 612 N25/612 IDENTIFICATION AND REGISTRATION LABEL(S) FOR GUIDED FALL ARREST SYSTEM
- Provide and fix to each system a permanent label giving:
    - Latchways name, address and telephone number
    - Name and/or reference code of site and system
    - Serial number and year of manufacture
    - Maximum number of users to be attached at any time
    - Date of installation / last inspection
    - PPE requirements
    - Whether the system is an arrest or restraint system
    - Label(s) to be located in positions such that they can be easily read.
- N25/640 MARKING OF ANCHOR DEVICES:
- Provide on or near each anchor device a label or other clear marking giving:
    - Latchways name and telephone number
    - Serial number and year of manufacture of device
    - Maximum number of personnel that may be attached to the device at any one time
    - Requirements for energy absorbers, ground clearance, etc.
    - Where an anchor device is intended solely for use with personal protective equipment, this restriction must be indicated by pictogram or other suitable marking on or near the device.
- 640 MARKING OF ANCHOR DEVICES
- Provision: Provide on or near each anchor device a label or other clear marking giving:
    - Manufacturer's name and telephone number.
    - Serial number and year of manufacture of device.
    - Maximum number of personnel that may be attached to the device at any one time.
    - Requirements for energy absorbers, ground clearance, etc.
  - Anchor devices intended solely for use with personal protective equipment: Indicate restriction of use by pictogram or other suitable marking on or near the device.

- 810 **SERVICE/ MAINTENANCE** Fall Restraint System and access ladders.
- General: Following acceptance of the completed installation, service and maintain the equipment for the period stated below as and at intervals recommended by the manufacturer. Such maintenance to include a 'call-out' service during normal working hours to maintain the equipment in an acceptable and safe condition.
  - Service/ Maintenance period: 12 years.
- 820 **OPERATING INSTRUCTIONS**
- Equipment and accessories: Where appropriate, mark in such a way that it is possible to identify the correct mode of operation for their safe use.
- 830 **OPERATING AND MAINTENANCE MANUAL**
- General: Provide, for inclusion in the Building Manual, printed instructions and recommended procedures to be established by the Employer for operating and routinely maintaining the equipment. Provide diagrams where appropriate.
  - Content:
    - Instructions for assembling/ erecting equipment for use.
    - Comprehensive operating instructions, including safety and emergency procedures, for all motions including upward, downward and lateral travel, and slew.
    - Servicing and planned maintenance procedures, including assembly instructions where maintenance necessitates dismantling of machinery parts.
    - List of replacement parts, with references.
    - Recommended procedures for testing equipment.
- 840 **AS INSTALLED DRAWINGS**
- General: After commissioning/ testing of the equipment provide as installed drawings for inclusion in the Building Manual.
    - Number of sets: 2.
  - Drawing content:
    - Contractor's name and contract number.
    - Location and date of installation.
    - Manufacturer's name, model and type numbers.
    - General arrangement of the complete installation.
    - Electrical circuit wiring diagrams complete with details and ratings of all items of equipment.

**P**

**Building fabric sundries**

**P10**  
**Sundry insulation/ proofing work**

## P10 Sundry insulation/ proofing work

### SUNDRY INSULATION/ PROOFING WORK

To be read with Preliminaries/ General conditions.

#### TYPES OF INSULATION

#### 220 UNFACED MINERAL WOOL INSULATION SUSPENDED VERTICALLY

- Material: Rock wool.
- Standard: To BS EN 13162, Kitemark certified.
- Manufacturer: As Clause 220A.
  - Product reference: As Clause 220A.
- Recycled content: Submit proposals.
- Density (minimum): 12 kg/m<sup>3</sup>.
- Thickness: 50 mm.
- Width: Widest practical.
- Installation requirements:
  - Joints: Butted, no gaps.
  - Head fixing: Staples or large head nails.

#### 220A INSULATION

- Manufacturer: Rockwool Ltd.
  - Web: [www.rockwool.co.uk](http://www.rockwool.co.uk).
  - Email: [info@rockwool.co.uk](mailto:info@rockwool.co.uk).
  - Product reference: Cladding Roll A/F
- Thickness: 50 mm.

#### 230 UNFACED MINERAL WOOL INSULATION FITTED BETWEEN STUDS

- Material: Rock wool.
- Standard: To BS EN 13162, Kitemark certified.
- Manufacturer: As clause 230A.
  - Product reference: Acoustic Slab.
- Recycled content: Not applicable.
- Density (minimum): 12 kg/m<sup>3</sup>.
  - Thickness: 100 mm.
- Installation requirements:
  - Fixing: Fit tightly with joints, butted, no gaps.
  - Fasteners: Used to prevent slumping/ displacement.

#### 230A ACOUSTIC INSULATION

- Manufacturer: Rockwool Ltd.
  - Web: [www.rockwool.co.uk](http://www.rockwool.co.uk).
  - Email: [info@rockwool.co.uk](mailto:info@rockwool.co.uk).
  - Product reference: Acoustic Slab
- Thickness: 67 mm.

## 320 BREATHER MEMBRANE

- Material: To BS 4016, Type 3.
- Manufacturer: As Clause 320A.
  - Product reference: Nilvent .
- Installation requirements:
  - Setting out: Joints minimized. Membrane to form a continuous barrier to prevent water, snow and wind blown dust reaching the substrate.
  - Method of fixing: Stainless steel staples at 300 mm centres on line of horizontal laps into sheathing board.
  - Joints: Lapped 100 mm minimum horizontally and 150 mm minimum vertically.
  - Openings: Membrane fixed to reveals.
  - Bottom edges: Membrane lapped over flashings, sills, etc. to allow free drainage to the exterior.
- Penetrations: Sealed.

## 320A MEMBRANE

- Manufacturer: Kingspan Insulation Ltd.
  - Web: [www.insulation.kingspan.com](http://www.insulation.kingspan.com).
  - Email: [techline.uk@insulation.kingspan.com](mailto:techline.uk@insulation.kingspan.com).
  - Product reference: Nilvent®

## 410 FLEXIBLE CAVITY BARRIERS

- Manufacturer: As Clause 410A.
  - Product reference: Fire barrier.
- Material: Wired glass wool batts.
- Fire resistance rating: To BS EN 1363, EI 30 .
- Installation requirements:
  - Spacing: Installed in voids so the maximum unobstructed dimension in any direction is 10 m.
  - Fixing: Secure at perimeters and joints with no gaps, to provide a complete barrier to smoke and flame.

## 410A FIRE BARRIERS

- Manufacturer: Rockwool Ltd.
  - Web: [www.rockwool.co.uk](http://www.rockwool.co.uk).
  - Email: [info@rockwool.co.uk](mailto:info@rockwool.co.uk).
  - Product reference: Fire barrier
- Fire resistance: 1 hour.
- Facing: Plain.

## 432 MINERAL WOOL SLAB CAVITY BARRIERS

- Manufacturer: As Clause 432A.
  - Product reference: Firepro SP60.
- Fire resistance rating: To BS EN 1363, EI 30.
- Thickness: 100 mm.
  - Installation requirements: Continuous, with minimum joints.
  - Fasteners: ??? Ltd ref ??? galvanized steel brackets at 500 mm centres.
- Other requirements: None required.

## 432A FIRE STOPS

- Manufacturer: Rockwool Ltd.
  - Web: [www.rockwool.co.uk](http://www.rockwool.co.uk).
  - Email: [info@rockwool.co.uk](mailto:info@rockwool.co.uk).
  - Product reference: Firepro SP 60.
- Width: To suit cavity width of 140 mm.

## 440 FIRE PROTECTION

- Manufacturer: As clause 440A.
  - Product reference: Firepro Acoustic Intumescent Sealant.
- Material: Water based Acrylic Sealant.
- Thickness: 10mm.
- Fire resistance rating: To BS EN 1363, EI 30.
- Number of layers: 1.
- Installation requirements: Continuous, with minimum joints.
  - Fasteners: None required.
- Other requirements: Polyethylene backing rod.

## 440A SEALANT

- Manufacturer: Rockwool Ltd.
  - Web: [www.rockwool.co.uk](http://www.rockwool.co.uk).
  - Email: [info@rockwool.co.uk](mailto:info@rockwool.co.uk).
  - Product reference: Rockwool Firepro Acoustic Intumescent Sealant
- Colour: Grey.

P

**Building fabric sundries**

**P12**

**Fire stopping systems**

## P12 Fire stopping systems

**To be read with Preliminaries/ General conditions.**

### 2A INTUMESCENT FOAMS

- Manufacturer: PFC Corofil Fire Stop Products.
  - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
  - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
  - Product reference: C25 Cable Firestop

### 2B PIPE FIRE SLEEVES

- Manufacturer: PFC Corofil Fire Stop Products.
  - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
  - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
  - Product reference: Firepro Insulated Fire Sleeves

## GENERAL

### 100 FIRESTOPPING DESIGN

The contractor will be responsible for the detailed design of the firestopping measures including the interfaces and co-ordination with adjacent materials. The firestopping contractor will be LPCB approved, using LPCD approved products (ref LPCB Red Book Vol 2, 2010) and installed in compliance with the ASFP Red Book, 3rd Edition 2009. This will be in accordance with the Architect's drawings indicating the extent of compartmentation and smoke protection required in order to comply with the Building Regulations (dwg Nos 223, 224, 225, 226). In compliance with the Building Regulations the building will be covered by an "alternative approach" as defined by the Consultant Fire Engineer, reference must therefore be made to the Fire Strategy document.

### 110 FIRE STOPPING SYSTEM To pipes between floors

- Panel material or joint filler: Submit proposals.
- Sealant: Submit proposals.

### 110A MINERAL WOOL INTUMESCNT COATED RIGID BATTS

- Manufacturer: Rockwool Ltd.
  - Web: [www.rockwool.co.uk](http://www.rockwool.co.uk).
  - Email: [info@rockwool.co.uk](mailto:info@rockwool.co.uk).
  - Product reference: Rockwool Firepro Intumescent Coated Batt

### 111 INTUMESCENT FOAMS

- Manufacturer: PFC Corofil Fire Stop Products.
  - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
  - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
  - Product reference: C25 Cable Firestop

### 130 FIRE STOPPING SYSTEM TO INDIVIDUAL SERVICES PENETRATIONS TO COMPARTMENT WALLS AND FLOORS

- Joint filler: Pipe collars - concealed intumescent .
  - Size or thickness: 25 mm.
  - Pipe outside diameter: Varies.
- Sealant: Submit proposals.
  - Colour: Submit proposals.

140 FIRE STOPPING SYSTEM TO MULTIPLE SERVICES PENETRATIONS THROUGH COMPARTMENT WALLS

- Panel material: Boards - calcium silicate filled and fibre reinforced.
  - Thickness: 50 mm.
  - Number of layers: Two.
  - Framing: ?? x ?? pressed steel at ??? maximum centres.
- Finish: Submit proposals.
- Sealant: Intumescent foams.
  - Colour: Grey.

160 MOVEMENT JOINTS To Stone Cladding

- Soffit profiles: As drawing 301A.
- Joint width or height (minimum): 10 mm.
- Joint filler: Sealant backing material.
- Sealant: Fire resisting silicone.
  - Colour: Submit proposals.

**SYSTEM PERFORMANCE**

210 DESIGN

- Design: Complete the design of the fire stopping system.
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

240 FIRE RESISTANCE Compartment walls

- Fire resistance:
  - Rating to BS 476-20: 60/60.
  - Rating to BS EN 13501-2: EI 60.
- Surface spread of flame to BS 476-7: Class 0.
- Smoke resistance:
  - Air leakage rate (maximum): 3 m<sup>3</sup>/m<sup>2</sup>·hr.

**PRODUCTS**

305 PRODUCT CERTIFICATION

- Certification: For products specified generically, submit evidence of compliance with the specification.
- Acceptable evidence: Listing in CERTIFIRE Register.

310 BOARDS - CALCIUM SILICATE FIBRE REINFORCED

- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.

315 BOARDS - CALCIUM SILICATE FILLED AND FIBRE REINFORCED

- Manufacturer: Contractor's choice .
  - Product reference: Submit proposals.

325 BOARDS - MINERAL BOUND LIGHTWEIGHT

- Manufacturer: As Clause 325A.
  - Product reference: Coated panel system.

- 325A    **BOARDS - MINERAL BOUND LIGHTWEIGHT**
- Manufacturer: PFC Corofil Fire Stop Products.
    - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
    - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
    - Product reference: Coated Panel System
- 330      **FIRE STOP LAMINATES**
- Manufacturer: As Clause 330A.
    - Product reference: Quickpass Cable Seal.
- 330A    **FIRE STOP LAMINATES**
- Manufacturer: PFC Corofil Fire Stop Products.
    - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
    - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
    - Product reference: Quickpass Cable Seal
- 335      **INTUMESCENT FOAMS**
- Manufacturer: As Clause 335A.
    - Product reference: C25 Cable Firestop.
- 335A    **INTUMESCENT FOAMS**
- Manufacturer: PFC Corofil Fire Stop Products.
    - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
    - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
    - Product reference: C25 Cable Firestop
- 340      **INTUMESCENT MORTARS**
- Manufacturer: As clause 340a.
    - Product reference: Firestop Compound.
- 340A    **INTUMESCENT MORTARS**
- Manufacturer: PFC Corofil Fire Stop Products.
    - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
    - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
    - Product reference: Firestop Compound
- 345      **INTUMESCENT PILLOWS**
- Composition: Sealed polyethylene bags containing graphite and vermiculite granules treated with fire activated chemicals.
  - Integral reinforced eyelets: Required.
  - Linking cable: Non-corrosive cotton-coated wire.
    - Length: Varies .
  - Manufacturer: As Clause 345A.
    - Product reference: C300P Intumescent pillows.
- 345A    **INTUMESCENT PILLOWS**
- Manufacturer: PFC Corofil Fire Stop Products.
    - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
    - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
    - Product reference: C300P Intumescent Pillows

- 350 INTUMESCENT PUTTIES
- Manufacturer: As Clause 350A.
  - Product reference: Intumescent Silicone Putty.
- 350A INTUMESCENT PUTTIES
- Manufacturer: PFC Corofil Fire Stop Products.
  - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
  - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
  - Product reference: Intumescent Silicone Putty
- 360 MINERAL WOOL RIGID BATTS
- Standard: To BS 3958-5.
  - Manufacturer: As Clause 360A.
  - Product reference: Rockwool Firepro Intumescent coated Batt.
- 360A MINERAL WOOL RIGID BATTS
- Manufacturer: Rockwool Ltd.
  - Web: [www.rockwool.co.uk](http://www.rockwool.co.uk).
  - Email: [info@rockwool.co.uk](mailto:info@rockwool.co.uk).
  - Product reference: Rockwool Firepro Intumescent Coated Batt
- 370 PIPE COLLARS - CONCEALED INTUMESCENT
- Manufacturer: As Clause 370A.
  - Product reference: Intumescent Quickstop Couplings.
- 370A PIPE WRAPS AND COUPLINGS
- Manufacturer: PFC Corofil Fire Stop Products.
  - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
  - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
  - Product reference: Intumescent Quickstop Couplings
  - Pipe diameters: 110 mm.
- 375 PIPE COLLARS - INSULATED WRAP
- Manufacturer: As Clause 375A .
  - Product reference: Intumescent Pipe Wraps.
- 375A PIPE FIRE SLEEVES
- Manufacturer: PFC Corofil Fire Stop Products.
  - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
  - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
  - Product reference: Intumescent Pipe Wraps
- 380 PIPE COLLARS - SURFACE MOUNTED INTUMESCENT
- Manufacturer: As Clause 380A.
  - Product reference: Acoustic Intumescent Sealant.
- 380A SEALANTS - ONE-PART FIRE RESISTING ACRYLIC
- Manufacturer: PFC Corofil Fire Stop Products.
  - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
  - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
  - Product reference: Acoustic Intumescent Sealant
  - Colour: Grey.

- 385 SEALANT BACKING MATERIAL
- Manufacturer: As Clause 385A.
  - Product reference: Hydrocell XL.
- 385A SEALANT BACKING MATERIAL
- Manufacturer: Fosroc Ltd.
  - Web: [www.fosroc.com](http://www.fosroc.com).
  - Email: [uk@fosroc.com](mailto:uk@fosroc.com).
  - Product reference: Hydrocell XL
- 390 SEALANTS - FIRE RESISTING SILICONE
- Manufacturer: As Clause 390A.
  - Product reference: Fire Rated Silicone Sealant.
- 390A SEALANTS - FIRE RESISTING SILICONE
- Manufacturer: PFC Corofil Fire Stop Products.
  - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
  - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
  - Product reference: Fire Rated Silicone Sealant
- 395 SEALANTS - ONE-PART FIRE RESISTING ACRYLIC
- Manufacturer: As Clause 395A.
  - Product reference: Acoustic Intumescent Sealant.
- 395A SEALANTS - ONE-PART FIRE RESISTING ACRYLIC
- Manufacturer: PFC Corofil Fire Stop Products.
  - Web: [www.pfc-corofil.com](http://www.pfc-corofil.com).
  - Email: [sales@pfc-corofil.co.uk](mailto:sales@pfc-corofil.co.uk).
  - Product reference: Acoustic Intumescent Sealant
  - Colour: Grey.
- 410 SEALANTS - TWO-PART FIRE RESISTING POLYSULFIDE
- Manufacturer: As Clause 410A.
  - Product reference: Flamex2.
- 410A SEALANTS - TWO-PART FIRE RESISTING POLYSULFIDE
- Manufacturer: Fosroc Ltd.
  - Web: [www.fosroc.com](http://www.fosroc.com).
  - Email: [uk@fosroc.com](mailto:uk@fosroc.com).
  - Product reference: Flamex Two

## 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.

- 640 **INSTALLING BOARDING**
- Position of boarding: Within opening.
  - Framing: Provide framing to all edges of boarding.
  - Bedding: Bed boarding on two-part fire resisting polysulfide.
  - Double layers of board: Staggered butt joints.
    - Joints: Seal with board adhesive.
  - Fixing: Submit proposals.
- 650 **INSTALLING FIRE STOP LAMINATE**
- Strip width: Wider than joint width.
  - Fitting of strips: Compress strips and fit into joint, 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 the end of joints.
    - Joints in strips: Fit two intumescent 'end pieces' at each butt joint.
- 660 **INSTALLING INTUMESCENT FOAM**
- New joints: Remove builder's debris, mortar droppings, grease, and the like.
  - Old joints: Clean and remove existing sealant from the joint.
  - Priming: Lightly moisten substrate with water.
  - Application: Fill joint to approximately half its depth, allowing foam to expand to face of joint.
  - Trimming: Do not trim or cut the face of the cured foam.
- 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: 1 kg:1.2-1.3 L.
  - Mortar cure: Do not disturb mortar before final set has taken place.
  - Shuttering: Remove after mortar has cured.
- 680 **INSTALLING INTUMESCENT PILLOWS**
- Number of pillows (per m<sup>2</sup> of opening): Number necessary to achieve fire resistance.
  - Orientation of bags: Lay perpendicular to plane of element containing opening.
- 690 **APPLYING INTUMESCENT PUTTY**
- Sequence: Install putty after services are permanently installed.
  - Loose dust and combustible materials: Remove from the opening.
- 710 **INSTALLING BATTS**
- Installing batts: Fit tight into void between the floor or wall and the penetrating services.
  - Face of batts: Flush with the surface of wall, floor or soffit.
  - Joints: Sealed with fire resisting sealant.
  - Gaps between services and bulkhead: Seal with fire resisting sealant.
- 730 **FIXING PIPE COLLARS**
- Collar fixing: Submit proposals.
  - Gap around collar: Seal with intumescent foam.
  - Length of wraps: Project 50 mm from each side of the element.

**740 INSERTING SEALANT BACKING MATERIAL**

- New joints: Build-in joint filler as the work proceeds.
- Old joints: Not applicable.

**750 APPLYING SEALANT TO JOINTS**

- De-greasing: Contractor's choice .
- Priming: Primer by sealant manufacturer.
- Depth of sealant: 20 mm.
- Temperature: Do not apply water based sealants when they could be damaged by frost.

**COMPLETION****910 CLEANING**

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

**920 INSPECTION**

- Notice for inspection (minimum): 3 days.

P

**Building fabric sundries**

P20

Unframed isolated trims/ skirtings/ sundry items

**P20 Unframed isolated trims/ skirtings/ sundry items**

To be read with Preliminaries/ General conditions

- 110     **SOFTWOOD FRAMING FOR COLUMN ENCASEMENT**
- Quality of wood and fixing: To BS 1186-3.
    - Species: European whitewood.
    - Class: 3.
  - Moisture content at time of fixing: 9-13%.
  - Preservative treatment: Water based microemulsion as section Z12, service life 30 years.
  - Fire rating: Not applicable.
  - Profile: As drawing 427 , 428.
    - Finished size: 25 x 38 mm , 50 x 50 mm.
  - Finish as delivered: Prepared and primed, as section M60.
  - Fixing: Nailed at 450 mm centres.
- 120     **HARDWOOD SKIRTINGS GENERALLY, WINDOW BOARDS**
- Quality of wood and fixing: To BS 1186-3.
    - Species: American white oak.
    - Class: CSH.
  - Moisture content at time of fixing: 13-17%.
  - Preservative treatment: Water based microemulsion as section Z12, service life 30 years.
  - Fire rating: Not applicable.
  - Profile: Pencil rounded edges.
    - Finished size: 19 x 120 mm , 210 x 18mm.
  - Finish as delivered: One coat clear finish, as section M60.
  - Fixing: Nailed at 300 centres.
- 150     **METAL Brackets to Mullions for trunking system**
- Material: Stainless steel to BS EN 10088-2, grade 1.4404 (316L).
    - Thickness: As drawing SK 122,123.
  - Finish: Dull polished with fine brush/ belt..
  - Fixing: Austenitic stainless steel bolts.
  - Metalwork: As section Z11.
- 170     **PROPRIETARY Pipe casings to all exposed pipework**
- Manufacturer: As Clause 170A.
    - Product reference: Pendock CH type.
  - Size: As drawing 427,428.
  - Finish/ Colour: White Laminate.
  - Accessories: Matching preformed stop ends.
  - Fixing: Screwed to softwood grounds using manufacturer's screws, washers and matching caps.
    - Jointing: Butt joints.

## 170A CASING SYSTEM

- Manufacturer: Alumasc Interior Building Products Ltd.
  - Web: [www.pendock.co.uk](http://www.pendock.co.uk).
  - Email: [sales@alumascinteriors.com](mailto:sales@alumascinteriors.com).
  - Product reference: Pendock CH Type B.
- Dimensions:
  - Leg: As drawing 427,428.
  - Face: As drawing 427,428.
- Finish: High pressure laminate.
  - Colour/ Species: White.
- Joint type: J1.
- Accessories: Edge shadow gap and Softwood battens.

## 170B CASING SYSTEM

- Manufacturer: Alumasc Interior Building Products Ltd.
  - Web: [www.pendock.co.uk](http://www.pendock.co.uk).
  - Email: [sales@alumascinteriors.com](mailto:sales@alumascinteriors.com).
  - Product reference: Pendock MK Type B.
- Dimensions: Refer Drawings 427,428.
  - Leg A (horizontal): Varies.
  - Leg B (vertical): Varies.
- Finish: High pressure laminate.
- Colour/ species: White.
- Joint type: As drawing 427,428.
- Fixing: Sw battens screwed and plugged..
- Accessories/ Other requirements:
  - Internal corner;
  - Stop end - LH; and
  - Stop end - RH.

## 170C COLUMN CASING To Columns within Accommodation Block

- Manufacturer: Alumasc Interior Building Products Ltd.
  - Web: [www.pendock.co.uk](http://www.pendock.co.uk).
  - Email: [sales@alumascinteriors.com](mailto:sales@alumascinteriors.com).
  - Product reference: Pendock CL type B.
- Internal diameter: 450.
- Internal width: Refer drawing 524.
- Height: 2950 mm.
- Finish: High pressure laminate.
  - Colour/ Species: White.
- Joint type: J3.
- Accessories: Inner collar.

## 170D COLUMN CASING To columns within Accommodation Block.

- Manufacturer: Alumasc Interior Building Products Ltd.
  - Web: [www.pendock.co.uk](http://www.pendock.co.uk).
  - Email: [sales@alumascinteriors.com](mailto:sales@alumascinteriors.com).
  - Product reference: Pendock SQ type B.
- External dimensions (Face A x Face B): refer drawings 520,521,522,524,525 & 527 .
- Height: 2950mm.
- Finish: High pressure laminate.
  - Colour/ Species: White.
- Joint type: J1.
- Accessories: Inner collar.

## 240 PLYWOOD SHEATHING TO PERIMETER STEEL BEAMS

- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Face ply species: American white oak .
- Appearance class to BS EN 635: Class E/I.
- Bond quality to BS EN 314-2: Class 2.
- Fire rating: Not applicable.
- Thickness: 22 mm.
- Edges: Rounded.
- Finish: Prepared and primed as section M60 .
- Support/ Fixing: Pinned and glued to softwood grounds.

## 350 PINBOARDS

- Material and standard: Medium board to BS EN 622-3.
  - Type: MBL.H.
- Fire rating: Not applicable.
- Thickness: 15 mm.
- Size: 900 x 900 mm.
- Edges: Hardwood trim as clause 110.
- Fixing: To softwood grounds with brass cups and screws.
- Decorative facing: As clause 440.

## 420 BRACKET SUPPORTS FOR SHELVES

- Material: Aluminium.
  - Finish: Polyester powder coating.
  - Colour: Grey.
- Size: As drawings 523,528,529. .
- Fixing: Plugged and screwed to substrate.

**EXECUTION**

## 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.

P

**Building fabric sundries**

**P21**

**Door/ window ironmongery**

## P21 Door/ window ironmongery

To be read with Preliminaries/ General conditions.

### PRE-TENDER

#### 10 QUANTITIES AND LOCATIONS

- Quantities and locations of ironmongery are in the door schedule .
- Fixing: As sections L10 and L20.

### GENERAL

#### 100 IRONMONGERY DESIGN

The contractor will be responsible through the ironmongery supplier for the final detailed scheduling of the door ironmongery in accordance with the outline schedule prepared for the tender documents. This will take account of all performance requirements with regard to performance rating, moisture resistance and the Disability Discrimination Act. If alternative are to be proposed then samples must be submitted to the Architect for approval.

#### 121C IRONMONGERY FROM SINGLE PROPRIETARY RANGE

- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Orbis Classic Range
- Type: As schedule 425.
- Finish: Satin stainless steel.

#### 130 APPROVED SUPPLIERS

- Source: Obtain ironmongery from one of the following: Orbis Classic Handles .
- Notification: Submit details of selected supplier.

#### 140 SAMPLES

- General: Before placing orders with suppliers submit labelled samples of the following: door handles and locking mechanisms. .
  - Conformity: Retain samples on site for the duration of the contract. Ensure conformity of ironmongery as delivered with labelled samples.

#### 141 SAMPLE BOARDS

- General: Before placing orders with suppliers submit a sample board, containing labelled samples of ironmongery and showing methods of fixing.
- Range: Include door handles and locking mechanisms .
  - Conformity: Retain board on site in an approved location for the duration of the contract. Ensure conformity of ironmongery as delivered with labelled samples.

#### 170 IRONMONGERY FOR FIRE DOORS

- Relevant products: Ironmongery fixed to, or morticed into, the component parts of a fire resisting door assembly.
- Compliance: Ironmongery included in successful tests to BS 476-22 or BS EN 1634-1 on door assemblies similar to those proposed.
  - Certification: Submit CERTIFIRE certificates .
- Melting point of components (except decorative non functional parts): 800°C minimum.

## 180 CATEGORY OF DUTY FOR DOOR IRONMONGERY

- Standard: To DD 171.
  - Category of duty of doors: Severe duty .
- General: Durability of ironmongery components to be compatible with stated category of duty of each door leaf.
  - Exclusions: Ironmongery with specific duty or 'category of use' defined elsewhere.
- Documentation: Before placing orders with suppliers submit documentation showing product compliance with stated category of duty.

**DOOR HANGING DEVICES**

## 310 SINGLE AXIS DOOR HINGES to public areas

- Standard: To BS EN 1935.
  - Hinges to doors on escape routes and fire/ smoke control doors: CE marked.
- Manufacturer: As Clause 310A .
  - Product reference: As Clause 310A .
- Type: Lift off .
- Size: As schedule .
- Material/ finish: Satin stainless steel, grade 1.4401 (316) .
- Hinge grade: As schedule .
- Other requirements: None .

## 310A SINGLE AXIS DOOR HINGES

- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Orbis Classic Ball Bearing Hinge
- Type: 37 800.2.
- Finish: SS7.

## 315 PERFORMANCE SPECIFICATION FOR SINGLE AXIS DOOR HINGES To escape routes and protected zones.

- Standard: To BS EN 1935.
  - Hinges to doors on escape routes and fire/ smoke control doors: CE marked.
- Minimum classification grades:
  - Category of use: 4 .
  - Durability: 7 .
  - Test door mass: 7 .
  - Suitability for use on fire/ smoke doors: 1 .
  - Safety: 1.
  - Corrosion resistance: 4 .
  - Security - Burglar resistance: 1 .
  - Hinge grade: 14 .
- Type: As schedule .
- Size: As schedule .
- Material/ finish: Satin stainless steel, grade 1.4401 (316) .
- Other requirements: Radiused corners .

- 350 DOOR TRACK AND RUNNING GEAR To Meeting rooms and Multi-Purpose Room Sliding Partitions.
- Standard: To BS EN 1527.
  - Manufacturer: Becker .
    - Product reference: Refer sliding partition manufacturer. .
  - Track type: As drawing 410 .
  - Category of door: As drawing 410 .
  - Opening dimensions: As drawing 410 .
  - Accessories: As drawing 410 .
  - Operation: Smooth and quiet.
    - Safety: Doors not able to come off track when in use.

- 360 PERFORMANCE SPECIFICATION FOR DOOR TRACK AND RUNNING GEAR To Meeting Room and Multi-Purpose Room Sliding Partitions
- Standard: To BS EN 1527.
  - Minimum classification grades:
    - Category of use: - (no classification).
    - Durability: 6 .
    - Door mass: 2 .
    - Fire resistance: 0 .
    - Safety: - (no classification).
    - Corrosion resistance: 3 .
    - Security: - (no classification).
    - Category of door: 3 .
    - Initial friction: 3 .
  - Opening dimensions: As drawing 410 .
  - Accessories: As drawing 410 .
  - Operation: Smooth and quiet.
    - Safety: Doors not able to come off track when in use.

#### DOOR OPERATING DEVICES

- 410 OVERHEAD DOOR CLOSERS To all doors leading to Protected Zones and Compartment walls.
- Standard: To BS EN 1154.
    - Door closing devices to fire/ smoke control doors: CE marked.
  - Manufacturer: As Clause 410A .
    - Product reference: 31 800 .
  - Type: As schedule .
  - Power size: Adjustable 2-6 .
  - Other functions: As schedule 425 .
  - Casing finish: As schedule 425 .
  - Operational adjustment:
    - Variable power: Matched to size, weight and location of doors.
    - Latched doors: Override latches and/ or door seals when fitted.
    - Unlatched doors: Hold shut under normal working conditions.
    - Closing against smoke seals of fire doors: Positive. No gaps.
- 410A OVERHEAD DOOR CLOSERS
- Manufacturer: Laidlaw Solutions Ltd.
    - Web: [www.laidlaw.net](http://www.laidlaw.net).
    - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
    - Product reference: Orbis Classic Smoothline Overhead Door Closer
  - Type: 31 800.
  - Finish: ESS.
  - Other requirements: Back check facility.

- 410B OVERHEAD DOOR CLOSERS
- Manufacturer: Laidlaw Solutions Ltd.
    - Web: [www.laidlaw.net](http://www.laidlaw.net).
    - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
    - Product reference: Orbis Centurion Overhead Door Closer Full Cover.
  - Type: LA83.
  - Finish: SS .
- 410D OVERHEAD DOOR CLOSERS
- Manufacturer: DORMA UK Ltd, Glass Division.
    - Web: [www.dorma-uk.co.uk](http://www.dorma-uk.co.uk).
    - Email: [glass@dorma-uk.co.uk](mailto:glass@dorma-uk.co.uk).
    - Product reference: ITS 96
  - Size: EN 2-4.
  - Finish: Stainless steel.
  - Slide channel: G 96 N20.
  - Hold-open unit: Not required.
  - Accessories: Intumescent gasket set for slide channel.
- 412 PERFORMANCE SPECIFICATION FOR OVERHEAD DOOR CLOSERS To Escape Routes
- Standard: To BS EN 1154.
    - Door closing devices to fire/ smoke control doors: CE marked.
  - Minimum classification grades:
    - Category of use: 4 .
    - Durability: 8.
    - Door closer power size: Adjustable 3-6 .
    - Suitability for use on fire/ smoke doors: 1 .
    - Safety: 1.
    - Corrosion resistance: 4 .
  - Type: As schedule .
  - Other functions: As schedule .
  - Casing finish: As schedule .
  - Operational adjustment:
    - Variable power: Matched to the sizes and weights of doors.
    - Latched doors: Override latches and/ or door seals when fitted.
    - Unlatched doors: Hold shut under normal working conditions.
    - Closing against smoke seals of fire doors: Positive. No gaps.
- 450 FLOOR SPRINGS to Fire Escape doors
- Standard: To BS EN 1154.
    - Door closing devices to fire/ smoke control doors: CE marked.
  - Manufacturer: As Clause 450A .
    - Product reference: Orbis Classic Electromagnetic Floor Spring .
  - Power size: Minimum 3 .
  - Other functions: As schedule .
  - Material/ finish: Satin stainless steel .
  - Operational adjustment:
    - Variable power: Matched to size, weight and location of doors.
    - Latched doors: Override latches and/ or door seals when fitted.
    - Unlatched doors: Hold shut under normal working conditions.
    - Closing against smoke seals of fire doors: Positive. No gaps.

## 450A FLOOR SPRINGS

- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Orbis Classic Electromagnetic Floor Spring
- Type: 30 764.
- Finish: Satin Stainless Steel.
- Accessories: 29 010.

## 452 PERFORMANCE SPECIFICATION FOR FLOOR SPRINGS To fire doors

- Standard: To BS EN 1154.
  - Door closing devices to fire/ smoke control doors: CE marked.
- Minimum classification grades:
  - Category of use: 4 .
  - Durability: 8.
  - Door closer power size: Adjustable 3-6 .
  - Suitability for use on fire/ smoke doors: 1 .
  - Safety: 1.
  - Corrosion resistance: 4 .
- Other functions: As schedule .
- Material/ finish: Satin stainless steel .
- Operational adjustment:
  - Variable power: Matched to size, weight and location of doors.
  - Latched doors: Override latches and/ or door seals when fitted.
  - Unlatched doors: Hold shut under normal working conditions.

## 471 ELECTROMAGNETIC HOLD OPEN/ SWING-FREE DEVICES (24 V) To escape corridor doors.

- Standard: To BS EN 1155.
  - Electromagnetic devices to fire/ smoke control doors: CE marked.
- Manufacturer: As Clause 471A .
  - Product reference: 27.855 .
- Type: Hold open, separate wall mounted .
- Material/ finish: Satin stainless steel .
- Electric supply: Mains voltage .
- Means of release: Alarm system and/ or failure of power supply.
- Test switch: Located in a convenient position adjacent to door.
- Operational adjustment of integral closer:
  - Variable power: Matched to size, weight and location of doors.
  - Latched doors: Override latches and/ or door seals when fitted.
  - Unlatched doors: Hold shut under normal working conditions.

## 471A ELECTROMAGNETIC HOLD OPEN/ SWING-FREE DEVICES

- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: 27.855 Orbis Classic Smoothline Electromagnetic Hold Open Device
- Finish: ESS.

- 472 PERFORMANCE SPECIFICATION FOR ELECTROMAGNETIC HOLD OPEN/ SWING-FREE DEVICES (24 V) To Escape corridor doors.
- Standard: To BS EN 1155.
    - Electromagnetic devices to fire/ smoke control doors: CE marked.
  - Type: As schedule .
  - Minimum classification grades:
    - Category of use: 3.
    - Durability: 8 .
    - Hold open power size: 5 .
    - Suitability for use on fire/ smoke doors: 1.
    - Safety: 1.
    - Corrosion resistance: 4 .
  - Material/ finish: Satin stainless steel .
  - Means of release: Alarm system and/ or failure of power supply.
  - Test switch: Located in a convenient position adjacent to door.
  - Operational adjustment of integral closer:
    - Variable power: Matched to size, weight and location of doors.
    - Latched doors: Override latches and/ or door seals when fitted.
    - Unlatched doors: Hold shut under normal working conditions.
- 481 DOOR COORDINATORS To REBATED DOUBLE DOORS..
- Standard: To BS EN 1158.
    - Door coordinators to fire/ smoke control doors: CE marked.
  - Manufacturer: Allgood plc .
    - Product reference: 91 490 .
    - Material/ finish: Satin stainless steel .
  - Application: To all single swing double doors with rebated meeting stiles and fitted with self closers.
- 481A DOOR COORDINATORS
- Manufacturer: Allgood plc.
    - Web: [www.allgood.co.uk](http://www.allgood.co.uk).
    - Email: [info@allgood.co.uk](mailto:info@allgood.co.uk).
    - Product reference: 9149G
  - Finish: TBC.
- 482 PERFORMANCE SPECIFICATION FOR DOOR COORDINATORS To rebated double doors
- Standard: To BS EN 1158.
    - Door coordinators to fire/ smoke control doors: CE marked.
  - Minimum classification grades:
    - Category of use: 3.
    - Durability: 8 .
    - Door coordinator size: 5 .
    - Suitability for use on fire/ smoke doors: 1 .
    - Safety: 1.
    - Corrosion resistance: 4 .
  - Material/ finish: Satin stainless steel .
  - Application: To all single swing double doors with rebated meeting stiles and fitted with self closers.
  - Selection criteria: Provide types that:
    - Require the minimum amount of material to be removed from the door and frame.
    - Are suitable for the size of rebates.

**DOOR SECURING DEVICES**

- 510 THIEF RESISTANT DOOR LOCKS To safe room
- Standard: To BS 3621 and Kitemarked.
  - Manufacturer: Laidlaw .
  - Product reference: Centurion lockcase .
  - Type: As schedule .
  - Backset: As schedule .
  - Material/ finish: Stainless steel faceplate .
  - Keying: As schedule .
- 510A THIEF RESISTANT DOOR LOCKS
- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Centurion Lockcase
  - Type: LA513SS.
- 510B THIEF RESISTANT DOOR LOCKS
- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Centurion Lockcase
  - Type: LA503SS.
- 515 DOOR LOCKS To Office, Meeting Rooms , Interview rooms etc.Stores
- Standard: To BS EN 12209.
  - Manufacturer: As Clause 515A .
  - Product reference: 11.861 .
  - Type: As schedule .
  - Backset: As schedule .
  - Material/ finish: Stainless steel faceplate .
  - Keying: As schedule .
- 515A DOOR LOCKS
- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Euro Profile Mortice Lockcase
  - Type: Type 11 861.
  - Rebate sets: Not required.
  - Intumescent packs: IP L1.
- 515B DOOR LOCKS
- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Euro Profile Mortice Lockcase
  - Type: Type 12 861.
  - Rebate sets: Not required.
  - Intumescent packs: IP L1.

- 515C DOOR LOCKS
- Manufacturer: Laidlaw Solutions Ltd.
    - Web: [www.laidlaw.net](http://www.laidlaw.net).
    - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
    - Product reference: Euro Profile Mortice Lockcase
  - Type: Type 13 862.
  - Rebate sets: Not required.
  - Intumescent packs: Not required.
- 525 PERFORMANCE SPECIFICATION FOR DOOR LOCKS AND LATCHES TO ALL OFFICE ACCESS DOORS.
- Standard: To BS EN 12209.
  - Minimum classification grades:
    - Category of use: 3.
    - Durability: W.
    - Door mass and closing force: 3.
    - Suitability for use on fire/ smoke doors: 1.
    - Safety: 0.
    - Corrosion resistance and temperature: F.
    - Security and drill resistance: 4.
    - Field of door application: H.
    - Type of key operation and locking: D.
    - Type of spindle operation: 3.
    - Key identification requirement: B.
  - Backset: As schedule.
  - Material/ finish: Stainless steel faceplate.
  - Keying: As schedule.
- 530 SPECIAL FUNCTION DOOR LOCKS Fire Exit doors to East Whale Lane
- Manufacturer: Agrément certified.
    - Product reference: Hormann Standard Range.
  - Type: Model 14.05 Electronic strikeplate with anti-panic lock/ bar internally, swipe card externally .
  - Backset: As drawing 421.
  - Material/ finish: Stainless steel faceplate/ locking plates.
  - Keying: As schedule.
- 530A SPECIAL FUNCTION DOOR LOCKS Louvre doors to East Whale Lane
- Manufacturer: Agrément certified.
    - Product reference: Hormann Standard Range.
  - Type: 3 steel security bolts on hinge side .
  - Backset: As drawing 421.
  - Material/ finish: Stainless steel faceplate/ locking plates.
  - Keying: In master keyed suite.
- 565 PADLOCKS To External Roller Shutters, East Whale Lane
- Standard: To BS EN 12320.
  - Manufacturer: Hormann UK Ltd. .
    - Product reference: Door Suppliers Standard .
  - Size: As drawing 422 .
  - Case: As drawing 422 .
  - Shackle: Hardened steel .
  - Accessories: Matching locking plate .
  - Keying: Not master keyed .

- 566 PERFORMANCE SPECIFICATION FOR PADLOCKS To External Roller Shutters
- Standard: To BS EN 12320.
  - Minimum classification grades:
    - Category of use: - (no classification).
    - Test cycles/ durability: - (no classification).
    - Door mass: - (no classification).
    - Fire resistance: - (no classification).
    - Safety: - (no classification).
    - Corrosion resistance: 2 .
    - Security: 6 .
  - Size: As schedule .
  - Case: As schedule .
  - Shackle: As schedule .
  - Accessories: As schedule .
  - Keying: As schedule .
- 571 EMERGENCY EXIT DEVICES To Fire Exit doors on East Whale Lane.
- Standard: To BS EN 179.
    - Emergency exit devices for locked doors on escape routes: CE marked.
  - Manufacturer: Hormann Uk Ltd .
    - Product reference: Anti-panic bar and electric strike plate .
  - Type: As schedule .
  - Material/ finish: Satin stainless steel .
  - Additional requirements: Security alarmed .
- 572 PERFORMANCE SPECIFICATION FOR EMERGENCY EXIT DEVICES To locked external Fire Exit doors.
- Standard: To BS EN 179.
    - Emergency exit devices for locked doors on escape routes: CE marked.
  - Minimum classification grades:
    - Category of use: 3.
    - Durability: 7 .
    - Door mass: 5 .
    - Suitability for use on fire/ smoke doors: 1 .
    - Safety: 1.
    - Corrosion resistance: 4 .
    - Security: 4 .
    - Projection of operating element: 1 .
    - Type of operation: Internal anti-panic bar and latch .
  - Material/ finish: As drawing 421 .
  - Additional requirements: Security alarmed .
- 577 PANIC EXIT DEVICES To escape route doors from Public Areas
- Standard: To BS EN 1125.
    - Panic exit devices for locked doors on escape routes: CE marked.
  - Manufacturer: Hormann Uk Ltd. .
    - Product reference: Anti-panic bar .
  - Type: Push bar .
  - Material/ finish: As drawing 421 .
  - Additional requirements: Security alarmed .

- 578 PERFORMANCE SPECIFICATION FOR PANIC EXIT DEVICES To Fire Exits from Public areas.
- Standard: To BS EN 1125.
    - Panic exit devices for locked doors on escape routes: CE marked.
  - Minimum classification grades:
    - Category of use: 3.
    - Durability: 7 .
    - Door mass: 6 .
    - Suitability for use on fire/ smoke doors: 1 .
    - Safety: 1.
    - Corrosion resistance: 3 .
    - Security: 2.
    - Projection of bar: 1 .
    - Type of bar operation: A: Push bar operation .
  - Material/ finish: As schedule .
  - Additional requirements: Security alarmed .
- 582 DOOR BOLTS To Internal Door Sets
- Standard: To BS EN 12051.
  - Manufacturer: As Clause 582A .
    - Product reference: 34.005.2 .
  - Type: Lever action flush .
  - Size: 200 mm .
  - Material/ finish: Satin stainless steel, grade 1.4401 (316) .
  - Additional requirements: None .
- 582A DOOR BOLTS
- Manufacturer: Laidlaw Solutions Ltd.
    - Web: [www.laidlaw.net](http://www.laidlaw.net).
    - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
    - Product reference: Orbis Classic Lever Action Flush Door Bolt
  - Type: 34 005.2.
  - Finish: ESS.
  - Accessories: 34 028.
- 584 PERFORMANCE SPECIFICATION FOR DOOR BOLTS Internal Double Doors
- Standard: To BS EN 12051.
  - Minimum classification grades:
    - Category of use: 4 .
    - Number of test cycles: 3 .
    - Door mass: - (no classification).
    - Fire safety: 1 .
    - Safety in use: 1 .
    - Corrosion resistance: 3 .
    - Security: 4 .
  - Type: Flush lever .
  - Size: 203 mm .
  - Material/ finish: Satin stainless steel, grade 1.4401 (316) .
  - Additional requirements: None .

- 586 PRIVACY INDICATOR BOLTS To WC compartments in blockwork walls.
- Manufacturer: As Clause 586A .
  - Product reference: As Clause 586A .
  - Type: Rotary, internal thumbturn integral with lever handle .
  - Material/ finish: Satin stainless steel, grade 1.4401 (316) .
  - Emergency release facility: Required.

- 586A PRIVACY INDICATOR BOLTS
- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Orbis Centurion Indicator Bolt
  - Type: 51 800.4.

### DOOR FURNITURE

- 610 LEVER HANDLES TO INTERNAL DOORS
- Standard: To BS EN 1906.
  - Manufacturer: As clause 610A .
  - Product reference: As Clause 610A .
  - Style: As schedule .
  - Size: As schedule .
  - Material/ finish: Satin stainless steel, grade 1.4401 (316)As schedule .
  - Mounting: As schedule .
  - Additional requirements: None .

- 610A LEVER HANDLES
- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Orbis Classic Lever Furniture
  - Lever handle: 54 833.22.
  - Rose: 50 800.6.
  - Backplate: 50 800.0.
  - Finish: SS7.
  - Accessories: 50 800CW PB.

- 620 DOOR KNOBS To External Doors
- Standard: To BS EN 1906.
  - Manufacturer: Hormann UK Ltd. .
  - Product reference: As Standard .
  - Style: As drawing 421 .
  - Size: As drawing 421 .
  - Material/ finish: Powder coated steel, colour RAL .
  - Mounting: As drawing 421 .
  - Additional requirements: None .

## 622 PERFORMANCE SPECIFICATION FOR LEVER HANDLE SETS TO INTERNAL DOORS

- Standard: To BS EN 1906.
- Minimum classification grades:
  - Category of use: 4 .
  - Durability: 7 .
  - Door mass: - (no classification).
  - Fire resistance: 1 .
  - Safety: 1 .
  - Corrosion resistance: 3 .
  - Security: 3 .
  - Type of operation: U .
- Style: As schedule .
- Size: As schedule .
- Material/ finish: Satin stainless steel, grade316 .
- Mounting: As schedule .
- Additional requirements: None .

## 625 PERFORMANCE SPECIFICATION FOR KNOBSETS To External Doors

- Standard: To BS EN 1906.
- Minimum classification grades:
  - Category of use: 4 .
  - Durability: 7 .
  - Door mass: - (no classification).
  - Fire resistance: 1 .
  - Safety: 1 .
  - Corrosion resistance: 4 .
  - Security: 4 .
  - Type of operation: A .
- Style: As drawings .
- Size: As drawings .
- Material/ finish: Powder coated steel, colour RAL .
- Mounting: As drawings .
- Additional requirements: None .

## 641 PULL HANDLES TO CORRIDOR DOORS

- Standard: To BS 8424.
- Manufacturer: As Clause 641A .
  - Product reference: 53.833.30 .
- Shape: As schedule .
- Diameter: As schedule .
- Distance between centres: 300 mm .
- Material/ finish: Satin stainless steel, grade 1.4401 (316) .
- Mounting: Bolt through .
- Additional requirements: None .

## 641A PULL HANDLES

- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Orbis Classic Pull Handle
- Type: As schedule,53.833.30.
- Rose: 50 853.22.6.
- Finish: SS7.

**651 PERFORMANCE SPECIFICATION FOR PULL HANDLES TO CORRIDOR DOORS**

- Standard: To BS 8424.
- Minimum classification grades:
  - Category of use: 3.
  - Durability: 2.
  - Door mass: - (no classification).
  - Suitability for use on fire/ smoke doors: 1.
  - Safety: 1.
  - Corrosion resistance: 3.
- Shape: As schedule.
- Diameter: As schedule.
- Distance between centres: As schedule.
- Material/ finish: As schedule.
- Mounting: As schedule.
- Additional requirements push plate.

**670 PUSH PLATES TO CORRIDOR DOORS**

- Manufacturer: As Clause 670 .
  - Product reference: 52.803 .
- Size: As schedule .
- Material/ finish: As schedule .
- Mounting: As schedule .
- Additional requirements: Rounded edges and radiused corners .

**670A PUSH PLATES**

- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Orbis Push Plate
- Type: 52 803.
- Finish: SS7.

**680 MIDRAIL PLATES TO SERVICE CORRIDOR DOORS**

- Manufacturer: As Clause 680A .
  - Product reference: Orbis Midrail .
- Size: 900 x 225 mm .
- Material/ finish: Satin stainless steel, grade 1.4401 (316) .
- Mounting: Face fix .
- Additional requirements: Rounded edges and radiused corners .

**680A MIDRAIL PLATES TO SERVICE CORRIDOR DOORS**

- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Orbis Midrail
- Size: 900 x 225 mm.
- Finish: SS7.

**690 KICK PLATES TO PLANT ROOM DOORS & KITCHEN DOORS**

- Manufacturer: As Clause 690A .
  - Product reference: xxx 888 .
- Size: As drawing 423 .
- Material/ finish: As drawing 423 .
- Mounting: Face fix .
- Additional requirements: Screw heads colour matched to plate .

- 690A KICK PLATE TO PLANT ROOM DOORS
- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Orbis Kick Plate
  - Size: 900 x 900 mm.
  - Finish: SS7.
- 690B KICK PLATE TO PUBLIC AREA DOORS
- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Orbis Kick Plate
  - Size: 900 x 200 mm.
  - Finish: SS7.
- 690C KICK PLATE TO PUBLIC AREA DOORS
- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Orbis Kick Plate
  - Size: 400 x 200 mm.
  - Finish: SS7.
- 710 ESCUTCHEONS TO ALL LOCKABLE DOORS
- Manufacturer: As Clause 710A .
  - Product reference: 51 800.3 , 51.800.25 .
  - Material/ finish: Satin stainless steel, grade 1.4401 (316) .
  - Keyhole type: To suit specified lock .
  - Usage: To cylinder locks where no handle backplate is specified to be fitted .
- 710A ESCUTCHEONS
- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Orbis Escutcheons
  - Type: 51 800 3 and 51 800.25 .
  - Finish: SS7.
- 720 DOOR STOPS
- Manufacturer: AS Clause 121 .
  - Product reference: 32 .803 .
  - Type: Wall mounted, face fixed, SAA finish, 75 mm projection .
  - Usage: To doors opening against walls other than those fitted with closers with a back check facility. .
- 720A DOOR STOPS
- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Orbis Classic Door Stop
  - Type: 32 803.
  - Finish: SS7.

- 760 DOOR HOLDERS TO PLANT ROOM DOORS
- Manufacturer: As Clause 760A .
  - Product reference: 32.850 .
  - Type: As schedule .
  - Size: As schedule .
  - Material/ finish: As schedule .
- 760A DOOR HOLDERS
- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Orbis Classic Door Holder
  - Type: 32 850.
  - Finish: SS7.
- 770 PADLOCK HASP AND STAPLE
- Manufacturer: As Clause 565 .
  - Product reference: Hormann UK Ltd. .
  - Type: Locking bar .
  - Size: As schedule .
  - Material/ finish: Hardened steel, self coloured .
- 811 DOOR MOUNTED COAT HOOKS TO OFFICE DOORS
- Manufacturer: As Clause 811A .
  - Product reference: 81.801 .
  - Type: Hat and coat hook, rubber buffered .
  - Material/ finish: Satin stainless steel, grade 1.4401 (316) .
- 811A DOOR MOUNTED COAT HOOKS
- Manufacturer: Laidlaw Solutions Ltd.
  - Web: [www.laidlaw.net](http://www.laidlaw.net).
  - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
  - Product reference: Orbis Classic Door Hook
  - Type: 81 801.
  - Finish: SS7.
- 850 THRESHOLD WEATHERSTRIP TO EXTERNAL DOORS TO EAST WHALE LANE & ROOF PLANT AREA
- Manufacturer: Hormann .
  - Product reference: From Hormann Door Range .
  - Type: As drawing 421 .
  - Size: To suit door .
  - Material/ finish: Powder coated aluminium, colour ??? .
- 850A THRESHOLD WEATHERSTRIP TO EXTERNAL DOORS TO EAST WHALE LANE & ROOF PLANT AREA
- Manufacturer: Hormann (UK )Ltd..
  - Web: [www.hormann.co.uk](http://www.hormann.co.uk).
  - Email: [sales@hormann.co.uk](mailto:sales@hormann.co.uk).
  - Product reference: Standard suitable for Door Type as drawing 421.
  - Insert: As Manufacturers Spec..

- 860 DOOR SEALS FOR: \_\_\_\_\_ PROOFING MEETING ROOMS
- Manufacturer: As Clause 860A .
    - Product reference: As Clause 860A .
  - Type: Elastomeric compression strip in metal carrier .
  - Size: To suit door .
  - Material/ finish: Satin anodized aluminium .
- 860A DOOR SEALS FOR: SOUND PROOFING
- Manufacturer: Sealmaster.
    - Web: [www.sealmaster.co.uk](http://www.sealmaster.co.uk).
    - Email: [sales@sealmaster.co.uk](mailto:sales@sealmaster.co.uk).
    - Product reference: Thunder seals WHG – 14 x 32 mm.
  - Material: Aluminium.
  - Size: 14 x 32 mm.
  - Finish: Satin silver.
- 890 DOOR VIEWERS To Meeting and Interview Room on ground level.
- Manufacturer: As Clause 890A .
    - Product reference: As Clause 890A .
  - Angle of vision: As schedule .
  - Material/ finish: As Clause 890A .
  - Viewer body diameter: Manufacturer's standard .
  - Door thickness: As schedule .
- 890A DOOR VIEWERS
- Manufacturer: Laidlaw Solutions Ltd.
    - Web: [www.laidlaw.net](http://www.laidlaw.net).
    - Email: [info.willenhall@laidlaw.net](mailto:info.willenhall@laidlaw.net).
    - Product reference: 70. AL8.DV Orbis Anti Ligature Door Viewer
  - Finish: Satin stainless steel.
- 895 DOOR MOUNTED AIR TRANSFER GRILLES TO STORE DOORS
- Manufacturer: As Clause 895A .
    - Product reference: As Clause 895A .
  - Type: As schedule .
  - Size: As schedule .
  - Material/ finish: As schedule .
- 895A DOOR MOUNTED AIR TRANSFER GRILLES
- Manufacturer: Rytons Building Products Ltd.
    - Web: [www.vents.co.uk](http://www.vents.co.uk).
    - Email: [lit@rytons.com](mailto:lit@rytons.com).
    - Product reference: Rytons Metal door ventilator LV262ALU.
- 896 DOOR MOUNTED FIRE RESISTING AIR TRANSFER GRILLES
- Manufacturer: As Clause 896A .
    - Product reference: VH60/FS .
  - Type: Intumescent .
  - Size: As drawings .
  - Fire resistance: 60 minutes .
  - Material/ finish: Satin stainless steel, grade 1.4401 (316) .

## 896A DOOR MOUNTED FIRE RESISTING AIR TRANSFER GRILLES

- Manufacturer: Sealmaster.
  - Web: [www.sealmaster.co.uk](http://www.sealmaster.co.uk).
  - Email: [sales@sealmaster.co.uk](mailto:sales@sealmaster.co.uk).
  - Product reference: VH60/FS.
- Finish: As standard.

## 897 DOOR MOUNTED FIRE RESISTING AIR TRANSFER GRILLES WITH SMOKE SHUTTER Compartment Wall doors .

- Manufacturer: As Clause 897A .
  - Product reference: VH60/F .
- Type: Intumescent with smoke shutter .
- Size: As schedule 425 .
- Fire resistance: 60 minutes .
- Material/ finish: Satin stainless steel, grade 1.4301 (304) .
- Activator: Smoke detection and/ or fire alarm system.

## 897A DOOR MOUNTED FIRE RESISTING AIR TRANSFER GRILLES WITH SMOKE SHUTTER

- Manufacturer: Sealmaster.
  - Web: [www.sealmaster.co.uk](http://www.sealmaster.co.uk).
  - Email: [sales@sealmaster.co.uk](mailto:sales@sealmaster.co.uk).
  - Product reference: VH60/F.
- Finish: As standard.

**P**

**Building fabric sundries**

**P30**

**Trenches, pipeways and pits for buried engineering services**

### **P30 Trenches, pipeways and pits for buried engineering services**

To be read with Preliminaries/ General conditions.

#### **GENERALLY**

- 140 BURIED ENGINEERING SERVICES SYSTEMS FOR GAS SERVICE PIPES**
- Positions and dimensions: As indicated on the Gas Service drawings at a depth of 600mm.
  - Service routes and enclosures: Trenches and backfill .
    - Support and backfill: 75mm bed of sand and sand covering before backfilling with excavated soil..
    - Accessories: 150mm wide Warning marker tapes at 350mm below ground level..
  - Access points: Proprietary access and inspection chambers .
- 140A BURIED ENGINEERING SERVICES SYSTEMS FOR MAINS COLD WATER SERVICE PIPES**
- Positions and dimensions: As indicated on the drawings at a depth of 750mm.
  - Service routes and enclosures: Trenches and backfill .
    - Support and backfill: 75mm bed of sand and sand covering before backfilling with excavated soil..
    - Accessories: 200mm wide Warning marker tapes at 350mm below ground level..
  - Access points: Proprietary access and inspection chambers as indicated on drawings for water meters and isolation valves .
- 140B BURIED ENGINEERING SERVICES SYSTEMS FOR ELECTRIC MAINS PIPES**
- Positions and dimensions: As indicated on the Electrical Services Engineers drawings at a depth of 450mm for L.V. cable and 600mm for H.V. cable..
  - Service routes and enclosures: Trenches and backfill .
    - Support and backfill: 100 mm bed of sand and 150mm sand covering before backfilling with excavated soil..
    - Accessories: 200mm wide Warning marker tapes at 200mm below ground level..
  - Access points: Proprietary access and inspection chambers .
- 140C BURIED ENGINEERING SERVICES SYSTEMS FOR TELECOMMUNICATIONS CABLES/ FIBRE-OPTIC CABLES**
- Positions and dimensions: As drawing .
  - Service routes and enclosures: Trenches and backfill .
    - Support and backfill: 100 mm bed of sand and 150 mm sand covering before backfilling with excavated soil..
    - Accessories: Warning marker tapes 200mm below ground level. Ducting through external walls. .
  - Access points: Proprietary access and inspection chambers .

150 ACCESS AND INSPECTION CHAMBER SYSTEMS FOR WATER SERVICE PIPES

- Positions and dimensions: Submit proposals.
- Core fabric: Proprietary access and inspection chambers .
  - Core fabric accessories: Submit proposals.
  - Backfill: Granular material .
- Cover slabs:
  - Type: Precast concrete .
  - Thickness: 150 mm.
  - Openings: To suit access covers.
  - Accessories: Access covers and frames .
- Bedding: Mortar.

**SYSTEM PERFORMANCE**

210 DESIGN

- Design: Complete the design of the buried engineering services systems.
- Extent of work:
  - Type of service: For gas service pipes.
  - Location: Inside site boundary.
- Performance criteria: Expected life: 30 years.
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

**PRODUCTS**

301 ACCESS COVERS AND FRAMES Within Pool Building

- Standard: To BS EN 124.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Material: Steel.
- Types: A15.

301A ACCESS COVERS AND FRAMES FOR MAINS COLD WATER SERVICE PIPES

- Standard: To BS EN 124.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Material: Steel.
- Types: B125.

305 PROPRIETARY ACCESS AND INSPECTION CHAMBERS Refer Engineers Drawing (58) 2110)

- Standard: To BS EN 13598-1.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Material: Polypropylene (PE).
- Size: 460 mm diameter.
- Inlets: 2 x 90°.

- 320 PIPEDUCTS FOR GAS SERVICE PIPES
- Manufacturer: Contractor's choice.
  - Product reference: Submit proposals.
  - Type: Full duct.
  - Material: Twin wall HDPE to BS EN 50086-2-4.
  - Colours: Refer Engineers Drawing.
  - Sizes: Refer Engineers Drawing.
  - Jointing: refer Engineers Drawing.
- 320A PIPEDUCTS FOR TRAFFIC SIGNAL CABLES as Civil Engineering 10
- Manufacturer: Agrément certified.
  - Product reference: Submit proposals.
  - Type: Full duct.
  - Material: HDPE, Agrément Certified.
  - Colours: Orange.
  - Sizes: 100mm diameter.
  - Jointing: Push fit flexible joints.
- 320B PIPEDUCTS FOR LV ELECTRIC CABLE ENTRY INTO BUILDING REFER ELECTRICAL SERVICES ENGINEER DRAWING (90) 001
- Manufacturer: Agrément certified.
  - Product reference: Submit proposals.
  - Type: Full duct.
  - Material: HDPE, Agrément Certified.
  - Colours: Orange.
  - Sizes: 200mm diameter.
  - Jointing: Push fit flexible joints.
- 340 SMALL SURFACE ACCESS POINTS FOR TRAFFIC SIGNAL CABLES as Civil Engineer drawing 10
- Manufacturer: Plastech or equal approved.
  - Product reference: Stakkabox or equal approved.
  - Material: Polypropylene.
  - Types: Not applicable.
  - Sizes: 600x600mm.
  - Accessories: Not applicable.
  - Marking: Not applicable.
- 345 LARGE SURFACE BOXES (BS 5834-3) For large surface boxes (one side longer than 300mm) are used for access to below ground fittings of intermediate size (larger than a small stop tap but not requiring a manhole sized chamber) e.g. large valves , cable television and other telecommunications applications.
- Standard: To BS 5834-3.
  - Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
  - Grade: As required / specified by service provider , submit proposals.
  - Material: As required/specified by service provider, submit proposals.
  - Types: As required/specified by service provider, submit proposals..
  - Sizes: As required / specified by service provider, submit proposals..
  - Accessories: As required / specified by service provider., submit proposals.
  - Marking: As required / specified by service provider , submit proposals.

- 350 **LARGE SURFACE BOXES (BS EN 124)** For large surface boxes (one side longer than 300mm) are used for access to below ground fittings of intermediate size (larger than a small stop tap but not requiring a manhole sized chamber) e.g large valves , cable television and other telecommunications applications.
- Standard: To BS EN 124.
  - Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
  - Class: B125.
  - Material: As required / specified by service provider , submit proposals..
  - Types: As required / specified by service provider , submit proposals..
  - Sizes: As required / specified by service provider, submit proposals..
  - Accessories/ Marking: As required / specified by service provider , submit proposals..
- 355 **LARGE SURFACE BOXES FOR FIRE HYDRANTS**
- Standard: To BS 750 or BS 5834-3.
  - Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
  - Grade: A.
  - Material: Refer Drawing (58)2110).
  - Types: Composite, with concrete surround.
  - Sizes: As Drawing (58)2110.
  - Accessories: As Drawing (58)2110.
  - Marking: As Drawing (58)2110.
- 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, size 4/10 to BS EN 12620.
- 415 **CONCRETE – PRECAST GENERALLY**
- Standard: To BS 8110-1.
  - Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
  - Panel size: Submit proposals.
  - Unit weight (maximum): Submit proposals.
  - Finish to exposed faces: Cast.
- 440 **MORTAR BEDDING**
- Mix: 1:3 cement:sand.
- 470 **FOAMED CONCRETE FOR BACKFILLING**
- Concrete:
    - Density (minimum): 1050 kg/m<sup>3</sup>.
    - 28 days compressive strength (maximum): 10 N/mm<sup>2</sup>.
  - Ground conditions to BS 8500-1: X0.
- 475 **DRAWLINES**
- Material: To the requirements of service undertakers.
  - Manufacturer: Submit proposals.
    - Product reference: Submit proposals.

- 480      **WARNING MARKER TAPES**
- Standard: To BS EN 12613.
  - Type: Continuous colour coded, heavy gauge polyethylene identification tapes.
  - Manufacturer: Utilitape.
    - Product reference: Premium Grade 004126.
  - Width: 150 mm.
  - Colour: Blue with black lettering.
  - Message: CAUTION - WATER PIPE BELOW.
  - Wire detection aid: Not required.

- 480A     **WARNING MARKER TAPES**
- Standard: To BS EN 12613.
  - Type: Continuous colour coded, heavy gauge polyethylene identification tapes.
  - Manufacturer: Utilitape.
    - Product reference: Premium Grade 002467.
  - Width: 150 mm.
  - Colour: Yellow with black lettering.
  - Message: CAUTION - GAS MAIN BELOW.
  - Wire detection aid: Not required.

- 490      **WARNING MARKER TILES**
- Standard: To BS 2484.
  - Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
  - Material: Reinforced precast concrete tiles.
  - Size: 155 x 115 x 25 to 50 mm pitched top.
  - Message: DANGER - ELECTRICAL CABLES BELOW.

- 495      **WARNING MARKER BOARDS**
- Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
  - Width: 300 mm.
  - Colour: White with black lettering.
  - Message: DANGER - WATER PIPE BELOW.

## **EXECUTION**

- 610      **ROUTES OF SERVICES BELOW GROUND**
- Locations of existing service runs and pipeducts: As indicated on existing drawings.
  - Site survey: To verify location of existing services.
    - Submit: Copy of survey, highlighting discrepancies.
  - Locations of new service runs and pipeducts: As indicated on 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'..
- 625A     **TRENCHES**
- Trench width: No less than the pipe OD + 250mm.
  - Trench sides: Contractor's choice.
  - 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.
  - Minimise 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 as section D20.

## 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: As specified by service undertaker.
- 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.

## 645 PIPEDUCT BEDDING AND SURROUND – SELECTED AS-DUG MATERIAL

- As-dug bed: Trimmed by hand, level or to accurate gradient. Replace overdig with compacted spoil.
- Bedding: Selected as-dug material thoroughly compacted by hand in 150 mm maximum layers.
  - Thickness (minimum): 150 mm.
- Surround: Selected as-dug material. Lay and compact to 150 mm (minimum) above pipeduct crown.

## 650 PIPEDUCT BEDDING AND SURROUND – GRANULAR MATERIAL

- Bedding: Granular material thoroughly compacted by hand in 150 mm maximum layers.
  - Thickness (minimum): 100 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.
- 668 **INSTALLING PROPRIETARY ACCESS AND INSPECTION CHAMBERS AND SURFACE BOXES**
- Bedding:
    - Material: Concrete, as section E10..
    - Thickness (minimum): 150 mm.
  - Surround:
    - Material: Concrete, as section E10..
    - Thickness (minimum): 150 mm.
    - Height: Full height.
  - Backfilling:
    - Material: Granular material, to 100 mm above crown of pipes, then.
    - 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 traffic.
- 670 **BEDDING OF FRAMES FOR ACCESS COVERS AND SURFACE BOXES**
- Bedding: Solidly in mortar, centrally over opening and level with surrounding finishes.
    - In road or pavement finishes: Flush, and square with block or slab joints.
    - In grassed areas: Set 30 mm below soil surface. Haunch back edge of bedding so that it is not visible.
- 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.

- 700    **BACKFILLING WITH FOAMED CONCRETE**
- Preparation: Repair damaged drainage or ducts and seal off cavities in or adjacent to the excavation which are not to be filled.
  - Backfilling: To British Cement Association publication 46.044, 'Foamed Concrete – Specification for use in the reinstatement of openings in highways'.
- 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: Submit proposals.
- COMPLETION**
- 910    **INSPECTION**
- Inspection of pipeducts: Before backfilling.
    - Inspection by: Service undertakers representative.
- 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): 3 days.
  - Defects: Report immediately.
- 930    **DOCUMENTATION**
- Record drawings: Submit.

**P**

**Building fabric sundries**

**P31**

**Holes, chases, covers and supports for services**

## P31 Holes, chases, covers and supports for services

To be read with Preliminaries/ General conditions.

### 12 DESCRIPTION OF WORKS

The following work shall be deemed to be Builders' Work, which shall be provided by the Main Contractor: -

- o Cutting away through walls, floors and ceilings for passage of conduits etc. and making good after.
- o Chasing of walls for conduits, accessory boxes and the like.
- o Auxiliary timber dwangs and the like for supporting luminaires and ceiling mounted accessories.
- o All underground pipe ducts, lighting column pits, trenching etc.
- o Removal and replacement of other parts of the building fabric as may be necessary.

The Electrical Contractor shall;

- o Inform the Main Contractor with respect to the locations and details of any of the above Builders' Work required by marking out on site or, if requested, by drawings.
- o Be responsible for the accuracy of the Builders' Work information.
- o Be responsible for the levels and squareness of accessories when fitted into chases etc., and accordingly, shall ensure the accuracy of all works carried out in this connection by the Main Contractor.

### PRODUCTS

#### 300 FLOOR DUCTING/ TRUNKING

- Manufacturer: As clause 300A.
  - Product reference: Submit proposals.
- Sizes: 150 x 65 mm.
- Bases:
  - Jointing type: Push fit.
- Covers: Standard.
  - Jointing type: Butt jointed.
- Accessories: Preformed corners and T-junctions.

#### 300A FLOOR DUCTING/ TRUNKING

- Manufacturer: Cavity Trays Ltd.
  - Web: [www.cavitytrays.com](http://www.cavitytrays.com).
  - Email: [enquiries@cavitytrays.co.uk](mailto:enquiries@cavitytrays.co.uk).
  - Product reference: Type I In-screed services duct
- Size: Manufacturer's standard.
- Accessories: Junction pieces.

- 370 ACCESS COVERS/ GRATINGS FOR Poolside junction boxes
- Manufacturer: As Clause 370a.
  - Product reference: As Clause 370A.
  - Covers/ Gratings: Hot dip galvanized mild steel recessed pattern with tile finish.
  - Sizes: 600 x 600 mm.
  - Loading grade: Pedestrian.
  - Frame/ Support/ Fixing: Frame cast in using integral anchors, covers fixed with corrosion resistant locking screws.
  - Accessories: GRP sealing plate with screws.
- 370A ACCESS COVERS/ GRATINGS FOR Poolside junction boxes
- Manufacturer: ACO Technologies plc.
  - Web: [www.aco.co.uk](http://www.aco.co.uk).
  - Email: [marketing@aco.co.uk](mailto:marketing@aco.co.uk).
  - Product reference: EC60/60 AAA.
  - Material: 316 grade austenitic stainless steel/ Syntolit V vinylester resin concrete.
  - Cast in frame: Corrosion resistant 316 grade austenitic stainless steel with integral anchors.
  - Accessories: Tile finish as per Pool tiles.
- 380 ACCESS COVERS/ GRATINGS/SUPPORT STEELWORK FOR SWITCHGEAR ROOM  
CABLE TRENCH
- o Covers/ Gratings: Hot dip galvanized Durbar pattern mild steel tread plate.
  - Sizes: As drawings.
  - Loading grade: Pedestrian.
  - o Frame/ Support/ Fixing: Galvanised mild steel angle, bolted to concrete.
  - o Support steelwork for Main LV Switchgear: 37 x 37 x 6 mm thick galvanised angle iron framework with suitable supports, covered on face with mild steel tread plate machine screwed to framework .
- 400 METER CABINETS
- Type: Inset.
  - Manufacturer: Contractor's choice.
  - Product reference: Submit proposals.
  - Size: As drawings.

#### EXECUTION

- 610 COORDINATION
- Locations and dimensions of holes and chases for services: Submit details As drawings
- 620 HOLES AND CHASES IN IN SITU CONCRETE
- Cast in: Holes larger than 10 mm diameter 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.
- 630 HOLES AND CHASES IN PRECAST CONCRETE
- Cutting and drilling: Not permitted except as indicated on drawings.
- 640 HOLES IN STRUCTURAL STEELWORK
- Cutting and drilling: Not permitted 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 x 300 mm.
- 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.

## 660 PREFORMED HOLES IN MASONRY

- Width of holes without bridging over (maximum): 225 mm.
  - Holes requiring bridging: Submit proposals.

## 680 FIXING FLOOR DUCTING/ TRUNKING

- Bases:
  - Fixing method: Plug and screw.
  - Fixing level: So as to provide a flush smooth surface when the floor finish is laid.
  - Jointing: Waterproof tape to outside of butt joints.
- Covers:
  - Applied finish: As schedule 515.
  - Fixing: Fit temporarily before screeding: . . . . .
  - Configuration: Concealed below floor finish.
- Intumescent fire barriers: As drawing ???.

## 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.

## 710 SEALING Electrical cabling through external walls

- Service: Electrical conduits.
- Location: As drawings.
- Sealing material: Expanding foam.
- Method: Point neatly around pipes.
- Performance requirement: Moisture vapour and airtight.

## 710A SEALING Cable ducts

- Service: Electrical conduits.
- Location: As drawings.
- Sealing material: Expanding foam.
- Method: Point neatly around pipes.
- Performance requirement: Watertight and vermin tight.

## 730 INSTALLING ACCESS COVERS/ GRATINGS AND FRAMES

- Seating: Tiled manhole in Pool Area.
- Bedding and haunching of frames: Continuously.
  - Material: Galvanised Steel ?.
  - Top of haunching: 30 mm below surrounding surfaces.
- Horizontal positioning of frames:
  - Centred over openings.
  - Install square with joints in surrounding surfaces: Required.
- Vertical positioning of frames:
  - Level; or
  - Marry in with levels of surrounding surfaces.
- Permissible deviation in level of external covers and frames: +0 to -6 mm.

## 740 INSTALLING METER CABINETS

- Fixing: As Electrical services Engineers drawing...
- Keys: Hand over to Employer at completion.

**Q**

**Paving/Planting/Fencing/Site furniture**

**Q10**

**Kerbs/ edgings/ channels/ paving accessories**

**Q10 Kerbs/ edgings/ channels/ paving accessories**

To be read with Preliminaries/General conditions.

**110 PROPRIETARY PRECAST CONCRETE KERBS**

- Standard: To BS EN 1340.
- Manufacturer: As Clause 110A.
- - Product reference: Lightweight Kerb.
- Recycled content: Submit proposals.
- Designations: HB2 Kerb, half battered.
- Size (width x height x length): 150 x 305 x 915 mm.
- Special shapes: Internal angle BNIA.
- Finish: As cast.
- Colour: Natural.
- Bedding: As drawing 07353/03/A.
- Joints generally: Dry, 2-3 mm gap.
- Sealant movement joints: At ??? m (maximum) centres.

**110A PRECAST CONCRETE KERBS**

- Manufacturer: ACO Technologies plc.
  - Web: [www.aco.co.uk](http://www.aco.co.uk).
  - Email: [marketing@aco.co.uk](mailto:marketing@aco.co.uk).
  - Product reference: LightWeight Kerb
- Accessories: Drop kerb, LH and Drop kerb, RH.

**110B DRAINAGE CHANNEL SYSTEM**

- Manufacturer: ACO Technologies plc.
  - Web: [www.aco.co.uk](http://www.aco.co.uk).
  - Email: [marketing@aco.co.uk](mailto:marketing@aco.co.uk).
  - Product reference: M100DS.
- Channel:
  - Type of fall: Pre-sloped invert.
  - Joints: Drain union, PVC-U.  
Size: 160 mm diameter.
  - Accessories:
    - Sump unit with sediment bucket;
    - Endcap, closing piece; and
    - Gully assembly comprising top, base, bucket and grating.
- Gratings:
  - Load class A15 (Pedestrian areas): Slotted stainless steel grating.
  - Load class C250 (Cars and light vans): Slotted galvanized steel grating.
  - Load class D400 (Cars, vans and HGV's, not carriageways or public roads): 'Heelguard' ductile iron grating.

- 112     **PRECAST CONCRETE KERBS**
- Standard: To BS EN 1340.
  - Recycled content: Submit proposals.
  - Designations: HB1 Kerb, half battered and HB2 Kerb, half battered.
  - Size (width x height x length): 150 x 305 x 915 mm.
  - Special shapes: Transition kerbs TL and TR as shown on drawings and Internal radius kerbs as shown on drawings.
  - Finish: Grit blasted.
  - Colour: Natural.
  - Bending strength: Class 2.
  - Weathering resistance: Class 3.
  - Abrasion resistance: Class 4.
  - Slip/ skid resistance: Above 75.
  - Bedding: Cement mortar and Fresh concrete races.
  - Joints generally: Dry, 2-3 mm gap.
  - Sealant movement joints: Not required.
- 112A    **PRECAST CONCRETE EDGINGS**
- Standard: To BS EN 1340.
  - Recycled content: Submit proposals.
  - Designations: EF Edging, flat top.
  - Size (width x height x length): 125 x 255 x 915 mm.
  - Special shapes: Internal angle BNIA.
  - Finish: Grit blasted.
  - Colour: Natural.
  - Bending strength: Class 2.
  - Weathering resistance: Class 3.
  - Abrasion resistance: Class 4.
  - Slip/ skid resistance: Above 75.
  - Bedding: As drawing 07353/03A.
  - Joints generally: Dry, 2-3 mm gap.
  - Sealant movement joints: Not required.
- 170     **LINEAR SLOT DRAINAGE CHANNEL SYSTEMS**
- Manufacturer: As Clause 170A.
    - Product reference: Slimline.
  - Bore: 150 mm.
  - Finish: As cast.
  - Colour: Charcoal.
  - Accessories:
    - Casting-in anchors;
    - Endcaps - outlets; and
    - Inspection unit channels.
  - Bedding: Cement mortar.
  - Joints generally: 1-2 mm open joints.

## 170A LINEAR SLOT DRAINAGE CHANNEL SYSTEMS

- Manufacturer: Marshalls.
  - Web: [www.marshalls.co.uk](http://www.marshalls.co.uk).
  - Email: [info@marshalls.co.uk](mailto:info@marshalls.co.uk).
  - Product reference: Slot Drain Duo
- Channel invert depth: 150 mm.
  - Length: 1000 mm.
- Slot channel: Slot drain 105.
- Accessories:
  - Access cover and frame 105;
  - End cap; and
  - Inline end outlet trapped outfall.

## 180 DRAINAGE CHANNEL SYSTEMS WITH GRATINGS

- Manufacturer: As Clause 180A.
  - Product reference: Submit proposals.
- Size: Nominal bore 150 mm.
- Type of fall: Constant depth.
- Finish: Standard.
- Colour: Buff.
- Accessories: Endcaps - closing pieces and Endcaps - outlets.
- Bedding: Proprietary.
- Joints generally: Drain unions as required.
- Cover gratings: Stainless steel, slotted.
  - Fixings: Hexagon head bolts with black moulded polypropylene protective cover caps.
  - Loading grade to BS EN 124: B125.
  - Finish/ Colour: Silver.

## 190 CARRIAGEWAY KERB AND DRAINAGE CHANNEL SYSTEMS

- Manufacturer: As Clause 190A.
  - Product reference: Mini Beany 385.
- Finish: As cast.
- Colour: Natural.
- Accessories:
  - Outfalls;
  - Silt box tops; and
  - 45 degree splayed top blocks.
- Bedding: As drawing 07353/03A.
- Vertical joints: 1 mm wide.
- Horizontal joints/Bond: Mortar jointed and half lap bonded.

## 190A CARRIAGEWAY KERB AND DRAINAGE CHANNEL SYSTEMS

- Manufacturer: Marshalls.
  - Web: [www.marshalls.co.uk](http://www.marshalls.co.uk).
  - Email: [info@marshalls.co.uk](mailto:info@marshalls.co.uk).
  - Product reference: Mini Beany
- Base units: 385.
- Top blocks: 45° splayed.
  - Finish/ Colour: Natural coloured hydraulically pressed concrete.
- Special shapes: Silt Box.
- Accessories: Cast iron access cover and frames and Trapped gully assemblies.

**ROADS/PAVING ACCESSORIES/MARKING**

- 395 **ROAD MARKING (THERMOPLASTIC)**
- Standard: Road Safety Markings Association standard specification document for road marking and road studs (StanSpec).
  - Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
  - Colour: Yellow.
  - Retroreflectivity to BS EN 1436: Class R2.
- 395A **ROAD MARKING (THERMOPLASTIC)**
- Standard: Road Safety Markings Association standard specification document for road marking and road studs (StanSpec).
  - Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
  - Colour: White.
  - Retroreflectivity to BS EN 1436: Class R2.
- 395B **ROAD MARKING (THERMOPLASTIC)**
- Standard: Road Safety Markings Association standard specification document for road marking and road studs (StanSpec).
  - Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
  - Colour: Red.
  - Retroreflectivity to BS EN 1436: Class R2.

**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.
- 520 **ADVERSE WEATHER**
- Conditions: Do not construct if the temperature is below 3°C on a falling thermometer or 1°C on a rising thermometer. Adequately protect foundations, bedding and haunching against frost and rapid drying by sun and wind.
- 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.
- 550 **KERB 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: To suit holes in kerbs.
    - Projection: 75 mm.
  - Grouting of holes in kerbs: Filled with 1:3 cement:sand mortar finished flush.
- 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.
- 570 **CHANNELS**
- Installation: To an even gradient, without ponding or backfall.
  - Lowest points of channels: 6 mm above drainage outlets.
- 580 **DRAINAGE CHANNEL SYSTEMS**
- Installation: To an even gradient, without ponding or backfall. Commence laying from outlets.
  - Silt and debris: Removed from entire system immediately before handover.
  - Washing and detritus: Safely disposed without discharging into sewers or watercourses.
- 590 **DRAINAGE CHANNEL SYSTEMS WITH BUILT IN FALL**
- Installation: Top of channels level, installed in correct sequence to form an even gradient without ponding or backfall. Commence laying from outlets.
  - Silt and debris: Removed from entire system immediately before handover.
  - Washings and detritus: Safely disposed without discharging into sewers or watercourses.
- 600 **RADIUS KERBS/CHANNELS**
- Usage: Radii of 15 m or less.
- 610 **ANGLE KERBS**
- Usage: Internal and external 90° changes of direction.
  - Cutting of mitres: Not permitted.
- 620 **ACCURACY**
- Deviations (maximum):
    - Level:  $\pm 6$  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.

**640 TOOLED MORTAR JOINTS**

- Jointing: Ends of units buttered with bedding mortar as laying proceeds. Joints completely filled and tooled to a neat flush profile.
  - Joint width: 6 mm.

**650 SEALANT MOVEMENT JOINTS**

- Joint filler: Compressible cellular rubber or plastics compatible with specified sealant.
- Filler installation: Built in as work proceeds, extending through haunching and foundation. Filler positioned accurately to fully support sealant at the recommended depth below exposed faces of units.
- Joint width: 10 mm.
- Sealant: High modulus silicone.
  - Colour: Colour match to kerbs.
- Sealant application: As section Z22.

**Q**

**Paving/Planting/Fencing/Site furniture**

**Q20**

**Granular sub-bases to roads/ pavings**

**Q20 Granular sub-bases to roads/ pavings**

To be read with Preliminaries/ General conditions.

- 120    **CHECKING CALIFORNIA BEARING RATIO (CBR) OF SUBGRADES**
- Subgrade variation: If material appears to vary from that stated in the site investigation report, or if there are extensive soft spots, test subgrade CBR to BS 1377-4 or BS 1377-9. Submit results and obtain instructions before proceeding.
- 140    **EXCAVATION OF SUBGRADES**
- Final excavation to formation or subformation level: Carry out immediately before compaction of subgrade.
  - Soft spots and voids: Give notice.
  - Old drainage and service trenches: Give notice.
  - 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: Obtain instructions.
  - 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.
- 150    **SUBGRADES FOR VEHICULAR AREAS**
- Preparation and treatment: To Highways Agency 'Specification for highway works', clauses 616 and 617.
- 170    **GEOTEXTILE FILTER/ SEPARATOR MEMBRANES**
- Manufacturer: Lotrak or equal approved .
    - Product reference: 2300 .
  - Jointing: 300 mm overlap .
  - Protect from:
    - Exposure to light, except during laying (maximum five hours).
    - Contaminants.
    - Materials listed as potentially deleterious by geotextile manufacturer.
    - Damage, until fully covered by fill.
    - Wind uplift, by laying not more than 15 m before covering with fill.
  - Preparation: Remove humps and sharp projections and fill hollows before laying.
- 175    **IMPERMEABLE MEMBRANES**
- Manufacturer: Contractors to submit proposals for acceptance.
    - Product reference: Contractor to submit proposals for acceptance.
  - Jointing: 300 mm overlap.
  - Protect from: :.
    - Exposure to light, except during laying (maximum five hours).
    - Contaminants.
    - Materials listed as potentially deleterious by geotextile manufacturer.
    - Damage, until fully covered by fill.
    - Wind uplift, by laying not more than 15 m before covering with fill.
  - Preparation: Remove humps and sharp projections and fill hollows before laying.

- 180 NOTICE
- Give notice:
    - After preparation and compaction of subgrades;
    - For inspection of granular sub-base material before spreading; and
    - On completion of compaction of sub-base.
    - Period of notice: 2 working days.
- 200 SUBGRADE IMPROVEMENT LAYER (CAPPING)
- Material: To Highways Agency 'Specification for highway works', table 6/1, Class 6F1, 6F2 or 6F3.
  - Standard: Placed and compacted to Highways Agency 'Specification for highway works', table 6/1, clauses 612 and 613.3, 613.8, 613.9, 613.10 and 613.13.
- 210 HIGHWAYS AGENCY TYPE 1 GRANULAR MATERIAL
- Material: Type 1 unbound mixture to Highways Agency 'Specification for highway works', clause 801.
    - Recycled aggregate: Permitted.
- 211 GRANULAR MATERIAL
- Quality: Free from excessive dust, well graded, all pieces less than 75 mm in any direction, minimum 10% fines value of 50 kN when tested in a soaked condition to BS 812-111 and 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.
- 220 FROST SUSCEPTIBLE GRANULAR MATERIAL
- Definition (non frost susceptible material): To Highways Agency 'Specification for highway works' clause 801.8.
  - Depth of frost susceptible material below final surface of paving (minimum): 450 mm.
  - Testing: Test materials used if required and supply certificates.
- 225 PLACING OF MATERIAL WITH HIGH SULFATE CONTENT
- Standard: To Highways Agency 'Specification for highway works', clauses 801.2 and 801.3.
    - Separation distance (minimum): 500 mm.
- 230 PLACING GRANULAR MATERIAL GENERALLY
- Preparation: Loose soil, rubbish and standing water removed.
  - Structures, membranes and buried services: Ensure stability and avoid damage.
- 240 LAYING GRANULAR SUB-BASES FOR VEHICULAR AREAS
- General: Spread and levelled in layers. As soon as possible thereafter compact each layer.
  - Standard: To Highways Agency 'Specification for highway works' clause 802.
  - At drainage fittings, inspection covers, perimeters and where local excavation and backfilling has taken place: Take particular care to compact fully.

**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:  $\pm$  20 mm.
  - **Sub-bases:**
    - Roads and parking areas:  $\pm$  20 mm.
    - Footways and recreation areas:  $\pm$  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.

Q

**Paving/Planting/Fencing/Site furniture**

**Q21**

**In situ concrete roads/ pavings/ bases**

## Q21 In situ concrete roads/ pavings/ bases

To be read with Preliminaries/ General conditions.

### TYPES OF PAVING

- 115 PAVING WITH EMBEDDED METAL (DESIGNATED CONCRETE) To Caithness Slabs
- Granular sub-base: Highways Agency Type 1 unbound sub-base mixture, as section Q20.
    - Thickness: 100 mm.
  - Separation membrane: Polyethylene sheet 125 micrometres thick, edges lapped 300 mm.
  - Embedded metal: Mesh reinforcement A252.
  - Concrete: To BS 8500-2.
    - Designation: PAV1.
    - Fibres: Not required.
    - Aggregate:
      - Size (maximum): 20 mm.
      - Coarse recycled concrete aggregate: Not permitted.
      - Additional aggregate requirements: None.
    - Consistence class: S2.
    - Additional mix requirements: None.
  - Slab thickness (minimum): 100 mm.
  - Finish: Tamped.

### GENERAL/ PREPARATION

- 140 READY-MIXED CONCRETE
- Production plant: Currently certified by a body accredited by UKAS to BS EN 45011 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.
- 145 ADMIXTURES
- Calcium chloride and admixtures containing calcium chloride: Do not use.
- 155 PROJECT TESTING OF CONCRETE - GENERAL
- Testing: To BS EN 206-1, annex B and BS 8500-1, annex B.
  - Recording: Maintain complete correlated records including:
    - 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.
  - Testing laboratory: Accredited by UKAS or other national equivalent.
  - Tests results:
    - Submission of reports: Within one day of completion of each test.
    - Number of copies: 1 .
    - Reports on site: A complete set, available for inspection.
  - Nonconformity: Obtain instructions immediately .

## 240 SUB-BASE PREPARATION

- Surface: Sound, free of debris, mud and soft spots, and suitably close textured.
- Levels and falls: Within specified tolerances:
  - Vehicular areas:  $\pm 20$  mm.
  - Pedestrian areas:  $\pm 12$  mm.
  - Drainage outlets: +0 to -10 mm of required finished level.
- Kerbs and edgings: Complete, adequately bedded and haunched, and to required levels.

## 250 LAYING FABRIC REINFORCEMENT

- Flatness: Lay in flat sheets, straight and out of winding.
- Main reinforcement: Parallel to long axis of slab.
- Temporary support: Securely fix and support fabric during construction of slab.
- Lapping at joints (minimum):
  - Longitudinal bars: 450 mm.
  - Transverse bars: 450 mm.
- Extent of fabric: Fully within slab.
  - Stopping short of slab edges by:  $100 \pm 20$  mm.
  - Stopping short of centre line of transverse joints by:  $100 \pm 20$  mm.
  - Stopping short of centre line of longitudinal joints:  $100 \pm 20$  mm.
- Alternative placing method: Fabric may be placed on top of first compacted layer of concrete, followed by top layer of concrete, placed within two hours of the first layer.

**LAYING CONCRETE**

## 310 TRANSPORTING CONCRETE

- General: Avoid contamination, segregation, loss of ingredients, excessive evaporation and loss of workability. Protect from heavy rain.
- Entrained air: Anticipate effects of transport and placing methods in order to achieve specified air content.
- Placing: Use suitable walkways and barrow runs for traffic over reinforcement and freshly placed concrete.

## 320 LAYING CONCRETE GENERALLY

- Timing: Place as soon as practicable after mixing and while sufficiently plastic for full compaction. After discharge from the mixer do not add water or retemper.
- Temperature of concrete at point of delivery:
  - In hot weather (maximum):  $30^{\circ}\text{C}$ .
  - In cold weather (minimum):  $5^{\circ}\text{C}$ .
- Cold weather:
  - Do not use frozen materials.
  - Do not place concrete against frozen or frost covered surfaces.
  - Do not place concrete when air temperature is below  $3^{\circ}\text{C}$  on a falling thermometer. Do not resume placing until rising air temperature has reached  $3^{\circ}\text{C}$ .
- Surfaces on which concrete is to be placed: Free from debris and standing water.
- Placing in final position: Place in one continuous operation up to construction joints.
  - Do not place concrete simultaneously on both sides of movement joints.
- Spreading: Spread and strike off with surcharge sufficient to obtain required compacted thickness.
- Adjacent work: Form neat junctions and prevent damage. Keep clean all channels, kerbs, inspection covers, etc.

## 330 COMPACTING

- General: Fully compact concrete to full depth (until air bubbles cease to appear on the surface) especially around reinforcement, cast-in accessories, into corners and at joints.
- Poker vibrators: Do not use to make concrete flow into position. Do not allow to come into contact with fabric reinforcement.
- Wet formed joint grooves: Rectify any irregularities by means of a vibrating float.
- Finish: A dense, even textured surface free from laitance or excessive water.
  - Excess concrete: Remove from top of groove formers.

## 340 MANHOLE COVER AND GULLY GRATING FRAMES

- General: Set frames in independent concrete slabs placed over, but slightly larger than, exterior of manhole shaft or gully pot and any concrete surround.
- Positioning of joints in main slab: Set out so that manhole/ gully slabs are adjacent to a main transverse joint, wherever possible.
- Joints: Separate the independent slabs from main slabs with 25 mm thick joint filler board. Set board 20 mm below top of slab to form a sealing groove.

## 350 LEVELS

- Lines and levels of finished surface: Smooth and even, with regular falls to prevent ponding.
- Finished surfaces: Within  $\pm 6$  mm of required levels (+6 or -0 mm adjacent to gullies and manholes).

## 360 SURFACE REGULARITY

- General: Where appropriate in relation to the geometry of the surface, the variation in gap under a 3 m straightedge (with feet) placed anywhere on the surface to be not more than 5 mm.
- Sudden irregularities: Not permitted.

## 380 QUALITY CONTROL

- Standard: BS EN 13877-2.
- Tolerance on paving thickness: Category T2.
- Control: Thickness of pavement.
- Number of cores: As table 7, Category 1.
  - Location: Submit proposals complying with recommendations of clause 5

## JOINTS

## 410 JOINTS GENERALLY

- Layout: All joints to be accurately located, straight and well aligned.
- Construction joints made at end of working day: Form as contraction joints.
- Modifications to joint design or location: Submit proposals.
- Temporary support: Prior to concreting, set formwork, dowel bars, tie bars, joint filler boards, sealing groove fillets and the like rigidly in position and support to prevent displacement. Maintain support until concrete has set.
- Keep clean:
  - Do not allow concrete to enter gaps or voids in formwork or to render movement joints ineffective.
  - Do not allow concrete to impregnate or penetrate materials used as compressible joint fillers.

**SURFACE FINISH**

## 520 TAMPED FINISH

- Method: Tamp surface with edge of a board or beam to give an even texture of parallel ribs.

**CURING/ PROTECTION/ FINISHING**

## 610 CURING

- General: Immediately after completion of surface treatment prevent evaporation from surface and exposed edges of slabs for a minimum period of seven days.
- Early curing:
  - Cover with waterproof sheeting held clear of surface. Seal against draughts at edges and junctions.
  - Do not apply sprayed compounds or sheets in direct contact until surface is in a suitable state and will not be marked.
- Coverings for curing: Contractor's choice of:
  - Impervious sheet material.
  - Resin based aluminized curing compound containing a fugitive dye and with an efficiency index of 90% when tested to BS 7542.
  - Sprayed plastics film.

## 615 CURING PERIODS To Concrete slab below Caithness Slabs.

- General: Curing periods are in days (minimum).
  - Definition of 't': The average surface temperature of concrete in degrees Celsius during the curing period.
- Curing periods:
  - Drying winds or dry, sunny weather (relative humidity < 50%): 6 days when surface temperature is between 5°C and 10°C and  $80/(t+10)$  when surface temperature is between 10°C and 25°C .
  - Intermediate conditions (relative humidity between 50 and 80%): 4 days when surface temperature is between 5°C and 10°C and  $60/(t+10)$  when surface temperature is between 10°C and 25°C.
  - Damp weather, protected from sun and wind (relative humidity > 80%): No special requirements.
- Curing periods for concretes using admixtures or other types of cements/ combinations: Submit proposals.
- Other requirements: None.

## 670 OPENING TO TRAFFIC

- Light vehicles: 3 days after placing concrete.
- Heavy vehicles: Paving not suitable for heavy vehicles.

Q

**Paving/Planting/Fencing/Site furniture**

**Q22**

**Asphalt roads/ pavings**

## Q22 Asphalt roads/ pavings

To be read with Preliminaries/ General conditions.

### TYPES OF PAVING

- 110 ASPHALT CONCRETE PAVING TO ALL ROADS
- Standard: To Highways Agency (HA) 'Specification for highway works'.
  - Subgrade improvement layer: As drawing Civil Engineer drawing 03.
    - Compacted thickness: As drawing Civil Engineer drawing 03.
  - Granular sub-base: As drawing Civil Engineer drawing 03.
    - Compacted thickness: As drawing Civil Engineer drawing 03.
  - Base: Dense asphalt concrete to HA clause 906.
    - Paving grade: Not applicable.
    - Compacted thickness: As drawing Civil Engineer drawing 03.
  - Binder course: Dense asphalt concrete to HA clause 906.
    - Paving grade: Not applicable.
    - Compacted thickness: As drawing Civil Engineer drawing 03.
  - Surface course: As drawing Civil Engineer drawing 03.
    - Paving grade: Not applicable.
    - Compacted thickness: Not applicable.
  - Reclaimed content:
    - Standard: To BS EN 13108-8.
    - Value (maximum): Submit proposals.
  - Surface treatment: Not required.
  - Other requirements: Not applicable.
- 115 ASPHALT CONCRETE PAVING TO FOOTWAYS
- Standard: To Highways Agency (HA) 'Specification for highway works'.
  - Granular sub-base: As drawing Civil Engineer drawing 03.
    - Compacted thickness: As drawing Civil Engineer drawing 03.
  - Binder course: Dense asphalt concrete to HA clause 906.
    - Paving grade: Not applicable.
    - Compacted thickness: As drawing Civil Engineer drawing 03.
  - Surface course: As drawing Civil Engineer drawing 03.
    - Paving grade: Not applicable.
    - Compacted thickness: As drawing Civil Engineer drawing 03.
  - Reclaimed content:
    - Standard: To BS EN 13108-8.
    - Value (maximum): Submit proposals.
  - Surface treatment: Not required.
  - Other requirements: Not applicable.

## 140 HOT ROLLED ASPHALT PAVING TO ALL ROADS

- Standard: To Highways Agency (HA) 'Specification for highway works'.
- Subgrade improvement layer: As drawing Civil Engineer drawing 03.
  - Compacted thickness: As drawing Civil Engineer drawing 03.
- Granular sub-base: As drawing Civil Engineer drawing 03.
  - Compacted thickness: As drawing Civil Engineer drawing 03.
- Base: As drawing Civil Engineer drawing 03.
  - Paving grade: Not applicable.
  - Compacted thickness: As drawing Civil Engineer drawing 03.
- Binder course: As drawing Civil Engineer drawing 03.
  - Paving grade: Not applicable.
  - Compacted thickness: As drawing Civil Engineer drawing 03.
- Surface course: Hot rolled asphalt to HA clause 910.
  - Paving grade: Not applicable.
  - Compacted thickness: As drawing Civil Engineer drawing 03.
- Reclaimed content:
  - Standard: To BS EN 13108-8.
  - Value (maximum): Submit proposals.
- Surface treatment: Not required.
- Other requirements Not applicable.

## 140A HOT ROLLED ASPHALT PAVING TO FOOTWAYS

- Standard: To Highways Agency (HA) 'Specification for highway works'.
- Subgrade improvement layer: As drawing Civil Engineer drawing 03.
  - Compacted thickness: As drawing Civil Engineer drawing 03.
- Granular sub-base: As drawing Civil Engineer drawing 03.
  - Compacted thickness: As drawing Civil Engineer drawing 03.
- Base: As drawing Civil Engineer drawing 03.
  - Paving grade: Not applicable.
  - Compacted thickness: As drawing Civil Engineer drawing 03.
- Binder course: As drawing Civil Engineer drawing 03.
  - Paving grade: Not applicable.
  - Compacted thickness: As drawing Civil Engineer drawing 03.
- Surface course: Hot rolled asphalt to HA clause 910.
  - Paving grade: Not applicable.
  - Compacted thickness: As drawing Civil Engineer drawing 03.
- Reclaimed content:
  - Standard: To BS EN 13108-8.
  - Value (maximum): Submit proposals.
- Surface treatment: Not required.
- Other requirements Not applicable.

**PREPARATORY WORK/ REQUIREMENTS**

## 220 BITUMINOUS MATERIALS GENERALLY

- Suppliers names: Submit.
  - Timing (minimum): 2 weeks before starting work.
- Test certificates: At the time of delivery for each manufacturing batch submit certificate:
  - Confirming compliance with this specification and the relevant standard.
  - Stating full details of composition of mix.

## 240 ACCEPTANCE OF SURFACES

- Surface: Sound, clean and suitably close textured.
- Level tolerances: To BS 594987.
- Kerbs and edgings: Complete, adequately bedded and haunched and to the required levels.

**250 ABUTMENTS**

- Vertical edges of manholes, gullies, kerbs and other abutments: Clean and paint with a thin uniform coating of hot applied 40/60 paving grade bitumen.
- Finishing: Tamp surface around projections.
  - Level: Flush or not more than 3 mm above projections.

**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.

**320 ADVERSE WEATHER**

- Frozen materials: Do not use.
- Suspend laying:
  - During freezing conditions
  - If the air temperature reaches 0°C, or in calm dry conditions -3°C, on a falling thermometer.
  - Hot rolled asphalt: During periods of continuous or heavy rain or if there is standing water on the base.

**330 LEVELS**

- Permissible deviation from the required levels, falls and cambers (maximum): In accordance with BS 594987, Table 7.

**340 FLATNESS/ SURFACE REGULARITY**

- Deviation of surface: Where appropriate in relation to the geometry of the surface, the variation in gap under a 3 m straightedge placed anywhere on the surface to be not more than:
  - Base: Hand laid, 25 mm and Machine laid, 25 mm.
  - Binder course: Hand laid, 13 mm and Machine laid, 13 mm.
  - Surface course: Hand laid, 10 mm and Machine laid, 7 mm.
  - Where a straightedge cannot be used the surface must be of a comparable standard of accuracy when judged by eye.

## 350 CONTRACTOR'S USE OF PAVEMENTS

- Before use:
  - Timing: allow newly laid sections to cool before trafficking.
  - Open-grained surface: Fill with 0/4 mm size coated grit. Remove surplus.
  - Finish: Uncoated chipping and binder surface treatment.
- 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: Tack coat to BS 434-1 or BS EN 13808.  
Application rate: As manufacturer's recommendation.  
Accuracy: Uniform, without puddles.
  - Finishing: Allow emulsion to break completely before applying surface.

## 370 COATED CHIPPINGS

- Chippings and application: To BS EN 13108-4.
  - Type/ Source: Submit proposals.
  - Size: Submit proposals.
  - Colour: Submit proposals.

**Q**

**Paving/Planting/Fencing/Site furniture**

**Q23**

**Gravel/ hoggin/ woodchip roads/ pavings**

**Q23 Gravel/ hoggin/ woodchip roads/ pavings**

Q

**Paving/Planting/Fencing/Site furniture**

**Q24**

**Interlocking brick/ block roads/ pavings**

**Q24 Interlocking brick/ block roads/ pavings**

**Q**

**Paving/Planting/Fencing/Site furniture**

**Q25**

**Slab/ brick/ sett/ cobble pavings**

**Q25 Slab/ brick/ sett/ cobble pavings**

To be read with Preliminaries/ General conditions.

**GENERAL**

- 110 NATURAL STONE SLAB PAVING SYSTEM To Caithness slab areas
- Granular sub-base: Highways Agency Type 1 unbound mixture, as section Q20.
    - Thickness: As Civil Engineer drawing 03 .
  - Base: Concrete as section Q21.
    - Thickness: 100 mm.
  - Laying course: 30mm compacted Easipoint Ltd Fine Bedding Concrete (FBC) or equal approved.
    - Accessories: Primer for underside of flags or slabs to be Easipoint Ltd Bond Plus or equal approved.
  - Paving units: Natural stone slabs.
  - Jointing: 10 mm joint infilled with Easipoint Ltd Granatech grouting mortar or equal approved. Applied as slurry and/or to manufacturers instructions and finished with mechanical belt cleaner .
    - Bond: As drawings.
  - Accessories: Inset uplighters.

**PRODUCTS**

- 305 GRANULAR MATERIAL FOR LAYER OVER EXISTING BASES
- Material: Highways Agency Type 1 unbound mixture, as section Q20.
- 310 NATURAL STONE SLABS Caithness Flagstone
- Standard: To BS EN 1341.
  - Supplier: Spittal Mains Quarry, Wick, Caithness , Scotland.
    - Product reference: Submit proposals.
    - Quarry: Spittal Mains Quarry.
  - Stone type: Calcareous siltstone.
  - Finish: Fine textured.
  - Sizes: As detailed on drawings.
    - Plan dimension deviation class: P1.
    - Diagonal deviation class: D1.
    - Thickness deviation class: T0.
  - Arrises: Square.
  - Freeze/ thaw resistance class: F1.
  - Flexural strength (MPa): 37.2 N /Squae Millimetre.
  - Abrasion resistance (mm): No requirement.
  - Slip/ Skid resistance (USRV): 69.
  - Water absorption (% by mass): 0.3%.
  - Petrographical description: Calcareous Siltstonet.
  - Surface treatment: None.

- 320 TACTILE FLAGS AND SLABS Blister Surface Type B1 at controlled pedestrian crossing points as per Civil Engineer Drawing 10
- Standard: To BS 7997.
  - Material: Precast concrete.
    - Manufacturer: Contractor's choice.
    - Product reference: Submit proposals.
  - Recycled content: Not applicable.
  - Nominal sizes: 400 x 400 mm.
  - Colour: Red.
- 320A TACTILE FLAGS AND SLABS Rib Surface Type R1 at East Whale Lane controlled pedestrian crossing as per Civil Engineer Drawing 10
- Standard: To BS 7997.
  - Material: Precast concrete.
    - Manufacturer: Contractor's choice.
    - Product reference: Submit proposals.
  - Recycled content: Not applicable.
  - Nominal sizes: 400 x 400 mm.
  - Colour: Red.
- 435 PRIMER FOR UNDERSIDE OF FLAGS AND SLABS underside of slabs and upper side of Concrete slab
- Manufacturer: Easipoint or equal approved.
    - Product reference: Easipoint Ltd Bond Plus or equal approved.

#### EXECUTION

- 610 MATERIAL SAMPLES
- Samples representative of colour and appearance of designated materials: Submit before placing orders.
    - Designated materials: Natural stone slab paving; reference sample to BS EN 1341.
- 615 CONTROL SAMPLES
- Sample areas: Complete as part of the finished work.
    - Types of paving: Natural stone slab paving.
    - Location: Agree on site with Engineer.
    - Size (minimum): 1.5 x 1.5 m.
    - Included features: Junction with building facade.
  - Approval of appearance: Obtain before proceeding.
- 620 ADVERSE WEATHER
- General:
    - Temperature: Do not lay or joint paving if the temperature is below 3°C on a falling thermometer or below 1°C on a rising thermometer.
    - Frozen materials: Do not use. Do not lay bedding on frozen or frost covered bases.
  - Paving with mortar joints and/ or bedding:
    - Protect from frost damage, rapid drying out and saturation until mortar has hardened.
  - Paving laid and jointed in sand:
    - Stockpiled bedding sand: Protect from saturation.
    - Exposed areas of sand bedding and uncompacted areas of sand bedded paving: Protect from heavy rainfall.
    - Saturated sand bedding: Remove and replace, or allow to dry before proceeding.
    - Laying dry-sand jointed paving in damp conditions: Brush in as much jointing sand as possible. Minimize site traffic over paving. As soon as paving is dry, top up joints and complete compaction.

- 625 LAYING PAVINGS - GENERAL
- Appearance: Smooth and even with regular joints and accurate to line, level and profile.
  - Falls: To prevent ponding.
  - Bedding of paving units: Firm so that rocking or subsidence does not occur or develop.
    - Bedding/ Laying course: Consistently and accurately graded, spread and compacted to produce uniform thickness and support for paving units.
  - Slopes: Lay paving units upwards from the bottom of slopes.
  - Paving units: Free of mortar and sand stains.
  - Cutting: Cut units cleanly and accurately, without spalling, to give neat junctions with edgings and adjoining finishes.
- 630 LEVELS OF PAVING
- Permissible deviation from specified levels:
    - Generally:  $\pm 6$  mm.
  - Height of finished paving above features:
    - At gullies: +6 to +10 mm.
    - At drainage channels and kerbs: +3 to +6 mm.
- 635 REGULARITY
- Maximum variation in gap under a 3 m straight edge placed anywhere on the surface (where appropriate in relation to the geometry of the surface): 10 mm.
  - Sudden irregularities: Not permitted.
  - Difference in level between adjacent blocks/ pavers/ setts (maximum): 2 mm.
- 640 COLOUR BANDING
- General: Unless premixed by manufacturer, select from at least 3-5 separate packs in rotation to avoid colour banding.
- 645 PROTECTION
- Cleanliness: Keep paving clean and free from mortar droppings, oil and other materials likely to cause staining.
  - Materials storage: Do not overload pavings with stacks of materials.
  - Handling: Do not damage paving unit corners, arrises, or previously laid paving.
  - Mortar bedded pavings: Keep free from traffic after laying:
    - Pedestrian traffic (minimum): 4 days.
    - Vehicular traffic (minimum): 10 days.
  - Access: Restrict access to paved areas to prevent damage from site traffic and plant.
- 650 CEMENTITIOUS BASES AND SUB-BASES
- General: Protect from moisture loss, if not covered by another pavement course within 2 hours of completion.

- 655    **CONDITION OF SUB-BASES/ BASES BEFORE SPREADING LAYING COURSE**
- Trenches and excavation of soft or loose spots in subgrade: Fill and thoroughly compact.
  - Granular surfaces: Lay and compact so as to be sound, clean, smooth and close-textured enough to prevent migration of bedding/ laying course materials into the sub-base during compaction and use, free from movement under compaction plant and free from compaction ridges, cracks and loose material.
  - Prepared existing and new bound bases (roadbases): Sound, clean, free from rutting or major cracking. Remove sharp stones, projections and debris.
  - Sub-base/ Roadbase level tolerances: To BS 7533-7, Annex A.
  - Levels and falls: Accurate and within the specified tolerances.
  - Drainage outlets: Within 0-10 mm of the required finished level.
  - Features in sand bedded paving (including mortar bedded restraints and drainage ironwork): Complete to required levels; adequately bed and haunch in mortar.
  - Sub-bases containing cement/ hydraulic binder: Cure for minimum times specified in BS 7533-4.
- 660    **DRAINAGE HOLES IN EXISTING BASES**
- Location: Impervious layers of existing road/ paving.
  - Drainage: Form regular grid of holes, through base and any additional build up, down to sub-base:
    - Spacing in both directions: 1000 mm.
    - Minimum clear opening: 30 mm.
    - Do not weaken or excessively disturb road/ paving.
  - Completion: Remove jagged or protruding edges. Fill voids with 2-8 mm pea gravel Ram down to form flush smooth surface.
- 665    **PLANING AND REPAIRS TO EXISTING BASES**
- Existing macadam/ asphalt surfaces: Plane to required levels.
  - Repairs: Cut out to remove ruts and cracks over 25 mm wide.
  - Building up existing surfaces to required levels: Regulate using bituminous material to local highway engineers requirements.
- 700    **SITE MIXED FINE CONCRETE TO FOOTPATH MARGINS**
- Standard: In accordance with BS 7533-7.
- 780    **LAYING MORTAR BEDDED ACCESSORIES SOLID DRAINAGE CHANNELS**
- Foundation: Concrete GEN1, as section E10.
    - Size: 200 x 150 mm.
  - Bedding:
    - Mortar: Ready mixed.
    - Thickness: 10 mm minimum to 40 mm maximum.
  - Laying: Bed units on foundation, and secure with continuous mortar haunching.
    - Keep exposed faces clean and free from mortar.
  - Jointing: Dry, closely butted.
- 785    **TOOLED JOINTS IN MORTAR BEDDED UNITS**
- Joints: Completely filled with bedding mortar as work proceeds.
    - Joint width: 10 mm.
    - Finish: Neat flush profile.

- 790 TOOLED COLOURED JOINTS IN MORTAR BEDDED UNITS
- Joints: Completely filled with bedding mortar as work proceeds.
    - Joint width: 10 mm.
  - Pointing: 1:3 cement:sand mortar with pigment, colour charcoal.
    - Depth: 10 mm.

**Q**

**Paving/Planting/Fencing/Site furniture**

**Q41**

**Barriers/ guardrails**

**Q41 Barriers/ guardrails**

To be read with Preliminaries/ General conditions.

**TYPES OF BARRIERS/ GUARDRAILS****115 PEDESTRIAN RESTRAINT SYSTEM**

To BS 7818

Visirail or equal approved

Height above datum (minimum): 1000mm.

Rails & Posts: Design loading: Class 2

Foundations 300 x 300 x 450mm deep concrete foundations.

**135 PROTECTIVE BARRIERS To paths at Fire Exit routes.**

- Standard: To BS 6180.
- Manufacturer: As Clause 135A.
  - Product reference: Submit proposals.
- Height above datum: 1100 mm.
- Design load: To BS 6180
  - Applied horizontally at: Design height .
- Material/ Protection: Steel, galvanized to BS EN ISO 1461 after fabrication.
- Surface finish: Powder coating as section Z31.
  - Colour/ Texture: RAL 9010/ matt.
  - Minimum film thickness: 60 micrometres.
- Fixings/ Foundations: 300 x 300 x 600 mm deep concrete foundation.
- Other requirements: None.

**135A PROTECTIVE BARRIERS**

- Manufacturer: Marshalls Street Furniture.
  - Web: [www.marshalls.co.uk/streetfurniture](http://www.marshalls.co.uk/streetfurniture).
  - Email: [msf.sales@marshalls.co.uk](mailto:msf.sales@marshalls.co.uk).
  - Product reference: Rhino RB60 Hoop Barrier
- Finish: Polyester powder coated .
- Colour: RAL ??? .
- Fixing: Base plate .

**200 COLLAPSIBLE CAR PARK POSTS**

- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Material/ Protection: Steel galvanized to BS EN ISO 1461 after fabrication.
  - Surface finish: Powder coating as section Z31.
    - Colour/Texture: RAL 9010 ???/ matt.
    - Minimum film thickness: 60 micrometres.
- Method of operation: Manual.
- Fixings/ Foundations: Expanding anchors grouted into concrete foundation.
- Other requirements: Locking cover cap.

**INSPECTION/ TESTING****305 PRODUCTION INSPECTION OF POSTS**

- General: At place of fabrication, at rate of 15 per order selected randomly.
  - Weld defect levels: As stipulated in Highways Agency 'Manual of contract documents for highway works' Volume 1 'Specification for highway works' Series 400.

- 330 VERIFICATION OF ANCHORAGES FOR PEDESTRIAN RESTRAINT SYSTEM
- Certification: Four weeks prior to installation, submit certificates from a United Kingdom Accreditation Service (UKAS) independent laboratory, stating that for tests in accordance with BS 5080-1, anchorages are capable of resisting the design loading.
  - Tolerance: Certification must include the maximum tolerance of hole size and evidence that load can be supported when anchor is installed in holes having these tolerances.
- 340 SITE TESTING ANCHORAGES IN DRILLED HOLES FOR PEDESTRIAN RESTRAINT SYSTEM
- Test parapet posts: Install on site.
  - Loading tests: To BS 5080-1.
    - Frequency of testing: One fixing at every fifth post.
  - Anchorage loadings: Incrementally in tension to 10% above the nominal tensile load determined in accordance with design loading.
    - Load holding periods:
      - Incremental loads: Not less than 30 seconds.
      - Test loads: Not less than 5 minutes.
    - Readings: Take after applying load and at the end of the time intervals stated.
    - Movement: Total not to exceed 1 mm during test.
      - Any evidence of slip during loading shall constitute failure.
  - Test results: Submit prior to full parapet installation.

#### INSTALLATION

- 410 WORK ON OR ADJACENT TO HIGHWAYS
- Requirement: Comply with the Department for Transport's 'Safety at street works and road works. A code of practice'. Retain a copy of this document on site at all times during the course of the works.
- 420 ALIGNMENT
- Erection: Fences/ barriers to present a flowing alignment. Tops of posts to follow ground profile.
  - Tolerance:  $\pm 30$  mm of prescribed alignment and, within any 10 m length,  $\pm 15$  mm from the straight or required radius.
- 430 ERECTION GENERALLY
- Protection: Coat all internal and external surfaces of aluminium and steel posts below and up to 150 mm above ground level, with two coats of bituminous paint to BS 6949 type 2, unless other applied surface finish is specified.
  - Prevention of electrolytic corrosion: Isolate dissimilar metals.
  - Steel components: Do not drill, cut or weld after galvanizing.
- 480 CONCRETE FOUNDATIONS FOR POSTS
- Excavations: To have vertical sides. Dispose of all arisings. Blind excavation bottoms with a 50 mm layer of concrete.
  - Concrete mix: To BS 8500-2, Designated mix not less than GEN 4 or Standard mix not less than ST5. Do not use admixtures.
  - Placing concrete: Fill holes to the specified depth and fully compact. Do not backfill for at least four days.
  - Temporary support to posts: Provide for a at least four days after placing concrete.

**490 DAMAGE REPAIR TO GALVANIZED SURFACES**

- Areas of repair: Minor damage, including fixings and fittings.
  - Total area of repair not to exceed 0.5% of total surface area.
  - Each area not to exceed 1000 mm<sup>2</sup>.
- Renovation: Use low melting point zinc alloy repair rods or powders or at least two coats of zinc-rich paint to BS 4652.

**510 PREPARATION FOR SITE PAINTING**

- Preparation and application: As soon as possible after installation of barriers/ guardrails.

Q

**Paving/Planting/Fencing/Site furniture**

**Q50**

**Site/ street furniture/ equipment**

**Q50 Site/ street furniture/ equipment**

To be read with Preliminaries/ General conditions.

**GATES, BARRIERS AND PARKING CONTROLS**

- 190 BOLLARDS To Main Entrance
- Manufacturer: As clause 190A.
    - Product reference: Bridgford Concrete Bollard.
  - Material: Precast concrete.
    - Finish: As manufactured.
    - Colour: None.
  - Height above ground: 900 mm.
  - Special features: White reflective band.
  - Method of fixing: Base plate bolted to 400 x 400 x 400 mm concrete base 100 mm below paving surface.
- 190A BOLLARDS
- Manufacturer: Marshalls Urban Structures.
    - Web: [www.marshalls.co.uk/urbanstructures](http://www.marshalls.co.uk/urbanstructures).
    - Email: [sales.urbanstructures@marshalls.co.uk](mailto:sales.urbanstructures@marshalls.co.uk).
    - Product reference: Bridgford Concrete Bollard
  - Finish: Sandblasted.
- 190B BOLLARDS
- Manufacturer: Marshalls Street Furniture.
    - Web: [www.marshalls.co.uk/streetfurniture](http://www.marshalls.co.uk/streetfurniture).
    - Email: [msf.sales@marshalls.co.uk](mailto:msf.sales@marshalls.co.uk).
    - Product reference: RB 123.
  - Type: Reinforced anti-ram.
  - Size:
    - Diameter: 194 mm.
    - Overall length: 1800 mm.
  - Finish: Galvanized.
  - Colour: Not required.
  - Cap: Flat.
  - Fixing: Root fixing.
  - Accessories: Reflective tapes.
- 190C BOLLARDS
- Manufacturer: Marshalls Street Furniture.
    - Web: [www.marshalls.co.uk/streetfurniture](http://www.marshalls.co.uk/streetfurniture).
    - Email: [msf.sales@marshalls.co.uk](mailto:msf.sales@marshalls.co.uk).
    - Product reference: RS 005.
  - Type: Reinforced anti-ram.
  - Size: 114 mm diameter.
  - Height above ground: 1000 mm.
  - Fixing: Root fixing.
  - Finish: Brushed satin.
  - Accessories: Reflective tapes.

192 COLLAPSIBLE/ TELESCOPIC BOLLARDS To access Road

- Manufacturer: As Clause 192A.
  - Product reference: Fusilier Bollard.
- Material: Steel.
  - Finish: As manufactured.
  - Colour: None.
- Height above ground: 1000 mm.
- Special features: White and red reflective band.
- Method of fixing: Concrete base as drawing ???.

192A FOLD DOWN BOLLARD

- Manufacturer: Marshalls Street Furniture.
  - Web: [www.marshalls.co.uk/streetfurniture](http://www.marshalls.co.uk/streetfurniture).
  - Email: [msf.sales@marshalls.co.uk](mailto:msf.sales@marshalls.co.uk).
  - Product reference: Fusilier Bollard

### SITE AND STREET FURNITURE

212 CYCLE LOCKERS AT BUILDING ENTRANCE 6 No.

- Manufacturer: BIKEAWAY,  
Bell Close , Newnham Industrial Estate , Plympton , Plymouth , Devon , PL7 4JH  
e:mail [sales@bikeaway.com](mailto:sales@bikeaway.com) , Telephone 01752-202116.
  - Product reference: Submit proposals.
- Material: Steel.
  - Finish: Polyester powder coated as section Z31.
  - Colour: RAL ???.
- Accessories: Integral door locks.
- Method of fixing: Proprietary anchored bases.

### INSTALLATION

510 CONCRETE FOUNDATIONS GENERALLY

- Standard: To BS 8500-2.
- Mix: Designated concrete not less than GEN 1 or standard prescribed concrete not less than ST2.
- Admixtures: Do not use.
- Foundation holes: Neat vertical sides.
- Depth of foundations, bedding, haunching: Appropriate to provide adequate support and to receive overlying soft landscape or paving finishes.

515 SETTING COMPONENTS IN CONCRETE

- Holes: 250 x 250 x minimum 300 mm deep.
- Components: Accurately positioned and securely supported.
- Concrete fill: Fully compacted as filling proceeds.
- Concrete foundations exposed to view: Compacted until air bubbles cease to appear on the upper surface, then weathered to shed water and trowelled smooth.
- Temporary component support: Maintain undisturbed for minimum 48 hours.

520 SETTING IN EARTH

- Holes: As small as practicable.
- Components being fixed: Accurately positioned and securely supported.
- Buried depth (minimum): 600 mm.
- Earth refill: Well rammed as filling proceeds.

## 545 ERECTION OF TIMBER AND PREFABRICATED STRUCTURES

- Checking: 5 days (minimum) before proposed erection date, check foundations, holding down bolts, etc.
- Inaccuracies or defects in prepared bases or supplied structures: Report immediately. Obtain instructions before proceeding.

## 550 DAMAGE TO GALVANIZED SURFACES

- Minor damage in areas up to 40 mm<sup>2</sup> (including on fixings and fittings): Make good.
  - Material: 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: Sufficient to provide a zinc coating at least equal to the original layer.

## 560 SITE PAINTING

- Timing: Prepare surfaces and apply finishes as soon as possible after fixing.

R

Disposal systems

**R10**  
**Rainwater drainage systems**

## R10 Rainwater drainage systems

To be read with Preliminaries/ General conditions.

### GENERAL

#### 110 GRAVITY RAINWATER DRAINAGE SYSTEM

- Rainwater outlets: Proprietary.
- Gutters: Aluminium and Gutter linings to H.31/234A.
- Pipework: Aluminium.
- Below ground drainage: As section R12.
- Disposal: To surface water drainage.
- Controls: As section S90.
- Accessories:
  - Insulation to internal downpipes;
  - Insulation to internal gutters; and
  - Sealant for gutters.

#### 111 GRAVITY RAINWATER DRAINAGE SYSTEM TO POOL HALL

- Rainwater outlets: flanges and clamping collars for waterproof membrane.
- Gutters: Composite.
- Pipework: Aluminium, sealed..
- Below ground drainage: As section R12.
- Disposal: To surface water drainage.
- Controls: Not applicable.
- Accessories: Insulation to internal downpipes and Insulation to internal gutters.

#### 114 Syphonic Drainage

The contractor will be responsible through the specialist sub-contractor for the design, installation, testing and commissioning of the syphonic drainage system. The scope of this will include the Services Block Roof and the Foyer Roof. All in accordance with BS EN 12056-3 : 2000.

#### 121 SIPHONIC RAINWATER DRAINAGE SYSTEM

- Rainwater outlets: Proprietary.
- Gutters: Composite.
- Pipework: Submit proposals.
- Below ground drainage: As section R12.
- Accessories: Insulation to internal downpipes and Insulation to internal gutters.

#### 121A SIPHONIC RAINWATER DRAINAGE SYSTEM TO FOYER/GLAZED LINK

- Rainwater outlets: Proprietary.
- Gutters: Composite.
- Pipework: Submit proposals.
- Below ground drainage: As section R12.
- Accessories: Insulation to internal downpipes and Insulation to internal gutters.

**121B SIPHONIC RAINWATER DRAINAGE SYSTEM TO ACCOMMODATION BLOCK**

- Rainwater outlets: Proprietary.
- Gutters: Composite.
- Pipework: Submit proposals.
- Below ground drainage: As section R12.
- Accessories: Insulation to internal downpipes and Insulation to internal gutters.

**SYSTEM PERFORMANCE****210 DESIGN**

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

**221 COLLECTION AND DISTRIBUTION OF RAINWATER**

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

**230 DESIGN PARAMETERS - GENERAL**

- Roof and gutter construction and finish: composite gutter in perimeter of standing seam aluminium roof  
and insulated gutter in single ply polymer roof with screed laid to falls .
- Design rate of rainfall: As BS EN 12056-3, National Annex NB.2.
  - Category: 2.
- Design life of building: 60 years.
- Available capacity of existing below ground drainage (maximum): see CE Plans P07353/01/B and P07353/04/C .

**241 DESIGN PARAMETERS - SIPHONIC RAINWATER DRAINAGE SYSTEM**

- System designer: Hydromax or equal and approved.
- System design: To operate on siphonic principles so as to be regularly self cleansing in normal use.
- Pipework:
  - Airtight at maximum and minimum operating pressures.
  - To accommodate thermal movement without damage to fixings and joints or excess stress, abrasion or noise.
- Design water depth after design rainfall of 2 minutes duration (maximum): 75 mm in gutters.
- Overflow arrangements: Separate system of gravity drained outlets situated 5 mm above maximum design water depth..
- Siphonic flow velocity (minimum): 1 m/s.
- Pressure imbalance (maximum): 0.75 m.
- Operational pressure (maximum): 8 m vacuum.

**PRODUCTS****325A COMPOSITE GUTTERS TO FOYER ROOF**

- Manufacturer: CGLSystems Ltd .
  - Product reference: CGL1 Insulated gutter.
- Profile: Box.
- Construction: Upper and lower skin of galvanized steel with polyisocyanurate rigid foam core.
- Insulation thickness: 60mm.
- Nominal size: 1000 x 200.
- Upper layer finish: Prebonded single ply membrane.
- Underside finish: Polyester powder coated.
- Fixings: Galvanized steel straps.
- Accessories: Leaf guards and Stop ends.

**326A COMPOSITE GUTTERSTO POOL HALL ROOF PERIMETER**

- Manufacturer: CGL Systems Ltd. .
  - Product reference: CGL1 Insulated gutter..
- Profile: Trapezium.
- Construction: Upper and lower skin of galvanized steel with polyisocyanurate rigid foam core.
- Insulation thickness: 150mm.
- Nominal size: 1500 x 150mm Internal size. .
- Upper layer finish: Prebonded single ply membrane.
- Underside finish: Polyester powder coated.
- Fixings: Galvanized steel straps at 1000mm centres.
- Accessories: Leaf guards and Stop ends.

**345 GUTTER LININGS**

- Manufacturer: Sarnafil.
  - Product reference: Submit proposals.
- Material: Sarnafill single ply polymer weatherproof membrane or equal.
- Size: Refer Architects Drawings SKP100 , 447.
- Outlets: 150 mm dia domed and clamped outlets .

**360 SEALANT FOR GUTTERS**

- Type: Low Modulus Silicone Sealant.

**365 PROPRIETARY RAINWATER OUTLETS**

- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Roof construction: Both upstanding aluminium roof to pool hall and liquid applied roof-coating laid to fall on Services Block.
  - Roof insulation thickness: varies.
- Type of grate/ Fittings: Flange and clamping collar for roof membrane.
- Outlet: Type and direction to suit pipework with suitable adaptors and connections.
- Accessories: Underdeck clamps.

**370 ALUMINIUM PIPEWORK**

- Standard: To BS 2977.
- Manufacturer: Alumasc Exterior Building Products Ltd, White House Works, Bold Road, Sutton, St Helens, Merseyside WA9 4JG. Tel: 01744 648400, Fax: 01744 648401. Email: info@alumasc-exteriors.co.uk Web: www.alumasc-exteriors.co.uk .
  - Product reference: Flushjoint downpipe system..
- Type/ Thickness : Extruded, 1.2 mm.
- Section: Round.
- Nominal size: 152 mm.
- Finish Polyester powder coating.
- Colour: white.
- Brackets: Extruded aluminium pipe clips coated as pipes.
  - Fixings: Stainless steel screws.
  - Size: 50 x 5 mm.
- Accessories: Access fittings.

**445 INSULATION TO INTERNAL GUTTERS**

- Material: Closed cell.
- Thermal conductivity (maximum): 0.045 W/m.K.
- Manufacturer: Contractor's choice.
  - Product reference: Submit proposals.
- Recycled content: 25% (minimum) to BS EN ISO 14021.
- Thickness: 70 mm.
- Fire performance: Class 1 spread of flame when tested to BS 476-7 or Class CL to BS EN 13501-1.

**FABRICATION****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: Bolted into masonry Services Block.
  - 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.
- 655 **JOINTING INTERNAL PIPEWORK**
- Jointing: Low modulus silicone sealant over a polyethylene foam backing insert.
- 660 **JOINTING EXTERNAL PIPEWORK**
- Jointing: Low modulus silicone sealant over a polyethylene foam backing insert.
- 670 **INSTALLING SIPHONIC DRAINAGE PIPEWORK**
- Fixing: Secure. Prevent movement during extreme operating conditions including oscillating pressure and cavitation. Provide for thermal movement.
  - Number of joints, bends and offsets: Minimize.
  - Condition on completion: Smooth, consistent bore, clean and free from distortion, wrinkling, cracks and other defects.
- 675 **CUTTING COATED PIPEWORK AND GUTTERS**
- Cutting: Recoat bare metal.
- 680 **FIXING INSULATION TO INTERNAL PIPELINES AND GUTTERS**
- Fixing: Secure and neat. Provide continuity at supports and leave no gaps. Fix split pipe insulation with the split on 'blind' side of pipeline.
    - Method: Waterproof adhesive.
  - Timing: Do not fit insulation until completion of pipe airtightness or leakage testing.

## 685 IDENTIFICATION OF INTERNAL RAINWATER PIPEWORK

- Markings: To BS 1710.
  - Type: Black bands, with arrows to indicate direction of flow.
- Wording: White lettering 'RAINWATER DRAINAGE' on a black background.
- Type: Permanent; integral or painted pipe colour, self-adhesive bands or identification clips.
- Locations: Junctions, both sides of slabs, bulkheads and wall penetrations.

## 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.

## 695 ELECTRICAL CONTINUITY - GUTTERS

- Joints in metal gutters: Purpose made links supplied by the gutter manufacturer to ensure electrical continuity.

## 700 ACCESS FOR TESTING AND MAINTENANCE

- General: Install pipework and gutters with adequate clearance to permit testing, cleaning and maintenance, including painting where necessary.
- Access fittings and rodding eyes: Position so that they are not obstructed.

**COMPLETION**

## 900 TESTING GENERALLY

- Dates for testing: Give notice.
  - Period of notice (minimum): 5 working days.
- Preparation:
  - Pipework: Complete, securely fixed, free from defects, obstruction and debris before testing.
- Testing:
  - Supply clean water, assistance and apparatus.
  - Do not use smoke to trace leaks.
- Records: Submit a record of tests.

## 906 INTERNAL PIPEWORK TEST - SCOTLAND

- Standard: To BS EN 12056-2, National annex NG.

## 910 GUTTER TEST

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

## 915 MAINTENANCE INSTRUCTIONS

- General: At completion, submit printed instructions recommending procedures for maintenance of the rainwater installation, including full details of recommended inspection, cleaning and repair procedures.

## 920 IMMEDIATELY BEFORE HANDOVER

- Construction rubbish, debris, swarf, temporary caps and fine dust which may enter the rainwater system: Remove. Do not sweep or flush into the rainwater system.
- Access covers, rodding eyes, outlet gratings and the like: Secure complete with fixings.

**R**

**Disposal systems**

**R11**

**Above ground foul drainage systems**

## 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: PVC-U.
  - Separate ventilating pipework: PVC-U .
  - 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):  $\pm 38$  mm water gauge.
  - Water seal retained in traps (minimum): 25 mm.

### PRODUCTS

- 310 FLOOR CHANNELS IN SHOWERS
- Manufacturer: ACO Technologies plc..
    - Product reference: Modular 2000 Floor Channel System.
  - Floor finish: Ceramic tile.
  - Body type: Modular.
    - Material: Stainless steel.
  - Sizes: 150 mm.
  - Type of fall: Constant depth.
  - Grating/ cover:
    - Loading: Pedestrian.
    - Material: Stainless steel, screw fixed.
  - Accessories:
    - Anchors for casting in;
    - Connecting flanges;
    - Junctions; and
    - Stop ends.

- 315 FLOOR DRAINS Pool and Changing Rooms
- Manufacturer: ACO Technologies plc..
  - Product reference: Aco EG 15 0Eurogulley.
  - Floor finish: Ceramic tile/ Stone/ Terrazzo.
  - Body type: Bell trapped.
  - Material: Stainless steel.
  - Grating/ cover:
  - Type: Flat.
  - Material: Stainless steel, screw fixed.
  - Outlet: Type and direction to suit pipework.
  - Accessories: not applicable.
- 320 ABS PIPEWORK FOR WASTES
- Standard:
  - To BS 5255 and Kitemark certified; or
  - To BS EN 1455-1 and Kitemark certified.
  - Application area code: B.
  - Opening dimensions of access fittings, design of swept fittings, stand off dimensions of pipe and fitting brackets and requirements for adaptors and plugs: To BS 4514.
  - Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
  - Nominal sizes: DN 50.
  - Colour: White where exposed to view.
  - Brackets: Plastics pipe clips, colour to match pipes.
  - Fixings: Stainless steel screws.
  - Size: 40 x 4 mm.
  - Accessories: Access fittings.
- 350 MUPVC OR PVC-C PIPEWORK FOR WASTES
- Material and standard:
  - MUPVC: To BS 5255 and Kitemark certified; or
  - PVC-C: To BS EN 1566-1, and Kitemark certified.
  - Application area code: B.
  - Opening dimensions of access fittings, design of swept fittings, stand off dimensions of pipe and fitting brackets and requirements for adaptors and plugs: To BS 4514.
  - Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
  - Nominal sizes: DN32 and DN 40.
  - Colour: White where exposed to view.
  - Brackets: Plastics pipe clips, colour to match pipes.
  - Fixings: Stainless steel screws.
  - Size: 40 x 4 mm.
  - Accessories: Access fittings.

- 365 PVC-U PIPEWORK - FOR DISCHARGE STACKS AND BRANCHES
- Standard: To BS EN 1329-1, Kitemark certified.
    - Weather resistance, connectors to WC pans, opening dimensions of access fittings, design of swept fittings, stand off dimensions of pipe and fitting brackets and requirements for adaptors and plugs: To BS 4514.
  - Manufacturer: Contractor's choice.
    - Product reference: Contractor's choice.
  - Nominal size: DN 110 and DN 160.
  - Colour: Grey.
  - Brackets: Plastics pipe clips, grey.
    - Fixings: Stainless steel screws.
      - Size: 40 x 5 mm.
  - Accessories: Access fittings and Air admittance valves.
- 375 AIR ADMITTANCE VALVES
- Standard: To BS EN 12380 or Agrément certified.
  - Minimum air flow rate: To BS EN 12056-2.
  - Manufacturer: Contractor's choice.
    - Product reference: Submit proposals.
- 380 GREASE TRAPS AND CONVERTERS
- Standards: In accordance with BS EN 1825-1 and to BS EN 1825-2 and Kitemark or Agrément certified.
  - Manufacturer: Contractor's choice.
    - Product reference: Contractor's choice.
  - Accessories: Enzyme dosing control unit and Lid.
- 383 INSULATION TO INTERNAL PIPELINES
- Manufacturer: Contractor's choice.
    - Product reference: Contractor's choice.
  - Material: Preformed flexible closed cell split tube.
  - Thermal conductivity (maximum): 0.045 W/m·K.
  - Thickness: 25 mm.
  - Fire performance: Class 1 spread of flame when tested to BS 476-7 or Class CL to BS EN 13501-1.
- 385 MASKING PLATES
- Manufacturer: Contractor's choice.
    - Product reference: Submit proposals.
  - Material and finish: Plastics, self finish.
  - Fixing: Raised head screws.
- 390 RODDING EYES INTERNALLY
- Manufacturer: Contractor's choice.
    - Product reference: Contractor's choice.
  - Body material: Stainless steel.
  - Cover type: Flush.
  - Cover material: Stainless steel.

**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.
- 605 PIPE ROUTES**
- General: The shortest practical, with as few bends as possible.
    - Bends in wet portion of soil stacks: Not permitted.
    - Routes not shown on drawings: Submit proposals before commencing work.
- 610 FIXING PIPEWORK**
- Pipework: Fix securely plumb and/ or true to line. Fix discharge stack pipes at or close below socket collar or coupling.
  - 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 load bearing support not less than every storey level. Tighten fixings as work proceeds so that every storey is self supporting.
  - Wall and floor penetrations: Isolate pipework from structure, e.g. with pipe sleeves.
    - Masking plates: Fix at penetrations if visible in the finished work.
  - Expansion joint sockets: Fix rigidly to the building.
  - Fixings: Allow the pipe to slide.
- 615 FIXING VERTICAL PIPEWORK - MUPVC OR PVC-C**
- Bracket fixings: Plugged and screwed into masonry.
  - Distance between bracket fixing centres (maximum): 1800 mm.
- 620 FIXING LOW GRADIENT PIPEWORK - MUPVC OR PVC-C**
- Bracket fixings: Plugged and screwed into masonry.
  - Distance between bracket fixing centres (maximum): 1200 mm.
- 625 JOINTING FLOOR CHANNELS**
- Jointing: Silicone sealant.
- 630 JOINTING PIPEWORK - GENERALLY**
- General: Joint with materials, fittings and techniques that will make effective and durable connections.
  - Jointing 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.
  - Junctions: Form with fittings intended for the purpose.
  - Jointing material: Do not allow it to project into bore of pipes and fittings.
  - Surplus flux, solvent jointing materials and cement: Remove from joints.

- 650 JOINTING PIPEWORK - COPPER
- Jointing: Integral lead free solder ring capillary fittings:
    - Standard: To BS EN 1254-1, Kitemark certified.
  - Connections to appliances and equipment:
    - Compression fittings: To BS EN 1254-2, Kitemark certified.
    - Fittings with threaded ends: To BS EN 1254-4, Kitemark certified.
- 660 JOINTING PIPEWORK - ABS, MUPVC, PVC-C AND PVC-U
- Jointing: Solvent welded.
- 665 JOINTING TO COPPER PREFABRICATED PIPEWORK ASSEMBLIES
- Jointing on site: Bolted mechanical joints with synthetic rubber gaskets.
    - Expansion joints (minimum provision): At every floor level.
    - Waste pipes: Connect with compression fittings.
- 670 JOINTING TO GALVANIZED STEEL PREFABRICATED PIPEWORK ASSEMBLIES
- Jointing on site: Bolted mechanical joints with synthetic rubber gaskets.
    - Do not cut pipes to length or otherwise damage coatings.
- 675 COATED PIPES
- Cutting: Recoat bare metal.
- 680 ELECTRICAL CONTINUITY
- Joints in metal pipes with flexible couplings: Make with clips (or suitable standard pipe couplings) supplied for earth bonding by pipework manufacturer to ensure electrical continuity.
- 685 IDENTIFICATION OF INTERNAL FOUL DRAINAGE PIPEWORK
- Markings: To BS 1710.
    - Type: Black, with arrows to indicate direction of flow.
    - Wording: White lettering 'FOUL DRAINAGE' on a black background.
  - Type: Integral lettering on pipe wall, self-adhesive bands or identification clips.
  - Locations: At 500 mm centres, junctions and both sides of slabs, valves, appliances, bulkheads and wall penetrations.
- 690 IDENTIFICATION OF INTERNAL GREY WATER DRAINAGE PIPEWORK
- Grey water: As defined in BS EN 12056-1, clause 3.1.
  - Markings: To BS 1710:
    - Type: Black bands, with arrows to indicate direction of flow.
    - Wording: Black lettering 'GREY WATER' on a light grey background..
  - Type: Integral lettering on pipe wall, self-adhesive bands or identification clips.
  - Locations: At 500 mm centres, junctions, and both sides of slabs, valves, appliances, bulkheads and wall penetrations.
- 695 DISCHARGE AND VENTILATING STACKS
- Terminations: Perforated cover or cage that does not restrict airflow.
    - Material: Plastics, as discharge stack.
- 700 INSTALLING AIR ADMITTANCE VALVES
- Position: Vertical, above flood level of highest appliance served and clear of insulation materials (other than the manufacturer's insulating cover).
  - Connection to discharge stack: Allow removal for rodding, e.g. ring seal.
  - Roof spaces and other unheated locations: Fit manufacturer's insulating cover.

**703 FIXING INSULATION TO INTERNAL PIPELINES**

- Fixing: Secure and neat. Provide continuity at supports and leave no gaps. Fix split pipe insulation with the split on 'blind' side of pipeline.
  - Method: Waterproof adhesive.
- Timing: Do not fit insulation until completion of pipe airtightness or leakage testing.

**705 ACCESS FOR TESTING AND MAINTENANCE**

- General: Install pipework with adequate clearance to permit testing, cleaning and maintenance, including painting where necessary.
- Access fittings and rodding eyes: Position to avoid obstruction.

**COMPLETION****900 TESTING GENERALLY**

- Dates for testing: Give notice.
  - Period of notice (minimum): 5 working days.
- Preparation:
  - Pipework: Securely fixed and free from obstruction and debris.
  - Traps: Filled with clean water.
- Testing:
  - Supply clean water, assistance and apparatus.
  - Do not use smoke to trace leaks.
- Records: Submit a record of tests.

**905 PIPEWORK AIRTIGHTNESS TEST**

- Preparation:
  - Open ends of pipework: Temporarily seal using plugs.
  - Test apparatus: Connect a 'U' tube water gauge and air pump to pipework via a plug or through trap of an appliance.
- Testing: Pump air into pipework until gauge registers 38 mm.
- Required performance: Pressure of 38 mm is to be maintained without loss for at least three minutes.

**910 SIPHONAGE AND BACK PRESSURE TESTS**

- Method:
  - WC pans: Test by flushing.
  - Other appliances: Test by filling to overflow level, then removing the plug.
- Number of tests: Test each appliance three times. Recharge traps before each test.
- Self siphonage testing: Test each appliance individually.
- Induced siphonage and back pressure testing: Test by discharging the following numbers of appliances simultaneously on each stack:
  - WCs: to be agreed.
  - Washbasins: to be agreed.
  - Sinks: to be agreed.
  - Selection of appliances: Submit proposals.

**915 PREHANDOVER CHECKS**

- Temporary caps: Remove.
- Permanent blanking caps, access covers, rodding eyes, floor gratings and the like: Secure complete with fixings.

**920 SUBMITTALS**

- Manufacturer's instructions for grease traps: Handover at completion.

**R**  
**Disposal systems**

**R12**

**Below ground drainage systems**

## R12 Below ground drainage systems

To be read with Preliminaries/ General conditions.

### GENERAL

- 110 **BELOW GROUND DRAINAGE SYSTEMS -**
- Surface water and rainwater drainage sources: Rainwater downpipes (nonsiphonic), as section R10 and Rainwater downpipes (siphonic), as section R10.
  - Foul drainage sources: Sanitary appliances, as section N13.
  - Land drainage sources: Submit proposals.
  - Pressure relief drainage sources: Below ground pipelines from pressure relief drainage, as section R16.
  - Pipes, bends and junctions: PVC-U - plain wall.
    - Accessories:
      - Access points;
      - Connectors - saddle;
      - Flexible couplings;
      - Fresh air inlets;
      - Rat barriers; and
      - Rodding points.
    - Manholes, inspection chambers, traps, and separators:
      - Manholes and inspection chambers to be in accordance with "Sewers For Scotland 2nd Edition" - concrete;
      - Manholes - concrete - additional components for deep manholes; and
      - Oil and petrol separator units to be "Downstream Defender" by Hydro International or equal approved.
    - Accessories: All to "Sewers For Scotland 2nd Edition"
      - Manhole channels and branches - preformed plastics;
      - Manhole steps; and
      - Sealing for concrete manholes - proprietary sealant.
  - Disposal:
    - To pumping stations, as section R18;
    - To sewers; and
    - To stormwater honeycomb units.
  - Accessories – general:
    - Access covers and frames - precast concrete seatings;
    - Concrete (general); and
    - Concrete (adoptable manhole benchings and surrounds).
- 135 **PRIVATE PACKAGED PUMPING STATIONS AND PRESSURE PIPELINE SYSTEMS To East Whale Lane Manhole**
- Foul drainage sources: Below ground pipelines.
  - Private packaged pumping stations: As section R18.
    - Control panel type: Submit proposals.  
Location: Basement Plant Room.  
Distance from tank: 10 m.
    - Accessories: Submit proposals .
  - Pressure pipes, bends and junctions: Polyethylene, as section R18.
    - Accessories: Submit proposals .
  - Disposal: Below ground foul drainage pipelines.

**SYSTEM PERFORMANCE****235 DESIGN - PRIVATE PACKAGED PUMPING STATION SYSTEMS**

- Design: Select appropriate proprietary packaged unit in accordance with BS EN 752.
- Working capacity: 2000 L.
- Flow capacity: 40 cubic meters per day, 4litres per second..
- Ground conditions: made ground.
- Submit proposals:
  - Drawings, technical information, calculations and manufacturers' literature.
  - Details of requirements for cable ducts and control panel installation.
  - Details of electrical supply required.
  - Installation details, base or bedding, surround and backfilling.
  - Details of requirements for access covers.
- Maintenance requirements: Submit details.

**PRODUCTS****311 CONNECTORS - WASTE PIPES TO PLASTICS DRAINAGE**

- Material and standard: Plastics to BS 4660 and Kitemark certified.
- Type:
  - DN 100 discharge stacks to DN 110 plastics;
  - DN 100 rainwater pipes to DN 110 plastics;
  - DN 32 waste pipes to DN 110 plastics; and
  - DN 50 waste pipes to DN 110 plastics.
- Manufacturer: AsClause 311A.
  - Product reference: Submit proposals.

**311A CONNECTORS**

- Manufacturer: Hepworth.
  - Web: [www.hepworth.co.uk](http://www.hepworth.co.uk).
  - Email: [info@hepworth.co.uk](mailto:info@hepworth.co.uk).
  - Product reference: As indicated on Architects Drawings 210-214.

**315 ONE PIECE GULLIES AND COVERS to Carriageway**

- Standards:
  - Cast iron: To BS 437 and Kitemark certified, or Agrément certified.
  - Clay: To BS EN 295-1 and Kitemark certified, or Agrément certified.
  - Concrete: To BS 5911-6 and Kitemark certified, or Agrément certified.
  - Plastics: To BS 4660 and Kitemark certified, or Agrément certified.
  - Polypropylene: To BS EN 1852-1.
- Material: As Civil Engineers drawing 03.
- Manufacturer: Contractor's choice.
  - Product reference: Submit proposals.
- Sizes: As Civil Engineers drawing 03.
- Outlet sizes: As Civil Engineers drawing 03.
- Covers: As Civil Engineers drawing 03.
  - Product reference: Submit proposals.
  - Type: As Civil Engineers drawing 03.
  - Material: As Civil Engineers drawing 03.
  - Sizes: As Civil Engineers drawing 03.
  - Loading grades to BS EN 124: As Civil Engineers drawing 03.
- Silt buckets: None.
  - Product reference: N/A.

- 329 PIPES, BENDS AND JUNCTIONS - SUPPLY
- Pipes and fittings: From same manufacturer for each pipeline.
- 344 PIPES, BENDS AND JUNCTIONS - PLASTICS - STRUCTURED WALL - FOUL DRAINAGE ROUTES UNDER BASEMENT FLOOR SLAB
- Standard: To WIS 04-35-01, Kitemark or Agrément certified.
  - Material: PVC-U.
  - Manufacturer: As Clause 346A.
    - Product reference: Submit proposals.
  - Recycled content: Submit proposals.
  - Sizes:
    - DN 110;
    - DN 150; and
    - DN 300.
  - Jointing type: Spigot and socket.
- 346 PIPES, BENDS AND JUNCTIONS - PVC-U - PLAIN WALL - SURFACE WATER DRAINAGE
- Standard: BS EN 1401-1, class SN4, with flexible joints, Kitemark certified.
  - Manufacturer: As Clause 346A.
    - Product reference: As Clause 346A.
  - Recycled content: None permitted.
  - Sizes: DN 100 and DN 160.
  - Application area code: UD.
- 346A PIPES, BENDS AND JUNCTIONS - PVC-U - PLAIN WALL
- Manufacturer: Hepworth.
    - Web: [www.hepworth.co.uk](http://www.hepworth.co.uk).
    - Email: [info@hepworth.co.uk](mailto:info@hepworth.co.uk).
    - Product reference: PlastiDrain
  - Size: 150 mm.
- 346B PIPES, BENDS AND JUNCTIONS - PVC-U - PLAIN WALL
- Manufacturer: Hepworth.
    - Web: [www.hepworth.co.uk](http://www.hepworth.co.uk).
    - Email: [info@hepworth.co.uk](mailto:info@hepworth.co.uk).
    - Product reference: PlastiDrain
  - Size: 300 mm.
- 352 ACCESS POINTS - PLASTICS - FOUL DRAINAGE
- Standard: To BS 4660 and Kitemark certified, to BS EN 13589-1, or Agrément certified.
  - Manufacturer: As Clause 352A.
  - Nominal diameter: 110.
  - Bases:
    - Product reference: As Clause 352A.
  - Raising pieces:
    - Product reference: As Clause 352A.
    - Heights: 300 mm.
  - Access covers and frames:
    - Product reference: As Clause 352A.
    - Loading grades to BS EN 124: A15.

- 352A ACCESS POINTS - PLASTICS
- Manufacturer: Hepworth.
    - Web: [www.hepworth.co.uk](http://www.hepworth.co.uk).
    - Email: [info@hepworth.co.uk](mailto:info@hepworth.co.uk).
    - Product reference: SDAC1/1 mini access chamber
  - Spares or individual items: SDC3 polymer cover and frame.
- 357 CONNECTORS - SADDLE
- Standards:
    - Cast iron: To BS 437 and Kitemark certified, or Agrément certified.
    - Clay: To BS EN 295-1 and Kitemark certified, or Agrément certified.
    - Concrete: To BS 5911-6 and Kitemark certified, or Agrément certified.
    - Plastics: To BS 4660 and Kitemark certified, or Agrément certified.
  - Material: Plastics.
  - Manufacturer: As Clause 357A.
    - Product reference: As Clause 357A.
  - Sizes: Standard.
- 357A PLASTICS SADDLES
- Manufacturer: Hepworth.
    - Web: [www.hepworth.co.uk](http://www.hepworth.co.uk).
    - Email: [info@hepworth.co.uk](mailto:info@hepworth.co.uk).
    - Product reference: 10P14B 160/250 mm SewerDrain oblique saddle.
- 359 FLEXIBLE COUPLINGS
- Standard: To BS EN 295-4 or WIS 04-41-01 and Kitemark certified, or Agrément certified.
  - Manufacturer: As Clause 359A.
    - Product reference: As Clause 359A.
- 359A FLEXIBLE COUPLINGS
- Manufacturer: Hepworth.
    - Web: [www.hepworth.co.uk](http://www.hepworth.co.uk).
    - Email: [info@hepworth.co.uk](mailto:info@hepworth.co.uk).
    - Product reference: HepSure couplings
  - Type: QSC Standard Couplings.
  - Size: To suit pipes being jointed.
- 361 FRESH AIR INLETS
- Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
- 365 PUDDLE FLANGES
- Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
- 367 RAT BARRIERS
- Manufacturer: Submit proposals.
    - Product reference: Submit proposals.

- 371 **RODDING POINTS At Basement**
- Standards:
    - Cast iron: To BS 437 and Kitemark certified, or Agrément certified.
    - Clay: To BS EN 295-1 and Kitemark certified, or Agrément certified.
    - Concrete: To BS 5911-6 and Kitemark certified, or Agrément certified.
    - Plastics: To BS 4660 and Kitemark certified, or Agrément certified.
  - Material: Plastics.
  - Manufacturer: As Clause 371A.
    - Product reference: As Clause 371A.
  - Sizes: DN 100 and DN 150.
- 371A **RODDING POINTS**
- Manufacturer: Hepworth.
    - Web: [www.hepworth.co.uk](http://www.hepworth.co.uk).
    - Email: [info@hepworth.co.uk](mailto:info@hepworth.co.uk).
    - Product reference: 4A20A straight rodding eye terminal.
- 373 **ROOT BARRIERS**
- Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
- 375 **SEALED ACCESS FITTINGS To Rainwater Downpipes Internally and Soil Vent Pipes Generally**
- Standards:
    - Cast iron: To BS 437 and Kitemark certified, or Agrément certified.
    - Clay: To BS EN 295-1 and Kitemark certified, or Agrément certified.
    - Plastics: To BS 4660 and Kitemark certified, or Agrément certified.
    - Polypropylene: To BS EN 1852-1.
  - Material: Plastics.
  - Manufacturer: Hepworth.
  - Bends:
    - Product reference: Submit proposals.
  - Branches:
    - Product reference: Submit proposals.
  - Straights:
    - Product reference: Submit proposals.
  - Raising pieces:
    - Product reference: Submit proposals.
    - Heights: 150 mm.
  - Covers:
    - Product reference: Submit proposals.
- 379 **WARNING MARKER TAPES - FOUL DRAINAGE**
- Type: Heavy gauge polyethylene.
  - Manufacturer: As Clause 379A.
    - Product reference: Submit proposals.
  - Colour: Red with black lettering.
  - Widths: 150 mm.
  - Message: FOUL SEWER BELOW.
  - Wire detection aid: Required.

- 379A **WARNING MARKER TAPES**
- Manufacturer: Hepworth.
    - Web: [www.hepworth.co.uk](http://www.hepworth.co.uk).
    - Email: [info@hepworth.co.uk](mailto:info@hepworth.co.uk).
    - Product reference: Underground warning marker tapes
  - Type: Detectable marker tapes to match buried services.
- 379B **WARNING MARKER TAPES - SURFACE WATER DRAINAGE**
- Type: Heavy gauge polyethylene.
  - Manufacturer: As Clause 379A.
    - Product reference: Submit proposals.
  - Colour: Red with black lettering.
  - Widths: 150 mm.
  - Message: SURFACE WATER DRAIN BELOW.
  - Wire detection aid: Required.
- 407 **MANHOLES AND INSPECTION CHAMBERS - CONCRETE TO ALL FOUL AND SURFACE WATER DRAINAGE. REFER TO SEWERS FOR SCOTLAND SECOND EDITION. FOR DETAIL REQUIREMENTS**
- Standards:
    - To BS 5911-3 and BS EN 1917 and Kitemark certified; or
    - To BS 5911-4 and BS EN 1917.
  - Manufacturer: Contractor's choice
  - Shape: Circular
  - Sizes: DN 1500.
  - Cement type and content: To BS 5911-1 and BS EN 1916.
  - Chamber sections:
    - Product reference: Contractor's choice.
    - Jointing type: Mortar.
  - Cover slabs:
    - Product reference: Contractor's choice.
    - Thickness: 175 mm.
    - Loading grades to BS EN 124: D400.
    - Openings: To suit access covers.
  - Steps: Required in chambers over 450 mm deep.
- 419A **GREASE TRAPS AND CONVERTERS**
- Standards: In accordance with BS EN 1825-1 and to BS EN 1825-2, and Kitemark or Agrément certified.
  - Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
  - Material: Plastics.
  - Capacity: Submit Proposals.
  - Inlet pipe size: DN 150.
  - Outlet pipe size: DN 150.
  - Accessories: Access equipment and tools.

- 421 OIL AND PETROL SEPARATOR UNITS - PLASTICS
- Standards: To Environment Agency PPG 3 and BS EN 858-1, with oil level alarm.
  - Manufacturer: Hydro International.
    - Product reference: Downstream Defender.
  - Size: 1200mm diameter.
  - Inlet pipe size: DN 300.
  - Outlet pipe size: DN 300.
  - Accessories: Access covers and frames.
- 433 MANHOLE CHANNELS AND BRANCHES - CONVENTIONAL
- Material: Plastics.
  - Manufacturer: As Clause 433A.
    - Product reference: As Clause 433A.
- 433A MANHOLE CHANNELS AND BRANCHES - CONVENTIONAL
- Manufacturer: Hepworth.
    - Web: [www.hepworth.co.uk](http://www.hepworth.co.uk).
    - Email: [info@hepworth.co.uk](mailto:info@hepworth.co.uk).
    - Product reference: Plastics channel fittings
  - Type: As Engineers Detail drawing.
  - Main channel diameter: As drawing 213.
  - Branches and junctions: As drawing 213.
- 435 MANHOLE CHANNELS AND BRANCHES - PREFORMED PLASTICS
- Manufacturer: As Clause 435A.
    - Product reference: As Clause 435A.
- 435A MANHOLE CHANNELS AND BRANCHES - PREFORMED PLASTICS
- Manufacturer: Hepworth.
    - Web: [www.hepworth.co.uk](http://www.hepworth.co.uk).
    - Email: [info@hepworth.co.uk](mailto:info@hepworth.co.uk).
    - Product reference: SPIC6/2 mixed base unit.
- 439 MANHOLE STEPS SEALED MANHOLE WITHIN BASEMENT
- Standard: To BS EN 13101.
  - Type: C.
  - Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
  - Material: Galvanized steel.
- 444 SEALING FOR CONCRETE MANHOLES - BITUMINOUS STRIPS
- Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
- 446 SEALING FOR CONCRETE MANHOLES - MORTAR
- Manufacturer: As Clause 446A.
    - Product reference: As clause 446A.

- 446A SEALING FOR CONCRETE MANHOLES - MORTAR
- Manufacturer: Ronacrete Ltd.
    - Web: [www.ronacrete.co.uk](http://www.ronacrete.co.uk).
    - Email: [tech@ronacrete.co.uk](mailto:tech@ronacrete.co.uk).
    - Product reference: Monoset
  - Grade: Mortar.
- 448 SEALING FOR CONCRETE MANHOLES - SEALANT
- Manufacturer: As Clause 448A.
    - Product reference: As Clause 448A.
- 448A SEALING FOR CONCRETE MANHOLES - SEALANT
- Manufacturer: Hyload Structural Waterproofing, member of the IKO Group.
    - Web: [www.hyload.co.uk](http://www.hyload.co.uk).
    - Email: [technical@ruberoid.co.uk](mailto:technical@ruberoid.co.uk).
    - Product reference: Hyload Ruberflex
  - Primer: Ruberoid Bitumen Primer.
- 464 STORMWATER HONEYCOMB UNITS
- Manufacturer: Hydro-Stormcell .
    - Product reference: Stormcell Attenuation System.
  - Size: As Civil Engineers Drawing 05.
- 471 ACCESS COVERS AND FRAMES AS PER ARCHITECTS DRAWING 213 FOR LOCATION OF SEALED MANHOLES
- Standard: To BS EN 124.
  - Types: Double seals and grease.
  - Manufacturer: Agrément certified.
    - Product reference: Submit proposals.
  - Materials: Steel.
  - Finishes: Self finish.
  - Sizes: 675 x 675 mm.
  - Loading grades to BS EN 124: B125.
  - Edging trims: Stainless steel.
  - Accessories: Independent sealing plates.
- 471A ACCESS COVERS AND FRAMES FOR ALL MANHOLES GENERALLY
- Standard: To BS EN 124.
  - Types: Double seals and grease and Single seal.
  - Manufacturer: Agrément certified.
    - Product reference: Submit proposals.
  - Materials: Steel.
  - Finishes: Self finish.
  - Sizes: 675 x 675 mm.
  - Loading grades to BS EN 124: D400.
  - Edging trims: Not required.
  - Accessories: Independent sealing plates.
- 473 ACCESS COVERS AND FRAMES - PRECAST CONCRETE SEATINGS TO FOUL DRAINAGE
- Standards: To BS 5911-3 and BS EN 1917 and Kitemark certified.
  - Manufacturer: Submit proposals.
    - Product reference: Submit proposals.
  - Opening sizes: To suit access covers.

- 481A CONCRETE (FOAMED)
- Density (minimum): 1050 kg/m<sup>3</sup>.
  - 28 day compressive strength (maximum): 10 N/mm<sup>2</sup>.
  - Ground conditions to BS 8500-1: -
- 483 CONCRETE (GENERAL)
- Standard: To BS 8500-2.
  - Concrete: Designated, GEN1. AS PER SEWERS FOR SCOTLAND SECOND EDITION..
- 485 CONCRETE (STRUCTURAL)
- Standard: To BS 8500-2.
  - Concrete: Designated, GEN3 AS PER SEWERS FOR SCOTLAND SECOND EDITION..
- 487 CONCRETE (ADOPTABLE MANHOLE BENCHINGS AND SURROUNDS)
- Standard:
    - England and Wales, Northern Ireland: To WRc 'Sewers for Adoption'.
    - Scotland: To WRc 'Sewers for Scotland'.
  - Concrete: In situ.
- 489 CONCRETE (ADOPTABLE MANHOLE BENCHING TOPPING)
- Standard:
    - England and Wales, Northern Ireland: To WRc 'Sewers for Adoption'.
    - Scotland: To WRc 'Sewers for Scotland'.
  - Concrete: High strength.
- 496 GRANULAR MATERIAL – NATURAL
- Standard: To BS EN 12620.
  - Recycled content: Submit proposals.
  - Size: Dependent on location – see Execution clauses in this section, and in sections R16, R17 and R18, if used.
- 497 GRANULAR MATERIAL – MANUFACTURED
- Standard: To BS EN 12620.
  - Manufacturer: Submit Proposals.
    - Product reference: Submit Proposals.
  - Source material: Submit proposals.
  - Size: Dependent on location – see Execution clauses in this section, and in sections R16, R17 and R18, if used.
- 498 GRANULAR SUB-BASE MATERIAL
- Standard: To Highways Agency Volume 1, 'Specification for Highway Works', Type 1 Unbound mixtures for sub-base.
  - Recycled content: Submit proposals.

#### FABRICATION

- 510 VERMIN GRATINGS FOR OUTFALLS AND OUTLET HEADWALLS
- Construction: Mild steel frame extending 75 mm beyond pipe opening all around, with 25 mm maximum opening steel mesh grille. Top hinged on built-in fish-tail straps and with bottom pin lock.
  - Finish: Galvanized to BS EN ISO 1461 after fabrication.
  - Submit: Shop drawings.
    - Timing: Before manufacture.

**EXECUTION**

- 610 **STRIPPING OUT**
- Extent of stripping out: Existing Drainage within new building footprint.
  - Exposed ends of existing drainage to be abandoned: Seal with concrete (general).
- 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.
- 625 **LOWER PART OF TRENCH - TRANSITION DEPTH**
- Trench widths up to 300 mm above crown of pipe (maximum):
    - DN 100 pipelines more than 6.0 m deep: 600 mm.
    - DN 150 pipelines more than 5.4 m deep: 700 mm.
    - DN 225 pipelines more than 4.0 m deep: 800 mm.
    - DN 300 pipelines more than 2.9 m deep: 900 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.
- 641 **PIPES AT DIFFERENT LEVELS IN COMMON TRENCH**
- Subtrench: Permissible provided soil of step is stable and unlikely to break away.
    - Subtrench not permissible: Trench depth as required for lower pipe. Increase thickness of bedding to upper pipe as necessary.
  - Lower pipe: Backfill with compacted granular material to at least half way up higher pipe.
  - Clear horizontal distance between pipes (minimum):
    - Pipes up to DN 700: 350 mm.
    - Pipes exceeding DN 700: 500 mm.

## 667 CLASS S SURROUND TO FOUL AND SURFACE WATER DRAINAGE GENERALLY

- Type of subsoil: made ground.
- Trench width up to 300 mm above crown of pipe (maximum):
  - DN 100 nominal pipe size: 600 mm.
  - DN 150 nominal pipe size: 700 mm.
  - DN 225 nominal pipe size: 800 mm.
  - DN 300 nominal pipe size: 900 mm.
- Granular material: Manufactured.
  - Pipe sizes DN 100 and DN 150: Size 4/10.
  - Pipe sizes DN 225 and DN 300: Size 4/10, 10/20 or 4/20.
  - Pipe sizes DN 375-500: Size 10/20 or 4/20.
  - Pipe sizes DN 600 and above: Size 10/20, 20/40, 4/20 or 4/40.
- Bedding:
  - Material: Granular, compacted over full width of trench.
  - Thickness (minimum): 50 mm for sleeve jointed pipes, 100 mm for socket jointed pipes.  
Where trench bottom is uneven, increase depth by 100 mm.
- Pipes: Dig slightly into bedding, rest uniformly on barrels and adjust to line and gradient.
- Initial testing before placing surround: Required.
- Surround:
  - Material: Granular.
  - Depth: To 50 mm above crown of pipe.
  - Compaction: By hand in 100 mm layers.
- Backfilling:
  - Material: Protective cushion of selected fill.
  - Depth: 150 mm (250 mm for adoptable sewers) above crown of pipe.
  - Compaction: By hand in 100 mm layers.

## 678 CLASS Z SURROUND TO CROSSOVERS AND DRAINAGE UNDER BASEMENT FLOOR SLABS

- Type of subsoil: Made up ground.
- Blinding:
  - Material: Concrete (general).
  - 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: Required.
- Surround:
  - Material: Concrete (general).
  - Depth: To 150 mm above crown of pipe.
  - Width: Full width of trench.
- Vertical construction joints:
  - Location: At face of flexible pipe joints.
  - Material: 18 mm thick compressible board precut to profile of pipe.
  - Socketed pipes: Fill gaps between spigots and sockets with resilient material to prevent entry of concrete.

- 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.
- 687 **CONCRETE SURROUND FOR CROSSOVERS**
- Class Z surround: Provide where two pipelines (other than plastics pipes) cross with less than 300 mm separation.
    - Extent, on both pipes: 1 m centred on the crossing point, and beyond as necessary to come within 150 mm of nearest flexible joints.
- 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): 300 mm for 150mm nominal diameter stacks..
  - Height of invert of horizontal drain at base of stack below centreline of lowest branch pipe (minimum): 750 mm.
  - Bedding: Do not impair flexibility of pipe couplings.
    - Material: Concrete (general).

- 693 **DIRECT CONNECTION OF GROUND FLOOR WCS TO DRAINS**
- Drop from crown of WC trap to invert of drain (maximum): 1.5 m.
  - Horizontal distance from the drop to a ventilated drain (maximum): 6 m.
- 695 **BACKDROP PIPES OUTSIDE MANHOLE WALLS**
- Excavation beneath backdrop pipe: Backfill.
    - Material: Concrete (general).
  - Pipe encasement:
    - Material: Concrete (general).
    - Thickness (minimum): 150 mm.
- 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.
- 699 **CONNECTIONS TO SEWERS**
- General: Connect new pipework to existing adopted sewers to the requirements of the adopting authority or its agent.
- 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.
- 711 **TRENCH SUPPORTS**
- Removal of trench supports and other obstacles: Sufficient to permit compacted filling of all spaces.
- 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.
- 718 **BACKFILLING OVER CONCRETE**
- Minimum times from placing concrete:
    - Backfilling generally: 24 h.
    - Heavy compactors and traffic loads: 72 h.
- 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.
- 722 **PUBLIC ROADS AND PAVINGS – E&W, SCOT**
- Excavating and backfilling of trenches: To Department for Transport 'Specification for the reinstatement of openings in highways'.

- 726 **FOAMED CONCRETE BACKFILL**
- Preparation: Seal off openings in, and ends of, abandoned pipelines and ducts. Seal off cavities in or next to the excavation which are not to be filled.
  - Backfilling: To British Cement Association 'Foamed concrete - specification for use in the reinstatement of openings in highways'.
- 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.
- 732 **TEMPORARY BRIDGES**
- Trench bridges: As necessary to prevent construction traffic damaging pipes after backfilling.
- 734 **INSTALLING ACCESS POINTS AND GULLIES**
- Bedding:
    - Material: Concrete.
    - Thickness (minimum): 150 mm.
  - Surround:
    - Material: Concrete (general).
    - Thickness (minimum): 150 mm.
    - Height: Full height.
  - Backfilling: As Required.
    - Material: Granular material - manufactured, size 4/10, 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 traffic.
- 736 **INSTALLING RODDING POINTS**
- Bedding and surround:
    - Material: Concrete (general).
    - Thickness (minimum): 150 mm..
  - Permissible deviation in level of external covers and gratings: +0 to -6 mm.
- 747 **INSTALLING OIL AND PETROL SEPARATOR UNITS**
- Base:
    - Material: Concrete (general).
    - Thickness (minimum): 200 mm.
  - Surround:
    - Material: Not required.
    - Thickness (minimum): Not required.
  - Backfilling: Suitable material as per manufacturers instructions.
    - Compaction: By hand in 100 mm layers.
  - Installation: Fill tank with water then encase tank and access shafts with concrete to fully support tank.
  - Vent pipe termination: Not applicable.
- 753 **FIXING MANHOLE STEPS**
- Fixing: Bed in joints.
  - Positioning: 300 mm vertical centres staggered 300 mm horizontally, with lowest step 300 mm (maximum) above benching and top step 450 mm (maximum) below top of cover.

- 755 JOINTING CONCRETE MANHOLE CHAMBER SECTIONS
- Jointing and sealing: Mortar.
  - Inner joint surface: Trim surplus jointing material extruded into chamber and point neatly.
- 757 LAYING CONVENTIONAL CHANNELS, BRANCHES AND BENCHING
- Main channel: Bed solid in 1:3 cement:sand mortar.
    - Branches: Connect to channel, preferably at half pipe 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 (general).
    - 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: 1:3 Cement:sand mortar.
      - Application: Before benching concrete has set, and with dense smooth uniform finish.
- 759 LAYING PREFORMED PLASTICS CHANNELS, BRANCHES AND BENCHING
- Main channel: Bed solid in 1:3 cement:sand mortar.
    - Branches: Connect to channel, preferably at half pipe level, so that discharge flows smoothly in direction of main flow.
    - Connecting angles more than 45° to direction of flow: Use three-quarter section channel bends.
  - Bedding: 1:3 cement:sand mortar. Use clips or ensure adequate mechanical key.
  - Benching:
    - Material: Concrete (general).
    - 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: 1:3 Cement:sand mortar.
      - Application: Before benching concrete has set, and with dense smooth uniform finish.
- 761 LAYING SEALED ACCESS FITTINGS, BRANCHES AND BENCHING
- Unused branches: Fit caps.
  - Bedding: 1:3 cement:sand mortar.
  - Benching:
    - Material: Concrete (general).
    - Profile: 10% fall from manhole walls to component rim.
    - Topping:
      - Material: 1:3 Cement:sand mortar.
      - Application: Before benching concrete has set, and with dense smooth uniform finish.
- 771 INSTALLING OUTFALLS
- Pipe outflow invert (minimum): Seasonal peak level or 150 mm above normal water level, whichever is the higher.
  - Pipe surround and backfill to the last 2 m run of drain: Excavated subsoil, rammed home.

## 773 INSTALLING ACCESS COVERS AND FRAMES

- Seating: Precast concrete.
- Bedding and haunching of frames: Continuously.
  - Material: 1:3 cement:sand mortar.
  - Top of haunching: 30 mm below surrounding surfaces.
- Horizontal positioning of frames:
  - Centred over openings.
  - Square with joints in surrounding paving.
- Vertical positioning of frames:
  - Level; or
  - Marry in with levels of surrounding paving.
- Permissible deviation in level of external covers and frames: +0 to -6 mm.

## 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: 7 days.

## 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: Air.

## 931 FINAL TESTING OF ADOPTABLE AND LARGE PRIVATE SEWERS

- Standard (sewers up to and including size DN 750):
  - England, Wales and Northern Ireland: To WRc 'Sewers for adoption'.
  - Scotland: To WRc 'Sewers for Scotland'.
- Method: Air.

- 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.
- 951 TESTING OF ANCILLARY COMPONENTS
- Components: Oil interceptors.
  - Standard: To BS EN 1610.
    - Tests: Exfiltration.  
Method: Testing with water (method W).
- 971 CCTV INSPECTION OF PRIVATE PIPELINES
- General: Carry out and record internal inspection using CCTV equipment.
    - Locations to be inspected: Foul and surface water drains.
  - Illumination: Of adequate intensity.
  - Recording: Provide continuous position recording, still photographs and stopping of the camera at any point.
    - Copy of videotape recording: Submit.
- 976 CCTV INSPECTION OF ADOPTABLE PIPELINES
- General: Permit the Adopting Authority or its agent to carry out and record internal CCTV inspection of pipelines and associated manholes after completion.
    - Locations to be inspected: Foul and surface water drains.
  - Pipelines under highways: Complete construction, except for laying of wearing course, before inspection.
- 978 LIFTING KEYS
- Lifting keys: Supply suitable keys for each type of access cover.
    - Timing: At completion.
- 980 INSTRUCTIONS
- Manufacturer's user instructions: Submit for grease traps, converters, and downstream defender.

**R**

**Disposal systems**

**R18**

**Pumping stations and pressure pipelines**

## R18 Pumping stations and pressure pipelines

To be read with Preliminaries/ General conditions.

### PRODUCTS

- 305 BELOW GROUND DRAINAGE SYSTEMS - PRODUCTS
- Generally: As section R12.
- 310 PRIVATE PACKAGED PUMPING STATIONS
- Manufacturer: Klargester Environmental.
    - Product reference: PU 2640TS.
  - Pump impeller type: Vortex.
  - Non-return valve: Required , " No. within chamber.
  - Outlet pressure pipe:
    - Material: M.D.P.E. SDR11.
    - Size DN 110.
  - Access covers and frames: 5 tonne SMWL.
    - Loading to BS EN 124: A15.
  - Accessories: Additional equipment and fittings necessary to complete the installation, including safety covers and chains, access equipment and tools.
- 310A PRIVATE PACKAGED PUMPING STATIONS
- Manufacturer: Kingspan Environmental.
    - Web: [www.kingspan.com](http://www.kingspan.com).
    - Email: [spec@kingspanenv.co.uk](mailto:spec@kingspanenv.co.uk).
    - Product reference: Klargester Package Pump Systems
- 350 CABLE DUCTS FOR PRIVATE PACKAGED PUMPING STATIONS
- Material: PVC-U.
  - Manufacturer: Contractor's choice.
    - Product reference: Contractor's choice.
  - Sizes: 75mm Min..

### EXECUTION

- 605 BELOW GROUND DRAINAGE SYSTEMS - EXECUTION
- Generally: As section R12.
- 620 INSTALLING PRIVATE PACKAGED PUMPING STATIONS
- Base: Concrete (general).
    - Thickness: 150 mm.
  - Surround:
    - Preparation: Temporarily fill tanks with water to prevent flotation.
    - Material: Concrete (general).
    - Height: As required by manufacturer to suit ground conditions.
  - Backfill: 250mm Min. Concrete (general).
- 640 LAYING CABLE DUCTS
- Drawlines: Thread through during laying.

**COMPLETION****910 WATER TESTING OF PRIVATE PRESSURE PIPELINES**

- Standard: To BS EN 805.
  - Polyethylene pipes: Also in accordance with WRc 'Guide to testing of water supply pipelines and sewer rising mains'.
- Timing: 24 hours (minimum) after completion of joints and installation of anchorages.
- Completion: Commission pumping system, and check that operation of complete installation is satisfactory under normal working conditions

**Z**

**Building fabric reference specification**

**Z10**

**Purpose made joinery**

## 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.
      - Clause NA.2 for further processed 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.
- 210 **LAMINATED PLASTICS VENEERED BOARDS/ PANELS**
- Fabrication: To British Laminated Plastics Fabricators Association Ltd (BLF) fabricating standards.
  - Balancing veneer: From decorative veneer manufacturer and of similar composition. Applied to reverse side of core material.
  - Finished components: Free from defects, including bow, twist, scratches, chipping, cracks, pimpling, indentations, glue marks, staining and variations in colour and pattern.
  - Joints visible in completed work: Tight butted, true and flush.

## 220 WOOD VENEERED BOARDS/ PANELS

- Core material and veneers: Conditioned before bonding.
- Setting out: Veneer features and grain pattern aligned regularly and symmetrically unless instructed otherwise.
- Balancing veneer: Applied to reverse side of core material.
  - Moisture and temperature movement characteristics: As facing veneer.
- Veneer edges: Tight butted and flush, with no gaps.
- Tolerance of veneer thickness (maximum):  $\pm 0.5$  mm.
- Finished components: Free from defects, including bow, twist, scratches, chipping, splits, blebs, indentations, glue marks and staining.
- Surface finish: Fine, smooth, free from sanding marks.

## 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.

**Z**

**Building fabric reference specification**

**610**

**Z11**

**Purpose made metalwork**

## Z11 Purpose made metalwork

To be read with Preliminaries/ General conditions.

- 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.
- 320 STEEL LONG AND FLAT PRODUCTS
- Hot rolled structural steels (excluding structural hollow sections and tubes): To BS EN 10025-1.
  - Fine grain steels, including special steels: To BS EN 10025-3 and -4.
  - Steels with improved atmospheric corrosion resistance: To BS EN 10025-5.
- 330 STEEL PLATE, SHEET AND STRIP
- Plates and wide flats, high yield strength steel: To BS EN 10025-6.
- 340 HOT ROLLED STEEL PLATE, SHEET AND STRIP
- Flat products, high yield strength for cold forming: To BS EN 10149-1, -2 and -3.
  - Carbon steel sheet and strip for cold forming: To BS EN 10111.
  - Narrow strip, formable steel and steel for general engineering purposes: To BS 1449-1.8 and BS 1449-1.14.
- 350 COLD ROLLED STEEL PLATE, SHEET AND STRIP
- Steel sections: To BS EN 10162.
  - Flat products, high yield strength micro-alloyed steels for cold forming: To BS EN 10268.
  - Carbon steel flat products for cold forming: To BS EN 10130 and BS EN 10131.
  - Uncoated carbon steel narrow strip for cold forming: To BS EN 10139 and BS EN 10140.
  - Narrow strip steel for general engineering purposes: To BS EN 10132-1, -2, and -3.
  - Carbon steel flat products for vitreous enamelling: To BS EN 10209.
- 360 COATED STEEL FLAT PRODUCTS
- Hot dip zinc coated carbon steel sheet and strip for cold forming: To BS EN 10327 and BS EN 10143.
  - Hot dip zinc coated structural steel sheet and strip: To BS EN 10143 and BS EN 10326.
  - Hot dip zinc-aluminium (za) coated sheet and strip: To BS EN 10326 and 10327.
  - Hot dip aluminium-zinc (az) coated sheet and strip: To BS EN 10327.
  - Organic coated flat products: To BS EN 10169-1.
- 370 STEEL STRUCTURAL HOLLOW SECTIONS (SHS)
- Non alloy and fine grain steels, hot finished: To BS EN 10210-1 and -2.
  - Non-alloy and fine grain steels, cold formed welded: To BS EN 10219-2.
  - Weather resistant steels, hot finished: To BS 7668.

**380 OTHER STEEL SECTIONS**

- Equal flange tees: To BS EN 10055.
- Equal and unequal angles: To BS EN 10056-1 and -2.
- Wire, carbon steel for general engineering purposes: To BS 1052.
- Wire and wire products, general: To BS EN 10218-2.
- Tubes:
  - Seamless circular: To BS EN 10297-1.
  - Seamless cold drawn: To BS EN 10305-1.
  - Welded and cold sized square and rectangular: To BS EN 10305-5.
  - Welded circular: To BS EN 10296-1.
  - Welded cold drawn: To BS EN 10305-2.
  - Welded cold sized: To BS EN 10305-3.

**400 STAINLESS STEEL PRODUCTS**

- Chemical composition and physical properties: To BS EN 10088-1.
- Sheet, strip and plate: To BS EN 10088-2.
- Semi-finished products bars, rods and sections: To BS EN 10088-3.
- Wire: To BS EN 1088-3.
- Tubes:
  - Welded circular: To BS EN 10296-2.
  - Seamless circular: To BS EN 10297-2.

**410 ALUMINIUM ALLOY PRODUCTS**

- Designations:
  - Designation system, chemical composition and forms: To BS EN 573-1, -2, -3 and -5.
  - Temper designations: To BS EN 515.
- Sheet, strip and plate: To BS EN 485-1 to -4.
- Cold drawn rods, bars and tubes: To BS EN 754-1 and -2.
- Extruded rods, bars, tubes and profiles: To BS EN 755-1 and -2.
- Drawn wire: To BS EN 1301-1, -2 and -3.
- Rivet, bolt and screw stock: To BS 1473.
- Structural sections: To BS 1161.

**420 COPPER ALLOY PRODUCTS**

- Sheet, strip, plate and circles for general purposes: To BS EN 1652.
- Sheet and strip for building purposes: To BS EN 1172.
- Rods: To BS EN 12163.
- Profiles and rectangular bars: To BS EN 12167.
- Wire: To BS EN 12166.
- Tubes: To BS EN 12449.

**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.

- 525     **ADHESIVE BONDING**
- Preparation of surfaces of metals to receive adhesives:
    - Degrease.
    - Abrade mechanically or chemically etch.
    - Prime: To suit adhesive.
  - Adhesive bond: Form under pressure.
- 530     **STAINLESS STEEL FABRICATION**
- Guillotining or punching: Do not use for metal thicknesses greater than 10 mm.
  - Thermal cutting:
    - Carbonation in the heat affected zone: Remove, after cutting.
  - Bending:
    - Plates or bars: Cold ending radius not less than material thickness.
    - Tubes: Cold bending radius not less than 2 x tube diameter.
  - Welding: In addition to general welding requirements:
    - Protect adjacent surfaces from weld spatter.
    - Pickle all welds before post fabrication treatments.
  - Protection: Provide protection to fabricated components during transit and on site.
- 555     **BRAZING**
- Standard: To BS EN 14324.
  - Testing:
    - Destructive testing: To BS EN 12797.
    - Nondestructive testing: To BS EN 12799.
- 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.
- 750     **LIQUID ORGANIC COATING FOR ALUMINIUM ALLOY COMPONENTS**
- Standard: To BS 4842.
- 760     **ZINC AND CADMIUM PLATING OF IRON AND STEEL SURFACES**
- Zinc plating: To BS EN 12329.
  - Cadmium plating: To BS EN 12330.
- 770     **CHROMIUM PLATING**
- Standard: To BS EN 12540.
- 780     **GALVANIZING**
- Standard: To BS EN ISO 1461.
  - Preparation:
    - Vent and drain holes: Provide in accordance with BS EN ISO 14713. 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 8501-1.  
Grade: St 2½.
- 790     **VITREOUS ENAMELLING**
- Standard: To BS EN 14431.
  - Substrate metal: Carbon steel or cast iron.

**COMPLETION****910 DOCUMENTATION**

- Submit:
  - Manufacturer's maintenance instructions.
  - Guarantees, warranties, test certificates, record schedules and log books.

**920 COMPLETION**

- Protection: Remove.
- Cleaning and maintenance: Carry out in accordance with procedures detailed in fabricators' guarantees.

**Z**

**Building fabric reference specification**

**Z12**

**Preservative/ fire retardant treatment**

## 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.
  - 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 British Wood Preserving and Damp-proofing Association (BWPDA) Manual.
- 130 PRESERVATIVE TREATMENT SOLUTION STRENGTHS/ TREATMENT CYCLES
- General: Select to achieve specified service life and to suit treatability of specified wood species.
- 165 WATER BASED MICROEMULSION PRESERVATIVE TREATMENT
- Solution:
    - Manufacturer: As Clause 165A .
    - Product reference: As Clause 165A .
    - Application: Double vacuum + low 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 surface dry before use.
- 165A WATER BASED MICROEMULSION PRESERVATIVE TREATMENT
- Manufacturer: Arch Timber Protection.
    - Web: [www.archchemicals.com](http://www.archchemicals.com).
    - Email: [advice@archchemicals.com](mailto:advice@archchemicals.com).
    - Product reference: Vacsol Aqua
  - Application category:
    - Standard: To BS EN 335-1
    - Use class: 2.
- 210 FIRE RETARDANT TREATMENT
- Solution type: Humidity resistant.
    - Manufacturer: As Clause 210A.
    - Product reference: As Clause 210.
    - 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.
- 210A FIRE RETARDANT TREATMENT
- Manufacturer: Arch Timber Protection.
    - Web: [www.archchemicals.com](http://www.archchemicals.com).
    - Email: [advice@archchemicals.com](mailto:advice@archchemicals.com).
    - Product reference: Dricon

**Z**

**Building fabric reference specification**

**Z20**

**Fixings and adhesives**

## 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.
- 330 NAILED TIMBER FASTENERS
- Nails:
    - Steel: To BS 1202-1 or BS EN 10230-1.
    - Copper: To BS EN 1202-2.
    - Aluminium: To BS 1202-3.
- 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.
- 360 ANCHORS
- Types:
    - Expansion: For use in substrate strong enough to resist forces generated by expansion of anchor.
    - Adhesive or chemical:
      - For use in substrate where expansion of anchor would fracture substrate.
      - For use in irregular substrate where expansion anchors cannot transfer load on anchor.
    - Cavity: For use where the anchor is retained by toggles of the plug locking onto the inside face of the cavity.
- 370 WOOD SCREWS
- Type:
    - Wood screws (traditional pattern).
      - Standard: To BS 1210.
      - Wood screws.
        - Pattern: Parallel, fully threaded shank or twin thread types.
  - Washers and screw cups: Where required are to be of same material as screw.
- 380 MISCELLANEOUS SCREWS
- Type: To suit the fixing requirement of the components and substrate.
    - Pattern: Self-tapping, metallic drive screws, or power driven screws.
  - Washers and screw cups: Where required to be of same material as screw.

## 390 ADHESIVES GENERALLY

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

## 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.

## 650 NAILED TIMBER FIXING

- Penetration: Drive fully in without splitting or crushing timber.
- Surfaces visible in completed work: Punch nail heads below wrot surfaces.
- Nailed timber joints: Two nails per joint (minimum), opposed skew driven.

## 660 SCREW FIXING

- Finished level of countersunk screw heads:
  - Exposed: Flush with timber surface.
  - Concealed (holes filled or stopped): Sink minimum 2 mm below surface.

## 670 PELLETTED 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.

**Z**

**Building fabric reference specification**



## 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 4027 and Kitemarked.
      - To BS EN 197-1 fly ash cement, CEM II/B-V and CE marked.
    - Strength class: 32.5, 42.5 or 52.5.
  - Masonry cement: To BS EN 413-1 and CE marked.
    - Class: MC 12.5.

- 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 MORTAR**
- Standard: To BS EN 998-2.
  - Lime for cement:lime:sand mortars: Nonhydraulic to BS EN 459-1.
    - Type: CL 90S.
  - Pigments for coloured mortars: To BS EN 12878.
  - Time and temperature limitations: Use within limits prescribed by mortar manufacturer.
    - Retempering: Restore workability with water only within prescribed time limits.
- 200    **STORAGE OF CEMENT GAUGED MORTAR MATERIALS**
- Sands and aggregates: Keep different types/ grades in separate stockpiles on hard, clean, free-draining bases.
  - Factory made ready-mixed lime:sand/ ready to use retarded mortars: Keep in covered containers to prevent drying out or wetting.
  - Bagged cement/ hydrated lime: Store off the ground in dry conditions.
- 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.

**Z**

**Building fabric reference specification**

**Z22  
Sealants**

## Z22 Sealants

To be read with Preliminaries/General conditions.

### PRODUCTS

- 310 JOINTS To all door openings
- 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.

Z

**Building fabric reference specification**

**Z31**  
**Powder coatings**

## Z31 Powder coatings

To be read with Preliminaries/ General conditions.

- 120    **POWDER COATING MATERIALS**
- **Manufacturer:** Obtain from one only of the following: Submit proposals.
  - **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.
- 230    **CONTROL SAMPLES**
- **Sequence:** Prior to ordering materials for the works, obtain approval of appearance for:
    - Powder coated samples: Of various grades and forms of background metal to be used, showing any colour, texture and gloss variation.
    - Fabrication samples: Showing joint assembly, how powder coating is affected and how any cut metal edges are finished and protected.
  - **Samples to include the following information:**
    - Product reference.
    - Colour.
    - Reference number.
    - Name.
    - Gloss level.

- 235 **INDEPENDENT INSPECTION AT PLANT**
- Requirement: Contractors/ suppliers of the following designated components must commission an approved Independent Inspection Authority to carry out acceptance inspections to confirm that powder coating application complies with this specification.
    - Designated components: Aluminium Curtain Walling, Doors and Windows .
  - Acceptance inspections: Carry out for each variation of colour and finish of each component work package at applicator's plant prior to any fabrication of units, in accordance with the following:
    - Where three or more production runs are required for application of coatings, not less than three acceptance inspections must be carried out in accordance with BS 6001-1, general inspection level 2, with an acceptance quality limit of 1%.
    - Where less than three production runs are required for application of coatings, one acceptance inspection must be carried out in accordance with BS 6001-2, with a limiting quality of 5% where the probability of acceptance is 10%.
  - Components failing inspection: Reprocess or replace and reinspect.
  - Inspection reports: Independent Inspection Authority must submit copies.
- 240 **QUALITY ASSURANCE SYSTEM**
- Requirement: Powder and coating application to the following designated components is to be tested and approved in accordance with the Qualicoat system.
    - Designated components: curtain wall framing.
- 250 **COMPONENT DESIGN**
- Condition of components to be powder coated:
    - To comply with relevant recommendations of BS 4479-1, -3, and -4.
    - Of suitable size to fit plant capacity.
    - Of suitable thickness to withstand oven curing.
- 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 or 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 coating: 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.

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**APPENDIX 6**

Contracts Designed Portion

Correspondence between DCC City Development Officers

Page 639

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**From:**  
**To:**  
**cc:**

**Date:** Monday, March 15, 2010 05:37PM  
**Subject:** 09-011 EAstmarketgait Development Pool - Contractors Electrical Design Element

regards our discussion last week concerning Contractor's design elements, I would consider the following items necessary;

- 1) **Final positioning and quantity of PA/Fire Evacuation speakers to comply with British Standards for intelligibility and sound levels.** The drawings to be provided for tender will indicate a scheme design but the Contractor will require to design this element during the Construction period considering acoustic properties of the building.
- 2) **Lightning Protection.** The electrical preamble will provide a quotation reference from BEST and also provided a performance specification. The Contractor however will require to design the installation to integrate into the building structure during the Construction period considering the complex outer fabric and ongoing changes.
- 3) **Poolside Containment installation and routes.** The services strategy presently requires cable ducts and containment to be buried in screed or possibly below slab level. There are a hybrid of systems to be installed at Poolside that require mains and/or data, the Contractor should then provide design proposals for servicing these systems including set out drawings.
- 4) **CHP Supply Cable and Connection.** The CHP to be specified by Mechanical will require a supply cable to be taken from the CHP control panel and terminate into the main switch panel. With information presently available allowance will be made in the Tender documents, however the Contractor will require to provide design details during the Construction period on size of terminating cable together with connection and control details.
- 5) **Specialist containment sizing.** The Contractor will require to provide design details on size and routes of cable containment associated with specialists systems such as HVAC controls and Sheerwater.
- 6) **Lift structure support elements.** The Contractor will require to provide design details on all lifts loading beams and any other structural elements.

Regards,

**From:**  
**To:**  
**cc:**



**Date:** Friday, April 02, 2010 10:51  
**Subject:** P09245: East Marketgait leisure Pool - CDP's

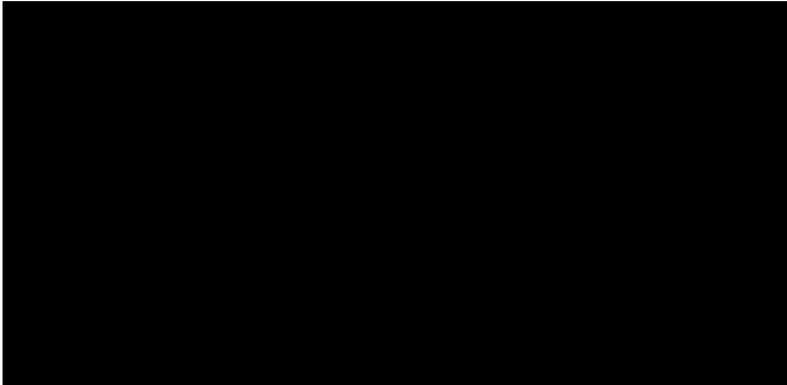
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Dear 

Further to the recent design team meeting, as I see them, contractor designed portions are as follows;

1. Precast Flooring units (performance specified)
2. Precast Stairs (performance specified)
3. Steel frame connections (performance specified)
4. Steel stair to serve Cafe
5. Structural roof deck (performance specified)
6. Piles (performance specified)
7. Reinforcement detailing of substructure (We will design reinforcement requirements, but detailing will be by contractor)

Regards



**From:**  
**To:**  
**cc:**



**Date:** Friday, May 14, 2010 10:44  
**Subject:** East Marketgait Leisure Pool

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Contractor designed packages are as follows:

- Underfloor Heating
- Sprinklers
- Pool Ventilation
- Controls

Regards



**From:**  
**To:**

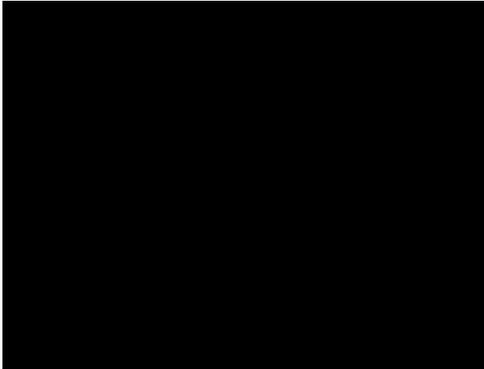


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**Date:** Friday, May 14, 2010 11:20  
**Subject:** East Marketgait - CDPs

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Please find attached a document prepared to outline the requirements for the Contractor Designed Portions, a copy of which has also been placed on the ftp site.  
I would suggest that this could also be circulated to [redacted] to have their specific clauses added in and one document used to deal with all of the contract requirements for CDPs.  
Your comments please  
Regards  
[redacted]



Attachments:  
CDPs.doc



**Dundee City Council**  
**Architectural Services Division**

**09-011**

**East Marketgait Leisure Pool and Multi-Storey Car Park**

**General Requirements For Contractor's Designed Portions**

1 Introduction

The following outlines the procedures required for work portions designated as Contractor Designed, with all associated requirements and responsibilities.

Whilst the provision of much of the information detailed below rests with the relevant subcontractor, the overall responsibility for provision of the following information and co-ordination of all other sub-contractors remains with the main contractor. The works shall comprise the design, supply and fixing of the Product or System which defines the Contractor Designed Portion.

The Contractor will be deemed to have included all material and assemblies as described in the Specification and as illustrated on the consultant's Design Intent Drawings and also included all connections to the primary structure and the connections and interfaces with other Work Packages. It is the responsibility of the Contractor to ensure that this Specification is adhered to in its entirety and to ensure the integrity of the Product or System is maintained throughout the installation.

2 Tender

The consultant's drawings will be issued as 'Design Intent' drawings. The Product or System manufacturer should confirm that these Design intent drawings can be fully achieved by the system. Any possible deviation from the System's performance criteria to be informed to the Architect for approval.

The Contractor will be responsible for the detailed design of the Product or System in accordance with the Design Intent Drawings, Specification and Performance requirements. The work portion must incorporate all relevant Reference Documents, Local Building Standards, CDM requirements, Health and Safety requirements, British Standard Codes of Practice plus all other statutory rules, regulations, bye-laws and other enforceable instruments pertinent to the installation of the Works.

The Contractor is to co-ordinate his Works with all related Works.

The Contractor shall not vary or alter the requirements of the specification without written approval from the Architect.

The Design Intent Drawings indicate intent but do not preclude submission with Tender of reasonable alternative proposals for consideration. If a different Product or System is being proposed by the Contractor then all performance criteria must

still be met along with the same duration of cover for the Product or System Guarantees and samples provided as noted.

The Product or System referred to in this specification is specified on an 'or equal approved' basis. It has not been Nominated. The tenderer should take all reasonable steps to assure themselves of the System supplier's ability to supply the product in the quantities and to the timescale required within the tender description.

### 3 Detailed Fabrication Drawings

The Contractor will be responsible for the preparation of all necessary detail design and fabrication drawings required in connection with the Product or System installation. The drawings must cover all Architect Design Intent Drawings along with any other additional interface details.

The Contractor must submit one copy, both in hard copy and electronic format, with submission date, of all drawings and specification to the Architect for comment prior to fabrication or commencement on site, and to include all relevant technical literature/certifications available.

The Contractor is to allow seven days for the turn around of first submission of drawings for comment and then resubmit the drawings until all outstanding items have been cleared. Allow adequate time for this whole approval process within the context of the Main Contractor's procurement programme and necessary delivery/manufacturing dates.

The drawings will then be returned by the Design Team dated and stamped with a status as follows:

- "Category A" No comments, work can process in accordance with the information shown on the drawing. Design responsibility remains with the originator.
- "Category B" Comments noted on drawings, work can proceed in accordance with the information shown on the drawing on the understanding that the comments are taken on board.
- "Category C" Comments noted on drawings, no fabrication to proceed until the issues raised have been rectified and the drawing has been submitted for further comment. No drawing stamp "Category C" will be permitted on site or in the fabrication shop.

Drawings will not be deemed to be 'Approved' and the manufacturer and installer of the Product or system will retain full responsibility for the design and co-ordination of this element of the Works. No comments made by other parties will relieve the manufacturer and installer of their responsibility for carrying out the Works in accordance with the performance and quality standards specified herein or shown on the Contract Drawings.

The details will include, where appropriate:

- **Materials:** colour, finish, thickness, gauge and dimensions

- **Fixings:** types, centres, materials, calculations where appropriate, suitability of sub-structure and spacer material
- **Interfaces:** with adjoining materials, lapping and overlapping to ensure waterproofing and air tightness
- **Compatibility:** of all materials used and with each other
- **Seals:** to ensure system is fully wind, water and vapour tight where required.
- **Fire:** indicate all fire stops and fire barriers and class conformity where required.
- On completion of the Works the Contractor will submit 2 sets of "As Built" drawings. These are to be provided as one paper and one electronic format (including AutoCAD drawings) on CD-R or DVD.

All drawings must show the required interface with adjacent materials, support etc by others, but clearly differentiate what is provided as part of the system and what is drawn for information but not included.

In instances where the Performance/Design tender document requires the works portion to form all or part of the complete external envelope, the whole portion must comply fully with the Building Regulations and include for all necessary fire stopping, cavity barriers and other accessories required to act as an entire system.

Evidence of the performance of the system in accordance with the various criteria of the Building Regulations such as thermal performance, fire performance (integrity, stability and insulation) requires to be provided by BRE or a similar recognised testing service for Building Control approval.

The system's performance, and its certification must be compatible with the situation within which the 'Design Intent' drawings propose it to be used.

The Contractor should clearly identify the levels of tolerance and acceptable movement required of any supporting structure or adjacent interface with works by others. The Contractor should design all fixings back to the structure to adequately deal with any expected tolerances. Where appropriate he should check the structure for line and level within the context of the structural specification before setting out his own works.

If required the Contractor should indicate clearly any expansion/movement joints required.

The Contractor should also allow for expansion/movement as required in the interfaces between this and adjacent packages.

The Contractor should be an approved installer of the specified system, and should be able to demonstrate that a manufacturer's certified training course has been completed for all relevant operatives.

#### 4 Information to be Provided with the Tender:

- Typical plan, section and elevation drawings at suitable scales
- Typical detailed drawings at large scales
- Technical information and certification demonstrating compliance
- Certification, reports and calculations demonstrating compliance

- Proposals for connections to and support from the primary support structure if required
- Proposals for any primary support structure required additional to that shown on preliminary design drawings
- Schedule of builder's work, special provisions and special attendance by others
- Preliminary fabrication and installation method statements and programme
- Proposals for replacing damaged or failed products
- Areas of non-compliance with the specification

5 Information to be provided after Acceptance of Tender :

Submit to the Architect within 3 weeks of appointment, the following :

- A drawing release schedule and dates for submission for comment
- Proposed fixing details and where relevant systems relevant to the structural design and construction with methods of adjustment and tolerances
- A schedule of all fabrication tolerances/size tolerances
- A detailed fabrication and installation programme in compliance with the Main Contract master programme

6 Information to be Provided before Commencement

Submit to the Architect before testing or fabrication the following:

- Detailed drawings to fully describe fabrication and installation.
- Detailed calculations to provide compliance with all design/performance requirements
- Project specific fabrication, handling and installation method statements
- Recommendations for safe dismantling and recycling or disposal of all products

**Dundee City Council**  
**Architectural Services Division**

**09-011**

**East Marketgait Leisure Pool and Multi-Storey Car Park**

**Contractor Designed Portions**

(ref Work Packages rev 21.05.09 (ftp site))

**1.0 Scope of Work Packages and General Obligations**

**1.1 Sections Covered by Consultants**

Temporary Sheet Piling  
refer to Structural Engineer

Piling  
refer to Structural Engineer

Reinforcing Details to Foundations and Underbuilding  
refer to Structural Engineer

Structural Frame Connections  
refer to Structural Engineer

Mechanical Services (part)  
refer to Mechanical Engineer

Sprinklers  
Refer to Mechanical Engineer

Electrical Services (part)  
refer to Electrical Engineer

Electrical Setting Out - Pre-installation  
Refer to Electrical Engineer

**1.2 Floors - Precast Concrete Units**

The contractor will be responsible for the detailed structural design of the precast concrete hollowcore floor units (in accordance with BS EN 1168 2005). Guidance is provided by the Architect's drawings (dwg refs 242, 243) which show the required penetrations, dimensions and perimeters. For structural performance specification, refer to Structural Engineer.

**1.3 Stair Flights - Precast Concrete Units**

The contractor will be responsible for the detailed structural design of the precast concrete stair units (in accordance with EN 14843 : 2007(E)) and their connections at landings. This will be in accordance with the Architects drawings (dwg refs 400A, 403A) which show the intent and required dimensions to accord with the requirements of the Building Regulations. For structural performance specification, refer to Structural Engineer.

**1.4 Lifts (part)**

The contractor will be responsible for the final design of the lifts (3no. - passenger lift, goods lift and cafe lift). These will be in prepared lift shafts built to Architect's details,

contractor to provide detailed requirements from the lift supplier for all shaft dimensions lifting beams, lifting hooks, inserts etc

**1.5 Curtain Walling / Glazing / External Doors**

The contractor will be responsible for the detailed design of all curtain walling, glazing and external doors (in accordance with EN 13830 : 2003(E) and the referenced standards in clauses 2.1 and 2.2). This will be in accordance with the Architect's drawings of Intent (dwg refs 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456), the NBS Clauses H11, H13, which states the performance required for thermal performance and light transmittance. This will be inclusive of structural design, interfaces, thermal shock and verification of the glazing specification to retain the relevant standards specified. The Contractor will be responsible for all interfaces to the curtain walling and external doors and the co-ordination with adjacent elements and materials.

**1.6 Flumes**

The contractor will be responsible through the preferred suppliers for the overall design of the four flumes to be provided in accordance with the Pool Specification and in accordance with BS EN 1069-1:2000 and the main Pools Package specification. These will comprise the slide paths and features, the run-outs and the primary structural support. Details will also be provided by the contractor of the requirements for the flumes Launch Pad to allow finalisation of the Launch Pad design by the Architects, and all primary support requirements to be provided to the Structural Engineer (Section 1.7). The contractor will also be responsible through the preferred supplier for all interfaces to the flumes and their supports including the co-ordination with adjacent materials.

**1.7 Flumes - Structural Supports**

The contractor will be responsible for the design of the primary structural support to the slide paths. Agreement with the Architects is required on the location of the structural supports. Liaison is required with the Structural Engineer on the design of the structural supports and their relationship to any support given by the substructure, foundations and structural frame.

**1.8 Firestopping**

The contractor will be responsible for the detailed design of the firestopping measures including the interfaces and co-ordination with adjacent materials. The firestopping contractor will be LPCB approved, using LPCD approved products (ref LPCB Red Book Vol 2, 2010) and installed in compliance with the ASFP Red Book, 3<sup>rd</sup> Edition 2009. This will be in accordance with the Architect's drawings indicating the extent of compartmentation and smoke protection required in order to comply with the Building Regulations (dwg Nos 223, 224, 225, 226). In compliance with the Building Regulations the building will be covered by an "alternative approach" as defined by the Consultant Fire Engineer, reference must therefore be made to the Fire Strategy document.

**1.9 Internal Doors and Screens**

The contractor will be responsible through the supplier of the internal door sets for the final detailed scheduling in accordance with the outline schedule prepared for the tender documents. This will take account of all performance requirements with regard to moisture resistance, acoustic performance and fire performance. If alternatives are to be proposed than samples indicating the finish, structure and core, must be submitted to the architect for approval. Ref - BS 6375 - 2 : 2009 and BS 8300.

**1.10 Ironmongery**

The contractor will be responsible through the ironmongery supplier for the final detailed scheduling of the door ironmongery in accordance with the outline

schedule prepared for the tender documents. This will take account of all performance requirements with regard to performance rating, moisture resistance and the Disability Discrimination Act. If alternative are to be proposed then samples must be submitted to the Architect for approval.

### 1.11 Syphonic Drainage

The contractor will be responsible through the specialist sub-contractor for the design, installation, testing and commissioning of the syphonic drainage system. The scope of this will include the Pool Roof, the Services Block Roof and the Foyer Roof. All in accordance with BS EN 12056-3 : 2000.

### 1.12 Pools and Leisure Features (part)

The specialist contractors will be responsible for the design, supply, installation and commissioning of the filtration, water treatment, water features (including the tube rides), moveable floor and submersible and transversible booms. The systems are to be in accordance with the specification produced by Sheerwater Consultancy Limited and must comply with the following documents.

<b>Publication</b>	<b>By</b>	<b>Reference</b>
<i>Swimming Pool Water Treatment and Quality Standards For Pools and Spas</i>	<i>Pool Water Treatment Advisory Group</i>	<i>Second Edition Published 2009 ISBN 0 95170076 6</i>
<i>Management of Public Swimming Pools - Water Treatment Systems, Water Treatment Plant and Heating and Ventilation Systems Code of Practice</i>	<i>BSI</i>	<i>PAS 39 : 2003</i>
<i>Managing Health and Safety in Swimming Pools 2003</i>	<i>The Health and Safety Commission and Sports England</i>	<i>ISBN 0 7176 2686 5</i>
<i>Swimming Pool Equipment - Part II : Additional Specific Safety Requirements and Test Methods for Moveable Floors and Moveable Bulk Heads</i>	<i>BSI</i>	<i>BS EN 13451 - 11 : 2004</i>

### 1.13 Fall Restraint System

The specialist contractor will be responsible for design, supply, installation, commissioning and testing of the fall restraint systems the scope of which are described in the Architects Drawing of Intent (dwg no 497). All in accordance with EN 363. The contractor will also be responsible for the co-ordination of the elements of the system with the adjoining materials at all interfaces.

### 1.14. Handrails and Barriers

The contractor will be responsible for the detailed design of the proprietary handrails and balustrading system, the scope and requirements of which are shown on the Architects Drawings of Intent (dwg nos 503-506 (stairs), 508 (pool side), 513 (café mezzanine) 416-418 (spectators seating). The contractor will also be responsible for co-ordination of interfaces all in compliance with BS 6399 - 1:1996 (activity/occupancy + horizontal loading) BS 5395-1 : 2000 (design) BS 8300 - 2007 (accessible design), BS 6206 : 1981 (impact performance for glazing), BS 6262 :2005 (glazing for building), BS 6180 : 1999 (barriers), BS EN 12150-1 : 2000 (safety glass).

**1.15. Spiral Stair To Flume**

The contractor will be responsible for the design of the specialist spiral staircase used to access the Flume Launch Pad. For this cognisance will need to be taken of the environmental conditions in the pool hall, with specific reference to corrosion resistance, and in the case of stainless steel - stress corrosion cracking for the selection of suitable materials. Design should be in accordance with BS 5395-2 : 1984, and BS 6399-1 : 1996 (activity/occupancy and horizontal loading), however, it should be noted that in respect to travel distance and secondary means of escape this stair will not be compliant with the Technical Handbook of the Building Standards (Scotland) Regulations 2004. The building is instead covered by an 'alternative approach' employing the use of a Fire Engineer all with the agreement of Building Control. Two specific design requirements to be imposed would be the incorporation of storey height landings and increased height to the balustrade/barrier to at least 1500 mm measured from the pitch line of the stair. Reference should be made to the Architects Drawing of Intent (dwg no 408) and NBS Clause L30.

**1.16. Companion-Way Ladders**

The contractor will be responsible for the design and installation of the proprietary companion-way ladders which give access to the various sub-floor areas in the pool hall. This will be in compliance with BS 5395-3 : 1985. The Architects Drawing of Intent (dwg no 411A) and NBS Clause L35 should be referred to for guidance.

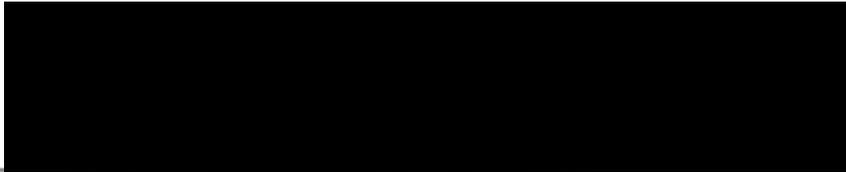
**1.17. Stone Cladding Fixings**

The specialist stone cladding contractor will be responsible for the selection and installation of all stone cladding fixing goods. This will include interfaces to substrates and co-ordination with adjacent elements and materials. Ref NBS Clause F21 which is incorporated for guidance.

**1.18. Plinths**

The contractor will be responsible for the detailed design of such plinths as are required for the specialist services contractors (ref Pool Plant Room Layout, Boiler Room Layout, 2<sup>nd</sup> Floor Plant Room Layout and Roof Layout),

**From:**  
**To:**  
**cc:**



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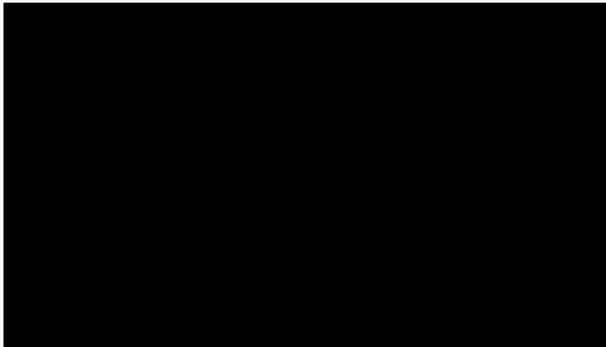
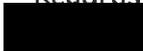
**Date:** Tuesday, June 08, 2010 10:57  
**Subject:** 09-011 Eastmarketgait Development Pool - CDP



I spoke with [redacted] this morning concerning Contractors Design Portion of the works. The original requirements as attached remains for electrical services with the following addition;

- 1) **Access Control** - The Access Control Specialist Lenel will be specified within the electrical preamble as required by DCC IT. Lenel are presently developing a software solution with DCC IT to meet their criteria for Corporate Lets and NEC smart card. The Contractor is therefore required to arrange for Lenel to undertake design development with DCC IT for access control software including testing and demonstration during the construction period.

Regards,



Attachments:

15.03.10 Email - to Project Manager Contractor design element.pdf



09-011

**CONTRACTOR'S DESIGN POOL AND CAR PARK****POOL**

PILING	£ 655,000.00
TEMP RETENTION	£ 100,000.00
PRECAST	£ 600,000.00
REINFORCEMENT	£ 250,000.00
STEELWORK CONNECTIONS	£ 100,000.00
STEEL STAIR	£ 100,000.00
ROOF DECK	£ 270,000.00
FIREPROOFING	£ 150,000.00
CURTAIN WALLING	£ 500,000.00
ROOF FALL RESTRAINT	£ 20,000.00
DRAINAGE/DRY RISER	£ 750,000.00
INT DOORS/IRONMONGERY	£ 130,000.00
METAL HANDRAILS SPIRAL STAIR	£ 150,000.00
STONE CLADDING FIXINGS	£ 50,000.00
PLINTHS	£ 10,000.00
ELECTRICAL	£ 1,020,000.00
MECHANICAL	£ 1,750,000.00
LIFTS	£ 200,000.00
FLUMES	£ 850,000.00
WATER TREATMENT	£ 1,000,000.00
MOVING FLOORS	£ 600,000.00
DROWNING DETECTION	£ 500,000.00
TIMING/SESSION MANGEMENT	£ 200,000.00

**CAR PARK**

PRECAST	£ 950,000.00
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FALL RESTRAINT	£ 25,000.00
PILING	£ 290,000.00
STEELWORK	£ 1,078,000.00
CURTAIN WALLING	£ 100,000.00
PLUMBING	£ 43,000.00
ELECTRICAL	£ 488,000.00
PARKING CONTROL	£ 110,000.00
LIFTS	£ 190,000.00

TOTAL APPROX.

£ 13.17

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**APPENDIX 7**

Paul Hackett Report

Page 655

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Interrelationships of water treatment, filtration and ventilation at Olympia Dundee



Olympia

3 East Whale Lane

Dundee DD1 3JU

17 March 2017

Consultant

Paul Hackett

MSc CMIOSH FCIMSPA MIISRM MCMi MISPE PIEMA FPA

## 1.0 Summary

- This Inspection was arranged by [REDACTED] Business Improvement Manager for Leisure and Culture Dundee and conducted on behalf of Quality Leisure Management Ltd by **Error! Reference source not found.**
- Dundee Olympia includes 50m swimming pool, flumes, diving pool, wave pool, rapid-river, children's pool, changing village, fitness suite, gymnasium, dance studio, cafe, offices and administration areas. The facility opened in the summer of 2013 and is starting to show signs of deterioration (corrosion in the pool hall) that is thought to be caused by adverse chemicals in the atmosphere. Various options including changing pH correction chemicals have been suggested.
- Pool water quality at the pool is excellent with very few chloramines in either the water or the atmosphere.
- The option to change pH correctant was considered, but the safest and normally the best for water in the Dundee area was rejected because the pool water is normally too agitated from all the features and the flumes working which would dissipate the gas from the water.
- The disinfectant could be changed to Calcium Hypochlorite with some benefit to water quality.
- The pool filtration and water cleansing system does not appear to be overloaded or exceeding the maximum daily bathing load on a regular basis.
- The pools' ventilation system has been restricted to 82% of its nominal maximum capacity. The relative humidity regularly exceeds the maximum recommended by the Pool Water Treatment Advisory Group (PTWAG), the Institute of Swimming Pool Engineers (ISPE) and the Swimming Pool and Allied Trade Association (SPATA). This will be leading to condensation on surfaces and potentially accelerating corrosion tendencies.
- The principle recommendations would be to reduce relative humidity by allowing the ventilation system to operate at its full potential and keeping the control link to relative humidity.
- Consider deploying pool covers for the majority of the pool when not in use.
- Have the steel supports and synthetic struts tested and checked to certify that they are of an appropriate specification for use in a swimming pool environment.
- Initiate an annual checking programme to verify that the support struts are not deteriorating any further
- Initiate an annual procedure for repainting/treating any exposed metal equipment/structures
- Consider adding safety chains/ropes to ducting and lighting units supported from the roof/ceiling to prevent heavy items hitting staff or customers.
- Convert the disinfection to Calcium Hypochlorite. Consider upgrading dosing pumps to cope with pumping a solution.

## 2.0 Introduction

This Inspection was arranged by [REDACTED] Business improvement Manager, Leisure and Culture Dundee and conducted on behalf of Quality Leisure Management Ltd by **Error!**  
**Reference source not found..**

The Consultant Paul Hackett wishes to thank the staff at Leisure and Culture Dundee Council officials, Barr and Wray and Craigalan Controls for their time, commitment and hospitality, which was greatly appreciated. The auditor would also like to thank all site employees who contributed to the audit.

The audit was conducted by reviewing the organisation's plant and systems; this was followed by an inspection of the sites and associated buildings. The inspection was undertaken to evaluate the functioning and interrelationships between the chemical treatments of the swimming pool, the filtration of the pool and the heating and ventilation. An additional visit was taken the next day (Saturday) with all pools in use to assess air quality.

The report has been prepared to identify the strengths and areas for improvement in the organisation's plant management systems and to provide recommendations for consideration. The report comments on the conditions observed and the impressions gained during the visit.

Every effort has been made to ensure that all statements and information offered in this report are given in good faith; they relate to matters seen during the inspection and information supplied by the organisation. The consultant assumes that the information supplied and representations made by the organisation during the inspection on which the report is based is up to date, accurate and complete. The organisation must notify Quality Leisure Management Ltd of any factual inaccuracies in the report or misinterpretation of information provided by the organisation as reflected in the report.

The report is written by:

Paul Hackett MSc CMIOASH FCIMSPA MIISRM MCMi MISPE PIEMA FPA

Paul Hackett is a health and safety consultant. He has been employed as a local government officer in the roles of Area Superintendent, Maintenance Manager and Manager of sports and recreation facilities including the management and operation of swimming pools and multifunctional sports centres.

Paul is a chartered member of the Chartered Institution of Occupational Safety and Health (IOSH), a Fellow of the Chartered Institute of Sport and Physical Activity (CIMSPA) and a member of the Chartered Institute of Management (CMI). Professional currency is maintained by participating in the Continuing Professional Development schemes of IOSH. Other professional memberships include the Institute of Swimming Pool Engineers (ISPE) Membership of the International Institute of Risk and Safety Management (IIRSM), Institute of Environmental Management and Assessment (IEMA) and the Fire Protection Agency (FPA).

Paul has authored technical, health and safety recreation factfiles for Sport England, on Under 8's admissions to swimming pools, legionella in spas and others for the Institute of Sport and Recreation Management and the Institute of Leisure and Amenities Management (Ireland). Paul has authored open learning packages in design and technical operations and also "Creating a Safe Coaching Environment" for Sports Coach UK. Paul was the author of ILAM Ireland's publication the National Spa and Swimming Pool Operators Certificate Candidate Manual that is the standard training document for swimming pools and spas in Ireland.

### 3.0 Background

Dundee Olympia includes a 50m swimming pool, flumes, diving pool, wave pool, rapid-river, children's pool, changing village, fitness suite, gymnasium, dance studio, cafe, offices and administration areas. The facility opened in the summer of 2013 and is starting to show signs of deterioration that is thought to be caused by adverse chemicals in the atmosphere. Various options including changing pH correction chemicals have been suggested.

This report seeks to identify possible causes and explain them.

#### 3.1 Current water quality

The pool water was generally well within current PWTAG Guidelines as set out in their Code of Practice "The Management and Treatment of Swimming Pool water" published in May 2015. The free chlorine levels between 0.5 and 1.5 mg/l and combined chlorine levels rarely exceed 0.2mg/l. The pH appeared stable on each pool at around 7.3. These results indicate excellent control of pool water chemistry. The lack of combined chlorine in the water, confirmed by the pool hall not smelling adversely, indicates that Nitrogen Trichloride is unlikely to be become airborne in any consequential volume.

Nitrogen Trichloride (trichloramine) is formed in swimming pools during the reaction between the chlorine introduced to disinfect the water and urea that is introduced by bathers. If the volume is excessive it will evaporate into the air and then condenses onto building fabric that is cooler than the air. This condensate will sometimes then enable a reversible reaction where the trichloramine will break down and form water and Hydrochloric Acid; this in turn may accelerate corrosion of metallic structures. In the Olympia the concentration of trichloramine is low and this reaction is unlikely to be occurring.

### 3.2 Pool water pH correction Chemicals.

The most frequently selected pH reducing chemicals in the UK are Hydrochloric Acid, Sodium Bisulphate and Carbon Dioxide. In recent years Sulphuric Acid has been introduced into commercial swimming pools although it is not recommended by the Pool Water Treatment Advisory Group (PWTAG) <sup>1</sup>

Acid	Also known as	Main Hazards
Hydrochloric acid	Muriatic acid, spirit of salts. Mineral Acid	With a pH of 3.0, vapours cause corrosion to exposed metals, can cause irritation and sensitisation to skin and irritation to the respiratory tract. It is either delivered by pump over or 40ltr carboys and have to be manhandled to the transfer point. Liquid chemicals need to be stored in a bunded area that can contain 110% of the total volume.
Sodium bisulphate	Dry acid, sometimes called pH minus. Additional sulphates will cause some grout erosion problems.	Similar to Sulphuric Acid this is usually delivered in bags 10-20kg and needs to be stored in a cool dry well-ventilated area. Bags need to be manhandled and then emptied and mixed with water
Sulphuric Acid	Battery acid, sulphuric acid. Mineral Acid	pH 2.75 Corrosive to metals, gives off hydrogen (flammable/explosive). Skin Corrosive Usually Delivered in 40ltr carboys and have to be man handled to the transfer point. Liquid chemicals need to be stored in a bunded area that can contain 110% of the total volume.
Carbon dioxide	Carbon dioxide gas converts to carbonic acid. In hard water areas, the addition of additional carbonates can increase alkalinity to such an extent as to make pH control difficult.	pH 4.7 Less aggressive than the mineral acids above. Delivered in either cylinders that have to be secured to walls or bulk which is pumped over. Potential for asphyxiation if bottles leak.

The most frequently used acids in swimming pools.

<sup>1</sup> PWTAG Sulphuric Acid 2011 [pwtag.org/technicalnotes/sulphuric-acid/](http://pwtag.org/technicalnotes/sulphuric-acid/)

In most cases the decision making process for the selection of pool chemicals takes into account two important criteria:

- 1 Chemical effectiveness
- 2 Chemical safety

### 3.3 Chemical effectiveness

Chemical effectiveness can sometimes eliminate Carbon Dioxide from the equation because the mains water quality leads to an adverse reaction that leads to alkalinity rising beyond acceptable levels and restricting the production of carbonic acid. This will be in hard water areas with calcium hardness levels in excess of 200mg/l. The mains water in Dundee is 50mg/l or less and is usually described as soft and CO<sub>2</sub> is considered to be ideal in this type of water.

Hydrochloric and Sulphuric Acid are very effective having a very low pH and being very aggressive to both the plant and also any operating staff if they unfortunately spill or inhale them. The volume of Acid used should be very low when compared with Carbon Dioxide. However CO<sub>2</sub> is suspended gas and when used in aggressive water situations, will effervesce out leading to very high costs as the acid effect has to be replaced by use of additional chemicals. Therefore use in leisure pools with a number of water agitating features is not normally practicable or cost effective.

### 3.4 Chemical safety

Chemical safety should be considered in line with Regulation 6 of the COSHH Regulations 2002 by risk assessment and controls established in line with Regulation 7 using the Hierarchy of Control. These regulations would normally be applied to justify the selection of the safest effective substance. In swimming pools in soft water areas that is normally Carbon Dioxide. However taking the type of pool into account this should discount CO<sub>2</sub> in Olympia.

### 3.5 Water chemistry and disinfection

There are four major choices in pool water disinfection; Chlorine gas and Chlorinated Isocyanurates are used but are not considered to be appropriate for most commercial operations. This is usually because of safety fears about Chlorine gas and the expense for Chlorinated Isocyanurates.

The alternatives left are Sodium Hypochlorite (liquid) and Calcium Hypochlorite (tablet or granules). Both Calcium Hypochlorite and Sodium Hypochlorite react with water to produce Hypochlorous Acid (HOCl) and a range of by-products. Neither product will get into the atmosphere and cause corrosion.

### 3.6 Pool filtration and circulation

The pool circulates the water through the filters to remove pollution. In some heavily loaded pools this can lead to an increase in the waterborne and airborne pollution levels. The circulation rates of the pools are all within the PWTAG guidelines and are sufficient to cope with the bather loads.

Pool	Circulation rate	Maximum daily Bathing load
Toddler pool	142m <sup>3</sup> /hr	250- 750-1500
Leisure pool	417m <sup>3</sup> /hr	700 2100-4200
Competition Pool	603m <sup>3</sup> /hr	1000 3000-6000

### 3.7 Ventilation

Pool hall ventilation should operate at a rate which keeps relative humidity in the 55-65%. At the moment the ventilation system appears to be working well until the leisure pool starts to get busy. The ventilation system units are set to deliver a maximum output of 82% of their capacity; this is probably in order to reduce electrical costs. The ventilation units work in response to relative humidity for some of the time but at peak times they are set to the max (82%). This maximum does not appear to be coping in maintaining the relative humidity below 65%.

The air handing system was delivering a relative humidity (RH) of 68-82 % on the balcony between 11.00hrs and 13.00hrs on Saturday with the lower readings at the café end and higher readings towards the far end of the conventional pool.

The air temperature is fairly well controlled between 28.2°C and 29°C whilst the water temperature for the competition pool is a fairly consistent 29.5°C. The leisure pool is a reasonably consistent 31.5°C. Based on the recommendations from PWTAG the water temperatures are a little warmer than expected and the pool water and the air should normally be within the 1°C required of a swimming pool atmosphere.

Relative Humidity can cause two major problems:

- condensation on internal surfaces
- accumulation of moisture within a structure in areas where it may cause corrosion of metal components, decay of timber based components or reduction of the performance of insulants

#### Condensation on Internal surfaces

Evaporated water that is trapped in the air comes into contact with a colder surface and deposits that water on the surface. Condensation will form on surfaces that are colder than the room air dew point temperature. The dew point of air is the temperature at which water vapour will fall out of the air as moisture. If the pool hall air is 30°C with 60% relative humidity, condensation will occur on any surfaces that are colder than approximately 22°C.

#### Causing Corrosion

If condensation is frequent then it is possible that corrosion will affect any metal parts. In the same way as oxidation is another name for corrosion, it is not beyond the realms of possibility that some synthetic component will oxidise a little and become brittle.

The Dundee pool has regular extremes of relative humidity that would cause the surfaces of the pool to allow dew point where the water will condense on colder surfaces.

The stainless steel in the pool appears to have surface corrosion (can be wiped off the stainless steel) but in the main is still solid. Some of the less visible (cleanable) sections are unsightly but do not appear to be structurally unsound. On the other hand some of the other steel components do appear to be corroded e.g. the steps to slides etc. It was also reported that synthetic supports for the ventilation ducting had also sheared on occasions. This may be for a number of reasons including poor specification, incorrect stress loading, or indeed poor selection of materials as well as the RH accelerating any propensity to brittle fractures of synthetic struts.

#### 4.0 Conclusions.

- The relative humidity at Dundee Olympia pool is often out of specification (over 65%) for a swimming pool. Some corrosion may be accelerated due to the relative humidity depositing water on to colder surfaces.
- Reducing the relative humidity will reduce the potential for surface water to be formed on building fabric.
- The pool air and water do not appear to have excessive chloramines that would make the situation worse.
- Changing pH correcting chemicals will be unlikely to contribute to the solution of the rusting issues; indeed changing to CO<sub>2</sub> could cause an increase of airborne CO<sub>2</sub> which would form carbonic acid on surfaces and could make the situation worse.
- Changing pool disinfectant chemicals from Sodium Hypochlorite to Calcium Hypochlorite would have a mainly neutral effect on the airborne corrosion issues but may reduce the amount of Calcium flake needed and reduce the need to use bicarbonates. This in turn may lead to a reduction in the Total Dissolved Solids which will reduce the potential for some pool water initiated corrosion.

#### 5.0 Recommendations

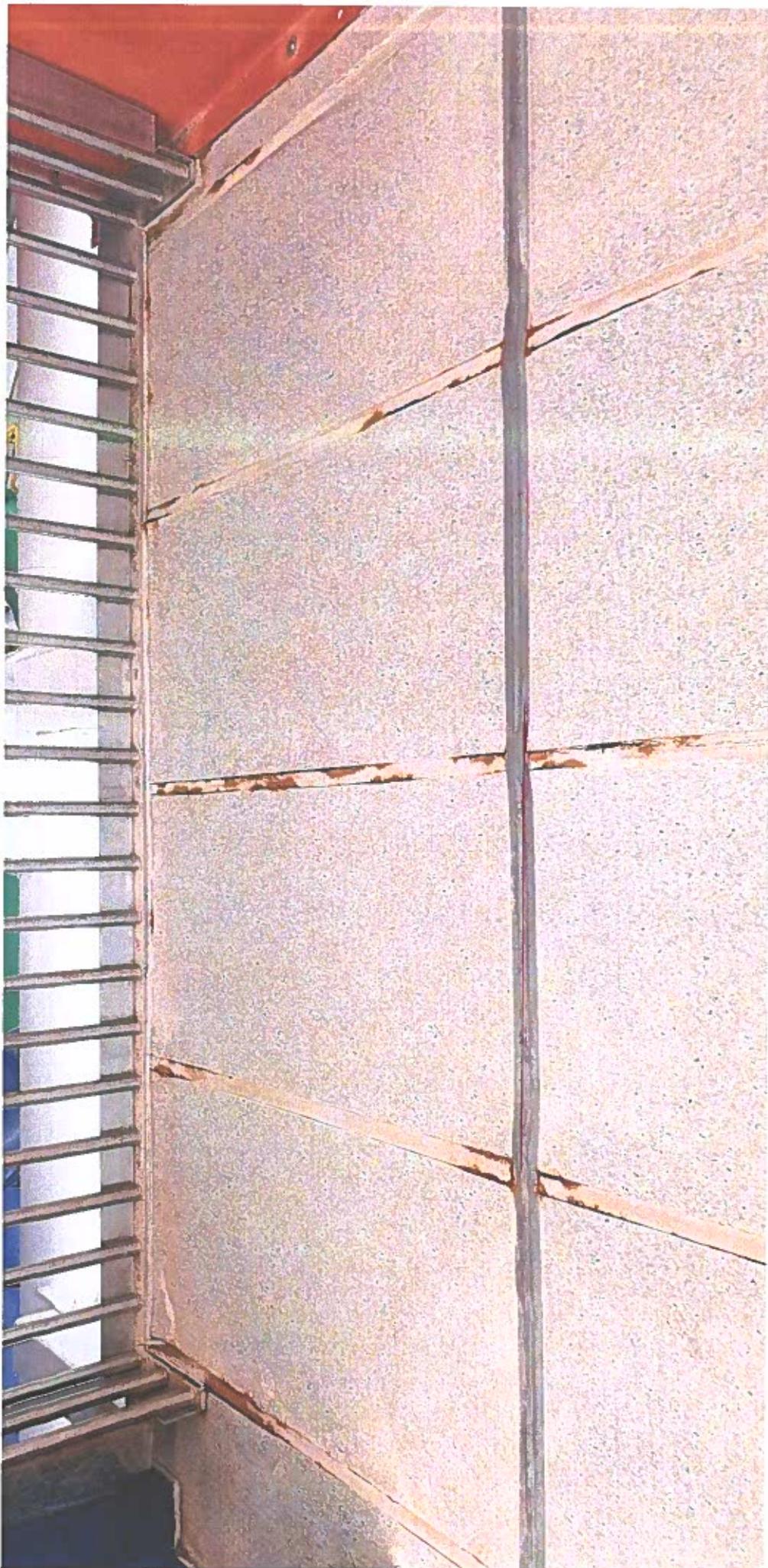
- Adjust the ventilation system so as to be able to operate at its full capacity (100%) rather than artificially limiting its potential to 82%.
- Assist the late evening relative humidity by installing pool covers over the majority of the pool surface area.
- Have the steel supports and synthetic struts tested and checked to certify that they are of an appropriate specification for use in a swimming pool environment.
- Initiate an annual checking programme to verify that the support struts are not deteriorating any further.
- Initiate an annual procedure for repainting/treating any exposed metal equipment/structures
- Consider adding safety chains/ropes to ducting and lighting units supported from the roof/ceiling to prevent heavy items hitting staff or customers.
- Convert the disinfection to Calcium Hypochlorite (consider upgrading dosing pumps to cope with pumping a solution rather than a liquid).
- Increase the voracity and frequency of cleaning the decorative stainless steel e.g. balcony and hand rails).

**APPENDIX 8**

## Photos

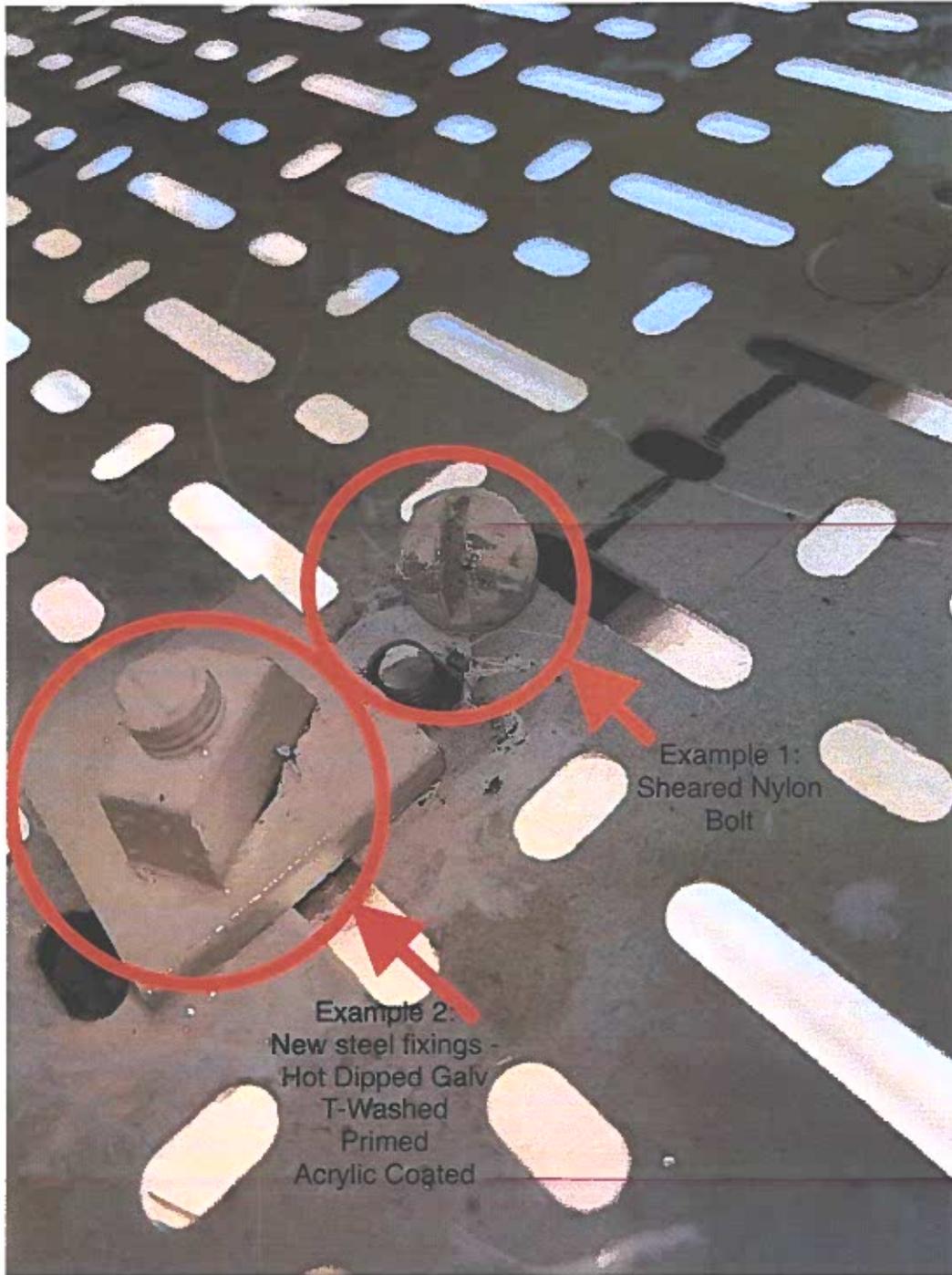
Corrosion on Flume Deck	Page 667
Corrosion on Underside of Flume Deck	Page 668
Failed Light Fitting	Page 669
Fixings for Light Fitting	Page 670
Sheared Curtain Walling Bolt	Page 671
Corroded Curtain Walling Bolt <u>in situ</u>	Page 672

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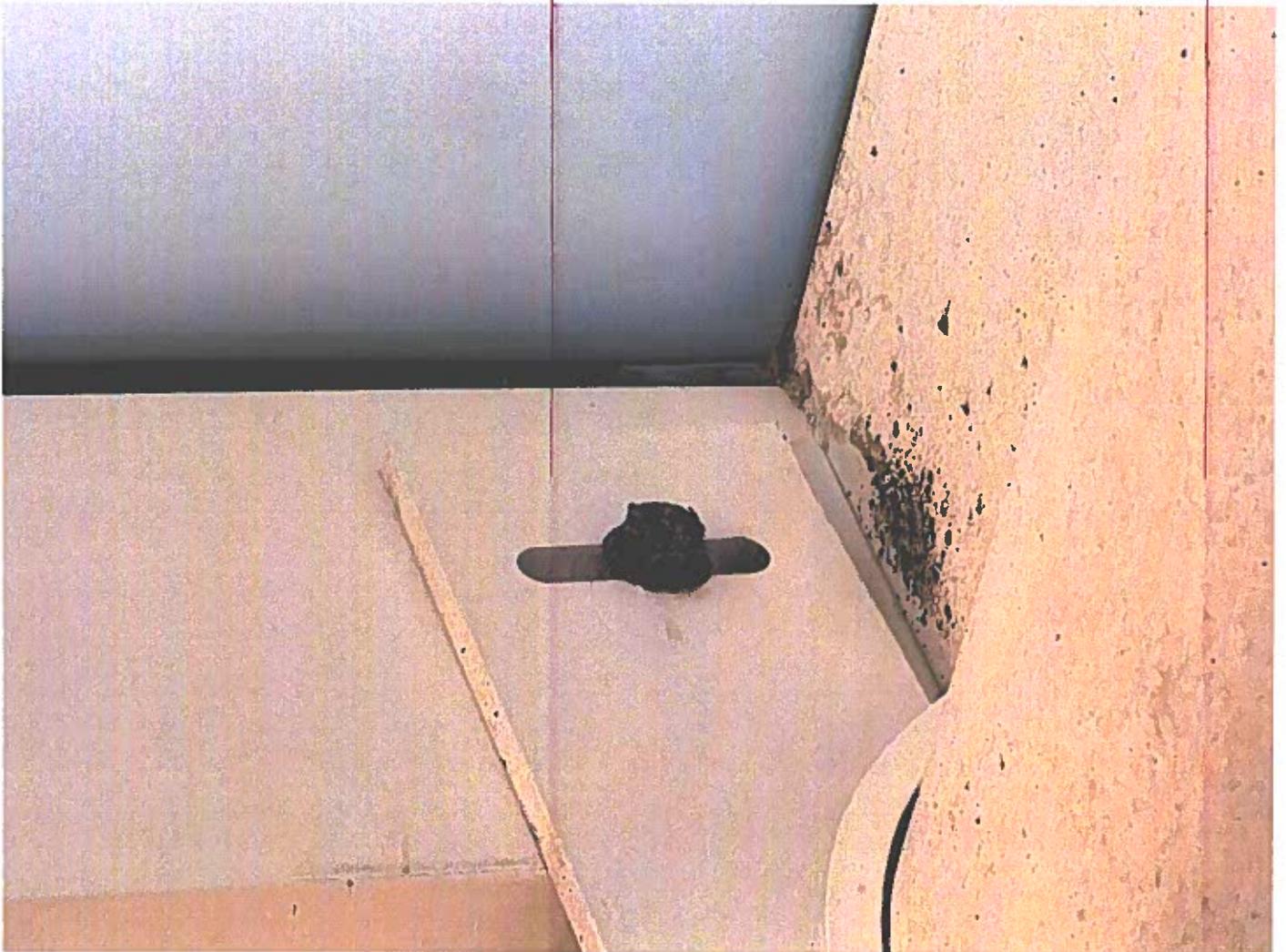




Example 1:  
Sheared Nylon  
Bolt

Example 2:  
New steel fixings -  
Hot Dipped Galv  
T-Washed  
Primed  
Acrylic Coated





**APPENDIX 9**

Remedial Works

Page 675

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## 20-007 - OLYMPIA – REMEDIAL WORKS

Scope and Works Content (Currently Under Development)

no	item	task
2	Bullnose	Develop a scheme of soffit ventilation  Revisit and reassess the design, consider augmenting the current proposals with further measures
3	Stair Treads	Replace stair treads to Flume Access Stair and Dive Stair.
4	Flume Launch Pad	Strip back, remove, replace and refurbish flume launch pad and supporting structure. Lay new flooring. Reinststate all goods, test and commission.
5	Water Ingress to Pool Plant Room	Strip back, remove and replace flooring with flexible vinyl flooring. Fit new SS skirting, alter grating to suit.  Revisit and assess additional measures
6	Dive Barriers	Fit additional glass balustrading.

## Scope and Works Content (Currently Under Development)

no	item	task
7	Balustrading Corrosion (incl measures for bimetallic corrosion)	Remove and replace affected balustrading. Refurbish other areas as required. Associated work - create removable section for access.
8	Corrosion to Steelwork and Stairs	Removal of areas of corrosion, treatment and refurbishment. Further investigation into environmental causes, incl humidity control Contribution to the investigation to be included in scope of Pool Consultant
10	Curtain Walling Saddle Brackets	Replace all bolt fixings Enquiry re materials from AM
11	Curtain Walling - fixings at head	Fit connecting bracket at head of 2no mullions in place of missing head shoe
12	Curtain Walling Paint Finish	Remedial work in ppc to debonded paint system
13	Ceiling Tiles - in poolside showers	Replace delaminating ceiling tiles

## Scope and Works Content (Currently Under Development)

no	item	task
14	Wave Plant Room - opening in floor	Infill existing opening in floor plus associated remedial work.
15	Revolving Door – main entrance	Replace matwell.
16	Foyer Air Curtain	Fit set of 5no new air barriers across entrance to Reception Foyer
17	Workshop Floor - groundwater leak	Remediate areas of groundwater ingress - Workshop and Pool Plant Room Check for other areas having developed
18	Bypass Door – east foyer entrance	Replace door set
19	Seating - poolside	Remove existing shell seats, retile.
20	West Screen Glare	Apply anti-glare film.
21	Underwater Cameras	Existing system to be replaced, including all associated builderswork.

## Scope and Works Content (Currently Under Development)

no	item	task
		<p>Investigate feasibility of additional provision and review whether system as proposed meets current industry best practice</p> <p>Contribution to the investigation to be included in scope of Pool Consultant</p>
22	Staff Door	Replace door and panic hardware
23	High Level Access – assessment and recommendations	<p>Ongoing desktop check</p> <p>Ref item 40-P-3a</p>
24	Ventilation Issues	<p>Alterations to improve performance of ventilation system in Pool Hall and Changing Village</p> <p>Peer review</p> <p>Contribution to the investigation to be included in scope of Pool Consultant</p>
25	Kicker Adjacent to Toddler Pool	Build low-level kicker wall adjacent to Toddler Pool

## Scope and Works Content (Currently Under Development)

no	item	task
26	Algae in the Training Pool	Investigate and treat algae staining in training Pool. Assess and determine long term solution. Contribution to the investigation to be included in scope of Pool Consultant
27	Ventilation Grille Deterioration	Replace damaged grilles
28	Poolside Fire Doors	Replace corroded ironmongery
32	New Access Barrier	Replace current barrier and gate with a proprietary system compatible with Client's booking system
33	<b>ADDITIONAL MATTERS</b> Appoint pool consultant to do report into pool treatment options	Draft scope for Employers Requirements  Assess and report on existing treatment system and it's contribution to associated issues. Provide design input for works associated with the water treatment system Provide advice to support the discussions within the Project Team to tackle identified issues.

## Scope and Works Content (Currently Under Development)

no	item	task
34	Resultant works to alter pool treatment system	Recommendations and design to be included in scope of Pool Consultant
35	Bulk chemical stores – remote level gauges	Provide overflow alarms with sounder internal and external to store  To be included in scope of Pool Consultant
36	Alter bulk chemical delivery point - viewing panel	Consult with Brenntag  To be included in scope of Pool Consultant
37	Chemical Store – double door	Alterations to increase width of doorway. Consider project impacts.
38	Pool covers - feasibility	Decisions taken during original design to be reviewed - revisiting and updating the criteria. Considerations will weigh up energy cost benefits and improved protection to fabric against water quality impacts, operational impacts and physical constraints within the building

## Scope and Works Content (Currently Under Development)

no	item	task
		Contribution to the investigation to be included in scope of Pool Consultant
39	PA Speakers - Pool Hall	<p>Investigate feasibility of alterations to the PA audibility design to move the speakers currently located over the Competition Pool into a more accessible location</p> <p>Discuss procurement route with RCT</p> <p>(note - maintenance contract is bolted into Chubb's Fire Alarm contract)</p>
40	<b>ADDITIONAL MATTERS AS ADVISED BY PROPERTY MAINTENANCE -</b>	
40-P-1-	Instigate an Approving Body for checking and approval of proposals.	<p>To comprise Corporate H&amp;S, BST and operational user</p> <p>Designs to be shared with approving body as they progress</p> <p>Meet regularly to vet proposals</p> <p>Process must be structured to maintain progress on programme</p>
40-P-2a -	Assess and replace remaining polypropylene rods – continue exercise previously carried out.	Site assessment, design appraisal of suspension options.

## Scope and Works Content (Currently Under Development)

no	item	task
		<p>Current position is all accessible suspended rods have been replaced by EWE. EWE to provide a mark up of works carried out.</p> <p>Information from term contractor to be shared with project team</p>
40-P-2b	Remedial / preventative work to light fittings - replace polypropylene fixings to fittings	<p>Hazard identification, method of securing equipment.</p> <p>Current position is all accessible rod fixings have been replaced by EWE. EWE to provide a mark up of works carried out.</p> <p>Address area of outstanding work</p>
40-P-3a	High level access – further to item 23 – investigate and assess feasibility of altering lighting design.	Lighting scheme to be assessed in conjunction with outcome of access assessment. Include consultation with access specialist. However, all performance matters which the lighting scheme is required to address must be considered also.
40-P-3b	Works arising from lighting feasibility exercise.	Revisions to lighting scheme.

## Scope and Works Content (Currently Under Development)

no	item	task
		<p>Note - if this results in replacement fittings (eg LED) replacement fittings may now be slightly longer making a straight swap of fittings more difficult.</p> <p>Address areas of enabling work to implement strategy</p>
40-P-4	<p>Water ingress to Pool Plant Room – further to item 5 – supplementary proposals to give additional protection. Drip trays; drain or bund at edge.</p>	<p>Assessment of potential water pathways to be considered, evidence of observed patterns during lockdown etc to be included. This may include supplementary repairs including structural repairs (balance tanks)</p> <p>Balance tanks - porthole access hatches are badly corroded. Replacement / repair will be complicated by the nature in which these are built into the concrete tank structure. Ref item 40-P-6f</p> <p>Some of the recent evidence suggests poolside channel is contributing to problem as well.</p>
40-P-5	<p>Plant room – equipment degradation or corrosion</p>	<p>Inspect, assess, repaint, upgrade, replace</p>

## Scope and Works Content (Currently Under Development)

no	item	task
		<p>Refer to the ongoing service maintenance corporate contracts including the annual electrical test and inspection certification</p> <p>Contribution to the investigation to be included in scope of Pool Consultant</p>
40-P-6a	Replacement of pool plant as required or planned	<p>List of equipment required for replacement / refurbishment</p> <p>Contribution to the investigation to be included in scope of Pool Consultant</p>
40-P-6b	Change filter media	<p>Currently being retendered by Prop Maintenance.</p> <p>Contribution to the investigation to be included in scope of Pool Consultant</p>
40-P-6d	Report on works to moveable floor and booms. Info to be available after service visit w/c 08/12/21	<p>Assess floor and booms for matters of preventative maintenance. This includes a reported issue with the seals around the floor.</p> <p>Contribution to the investigation to be included in scope of Pool Consultant</p>

## Scope and Works Content (Currently Under Development)

no	item	task
40-P-6e	Test and possibly replace chlorine gas sensors	Carry out test.  Note - reported as working fine at this time, but they may need to be altered to suit any revised pool treatment chemical strategy. Contribution to the investigation to be included in scope of Pool Consultant
40-P-6f	Assess and consider replacement/refurbishment of balance tank porthole hatches	Ref item 40-P-4
40-P-8a	Sprinklers – Changing Village	Change sprinkler fittings to Victaulic; replace flexi hoses and heads
40-P-8b	Changing Village ceiling – replace / refresh ceiling tiles	Assess requirement, scope and specification.
40-P-8f	Sprinklers - fire stopping	Main plant room basement area, some range pipes pass through at high level and are not fire stopped approx. 3 off

## Scope and Works Content (Currently Under Development)

no	item	task
40-P-8g	Sprinklers - remedial works	<p>Main plant room basement area, at feed from pool to pump 2. At areas where it has been leaking from above onto the pipe, would recommend treating with rust inhibitor and repainting using 2 coats of red primer</p> <p>Main plant room basement area, 32mm drain valve showing signs of corrosion recommend replacing</p> <p>Main plant room basement area, room ANC. Room BR8 void area requires sprinkler protection (2 number heads)</p> <p>Level 1 cleaners cupboard requires sprinkler protection 1</p>
40-P-9a	Ventilation – replace obsolete sensors in Pool Hall	Replace wireless receiver and sensors
40-P-9c	Chem Stores ventilation extract –	<p>Assess and consider air flow status or fan run status for monitoring / alarming</p> <p>Contribution to the investigation to be included in scope of Pool Consultant</p>

## Scope and Works Content (Currently Under Development)

no	item	task
40-P-9d	Menerga – put heat recovery system on BMS	Interfacing of the 2off Menerga Waste Water Heat Recovery Units to the BMS System for monitoring purposes (This would require Menerga to carry out works along with Contractor but have been unsuccessful so far in attempts of trying to get information and costs from them to carry out the works).
40-P-12a	Ventilation – AHU2 – replace heating coil	Pool Hall air handling unit AHU 1 heating coil has recently been replaced. AHU 2 (that also supplies & extracts air from the pool arena) heating coil is also corroded but not yet leaking. Recommend replacing as preventative maintenance
40-P-12b	Chem stores extract	Carry out flow test (ref P-9c)
40-P-12c	Pool Hall smoke test – already done under item 24	
40-P-12d	Ventilation at Changing Village desk	Assess and provide proposals
40-P-13a	Menerga heat recovery system – bring on line	

## Scope and Works Content (Currently Under Development)

no	item	task
40-P-13b	Shower drain modification to heat recovery system	
40-P-14a	Check damper bearings on AHUs	These were all replaced approx 4/5 years ago and may be due to be redone. IC - check and assess.
40-P-14b	Survey fire and smoke dampers – including upgrading as necessary.	No maintenance contract in place, statutory annual check required. Review existing drawings on file.
40-P-14c	Entrance – revolving door and air curtain – already covered by items 15 and 16	
40-P-14e	Kitchen - check equipment	No maintenance by previous lessee. Equipment to be surveyed by specialist (eg Lovatts). Statutory inspection of gas equipment required.  May need some upgrading work to meet current standards.

## Scope and Works Content (Currently Under Development)

no	item	task
		<p>Liaise with Lovats for replacement of the Packaged VES Kitchen Extract Fan Control Panel located on the roof – This has a Metal Panel on the Roof which is now starting to deteriorate and should either be replaced with a Plastic / GRP Panel or encapsulated with some sort of plastic cover to prevent further deterioration. (Note - extract fan has been taken onto existing extract fan service contract)</p>
40-P-15	Wave Plant Room – (remedial work to builderswork already included in item 14) damaged equipment	<p>Inspect and replace</p> <p>Replacement cable tray could be in pvc - check.</p> <p>To be included in scope of Pool Consultant</p>
40-P-16	Poolside store	Inspect and replace ss goods affected by corrosion
40-P-17	Bulk Chemical Store – equipment	<p>Assess and replace damaged services and equipment</p> <p>To be included in scope of Pool Consultant</p>

## Scope and Works Content (Currently Under Development)

no	item	task
40-P-18a	Lighting – ref items P-3a and P-3b and item 23	<p>Review lighting design in Pool Hall</p> <p>Works resulting from general assessment of lighting strategy in Pool Hall</p> <p>Investigate lamp life. Incl manufacturer's recommended long life lamps to extend operation in areas of the Pool Hall difficult to access.</p> <p>Possible consideration given to LED equivalent in these areas subject to meeting lighting criteria.</p>
40-P-18b	Lighting - remedial work	<p>Investigate and identify damaged Pool Hall lighting equipment including inoperative light fittings and repair/replace/upgrade as necessary.</p>
40-P-18c	Lighting - preventative maintenance	<p>Carry out preventative maintenance to light fittings that have not been previously accessed in the Pool Hall including testing &amp; inspection with relamp and clean.</p> <p>Consider bringing forward the relamping, possibly in LED</p>

## Scope and Works Content (Currently Under Development)

no	item	task
40-P-18d	Establish a planned periodic maintenance schedule	
40-P-19	Lighting controls – risk of future obsolescence or parts availability	<p>Investigate and consider replacement, advise on obsolescence of Mode lighting equipment.</p> <p>Arrange to carry out all necessary works with replacing Mode Lighting Evolution equipment</p> <p>Discuss scene setting options with Client.</p> <p>Try to get open protocol problem dealt with as well.</p>
40-P-20a	Emergency lighting, central inverters and batteries – risk of future obsolescence or parts availability	Investigate risk of obsolescence and consider replacement. Check lifespan and limited life.
40-P-20b	Investigate temperature monitoring system in areas with central inverters	Incorporate a high limit stat with alert generated to go to SARC.
40-P-22b	Replace auto door at bypass – ref item 18	
<b>NEW ADDITIONAL MATTERS -</b>		

## Scope and Works Content (Currently Under Development)

no	item	task
41	Balance tanks	<p>Investigate reports concerning degradation of the balance tank lining.</p> <p>To be included in scope of Pool Consultant</p>
42	Balance tanks	<p>Investigate reports of balance tank and pool water levels dropping.</p> <p>To be included in scope of Pool Consultant</p>
43	Bullnose	<p>Additional investigations into robust measures to deal with the condensation problem or more significantly restrict it than is currently envisaged – ref item 02.</p>
44	Showers - leaks	<p>Ref - P-40-4 – investigate further work than can be put in place to control or manage the problem</p> <p>Widen the scope of investigations into leaks into the pool plant room. Assess further areas of consideration for leaks beyond the area around showers. May require a wider remit of remedial works.</p>

## Scope and Works Content (Currently Under Development)

no	item	task
45	AHUs	The design review has suggested an independent specialist review is required
46	Ventilation	Peer review of design for item 24
47	Heating system	Site-wide review of thin wall carbon steel pipework
48	Acid day tank X1 Hypo day tanks X2 overspill alarms to be fitted on top of the day tanks with external sounders located outside both chemical rooms	Assess whether this is a repeat of item 35.  To be included in scope of Pool Consultant
49	Dosing system	Change all chemical dosing hoses.
40 40-P-6c	<b>WORKS BY OTHERS -</b>  Clean and reline balance tanks	Contribution to the investigation to be included in scope of Pool Consultant
40-P-7	Pool features programme - engage specialist to update	Try to get the closed protocol problem dealt with

## Scope and Works Content (Currently Under Development)

no	item	task
40-P-8c	Sprinkler test with pool water	
40-P-8d	Fire Pump Test	Strip and test main fire pump condition
40-P-8e	Sprinkler tank 10 year inspection	
40-P-9b	AHU on roof – replace GRP control panel enclosure	
40-P-9e	Upgrade Trend controllers	Upgrade of Trend IQ3 BMS Controllers to Trend IQ4 BMS Controllers – The Trend IQ3 System is now obsolete with no spares available (Limited repairs whilst components are available).
40-P-9f	Relocate BMS alarm	Re-Location of Existing BMS Remote Common Alarm Unit to either Facilities Staff Canteen or Duty Managers Office.

## Scope and Works Content (Currently Under Development)

no	item	task
40-P-9g	Underfloor heating manifold controls	Upgrade of Under-Floor Heating Manifold Controls to allow each individual Heating Zone to be controlled via the BMS System – This will allow Actual Temperatures within the Zones to be monitored / viewed and allow further improvements to the existing Heat-Led Demand Energy Saving Strategy.
40-P-10	Air compressors – to be replaced	The existing basement plantroom air compressors (3No) should be replaced with a newer model with integrated filter / drier and future proofing the installation. This can be carried out through the H&S contract.
40-P-11	Solar Thermal - remedial works	Replace leaking expansion vessel. Replace all roof top insulation that has perished. IC to update on scope of remedial works- requirements to be advised by AJ
40-P-14d	AC – carry out TM44 inspection	5 - yearly inspection due - to be carried out by Chartered AC Engineer.

## Scope and Works Content (Currently Under Development)

no	item	task
40-P-14f	Mechanical miscellaneous	<p>Ensure all gas pipe sleeves are fire sealed on both sides.</p> <p>No visible gas pipe sleeves along route trac-pipe takes from the plantroom to kitchen, where pipe passes through wall &amp; floor.</p> <p>No gas purge point at end of line in kitchen</p> <p>Test / purge points along gas pipe route are too small. Less than 25% of pipe diameter.</p>
40-P-21	Fire alarm control panels and heads – risk of future obsolescence or parts availability	<p>Investigate and consider replacement. Normal lifespan is about 10 years. At present the current status seems fine with no issues. Might not be required and could be replaced ad hoc in the future with little impact on centre.</p> <p>Determine whether within or out-with main project works</p>
	<p><b>Follow-up Activities</b></p> <p>Cleaning and maintenance strategy</p>	

**APPENDIX 10**

## Leisure and Culture Dundee

Email correspondence between Leisure and Culture Dundee and Dundee City Council dated 17th November, 2021	Page 699
Minute of Leisure and Culture Dundee Health and Safety and Property Committee dated 26th August, 2021	Page 704
Minute of Leisure and Culture Dundee Health and Safety and Property Committee dated 15th April, 2021	Page 706
Email correspondence between Dundee City Council and Leisure and Culture Dundee dated 5th February, 2021	Page 717
Minute of Leisure and Culture Dundee Health and Safety and Property Committee dated 24th November, 2020	Page 733
Minute of Leisure and Culture Dundee Health and Safety and Property Committee dated 10th September, 2020	Page 735
Minute of Leisure and Culture Dundee Health and Safety and Property Committee dated 15th March, 2018	Page 737
Minute of Leisure and Culture Dundee Health and Safety and Property Committee dated 11th January, 2018	Page 740
Minute of Leisure and Culture Dundee Health and Safety Management Group dated 9th November, 2017	Page 742
Minute of Leisure and Culture Dundee Health and Safety Management Group dated 14th September, 2017	Page 745
Minute of Leisure and Culture Dundee Health and Safety Management Group dated 13th July, 2017	Page 746
Minute of Leisure and Culture Dundee Health and Safety Management Group dated 16th March, 2017	Page 747
Minute of Leisure and Culture Dundee Health and Safety Management Group dated 12th January, 2017	Page 749
Olympia Defects – Note from Walk Round on 6th December, 2016	Page 751
Note of Meeting Olympia Defects dated 24th November, 2016	Page 753
Email regarding Olympia Update dated 10th November, 2016	Page 757
Minute of Leisure and Culture Dundee Health and Safety Management Group dated 15th September, 2016	Page 758
Minute of Leisure and Culture Dundee Health and Safety Management Group dated 14th July, 2016	Page 760
Minute of Leisure and Culture Dundee Health and Safety Management Group dated 14th May, 2015	Page 761
Health and Safety Management Group Update Briefing – October 2014	Page 762

Minute of Leisure and Culture Dundee Health and Safety Management Group dated 11th September, 2014	Page 763
Minute of Leisure and Culture Dundee Health and Safety Management Group dated 8th May, 2014	Page 764
Health and Safety Management Group Update Briefing – April 2014	Page 765
Minute of Rectification Period Completion Review Meeting dated 28th March, 2014	Page 766
Health and Safety Management Group Update Briefing – 13th February, 2014	Page 768
Minute of Leisure and Culture Dundee Health and Safety Management Group dated 16th January, 2014	Page 769
Minute of Leisure and Culture Dundee Health and Safety Management Group dated 14th November, 2013	Page 770
Minute of Leisure and Culture Dundee Health and Safety Management Group dated 12th September, 2013	Page 772

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**From:** Gregory Colgan  
**Sent:** 17 November 2021 23:33  
**To:** Judy Dobbie; [REDACTED]  
**Cc:** Robin Presswood  
**Subject:** Re: Olympia

Hi Judy

As per my earlier email my approach is to seek technical and professional advice before reaching any decision on potential opening of the training pool.

If you can speak with [REDACTED] in the morning around advice being sought and when this will be available thanks  
Greg

Gregory Colgan  
Chief Executive

Dundee House  
50 North Lindsay Street  
Dundee DD1 1NN  
Tel: 01382 434431  
Email: [gregory.colgan@dundeecity.gov.uk](mailto:gregory.colgan@dundeecity.gov.uk)

Secretary  
Email: [REDACTED]

---

**From:** Judy Dobbie <judy.dobbie@leisureandcuturedundee.com>  
**Sent:** Wednesday, November 17, 2021, 11:22 PM  
**To:** Gregory Colgan; [REDACTED]  
**Cc:** Robin Presswood  
**Subject:** Re: Olympia

Thanks Greg, we are in the same position.

There are a number of unanswered questions in relation to the health and safety issues and as the board and management team are the responsible parties for H&S, a safe reopening would require sight of the reports related to the issues that there are concerns about.

The current contractor has reported additional issues with regard to the pool curtains, window fixings and also the speaker system over the pool which appears can only be addressed by an inspection at height, possibly involving the pool draining.

I'm sure you will appreciate these concerns and our hesitation in terms of reopening, especially as the dive pool would not be able to reopen as the light fittings in this section have not been fully replaced.

A full inspection of the curtain systems and speaker systems above the pools as well as the window fittings would be needed to reassure that these are completely safe as even a small risk of danger occurring is enough for us not to reopen as the consequences could be so great.

There is also the factor, although less critical, that the pool would be under considerable scrutiny due to recent press interest and that reopening could highlight the more visible issues.

Best wishes  
Judy

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**From:** Gregory Colgan <gregory.colgan@dundeeecity.gov.uk>  
**Sent:** Wednesday, November 17, 2021 10:19:51 PM  
**To:** Judy Dobbie <judy.dobbie@leisureandculturedundee.com>; [REDACTED]  
**Cc:** Robin Presswood <robin.presswood@dundeeecity.gov.uk>  
**Subject:** Re: Olympia

---

Thanks Judy helpful to understand the basis on which this decision was reached.

From my perspective I have asked [REDACTED] and Robin to arrange for professional advice on the options around the training pool opening to be prepared. This will cover all the aspects that needs to be taken into account. From my perspective I require to have technical advice to inform any potential decisions that may require to be taken.

KR  
Greg

Gregory Colgan  
Chief Executive

Dundee House  
[50 North Lindsay Street](#)  
[Dundee DD1 1NN](#)  
Tel: [01382 434431](tel:01382434431)  
Email: [gregory.colgan@dundeeecity.gov.uk](mailto:gregory.colgan@dundeeecity.gov.uk)

Secretary . . .  
Email: [REDACTED]

---

**From:** Judy Dobbie <judy.dobbie@leisureandculturedundee.com>  
**Sent:** Wednesday, November 17, 2021 10:09 pm  
**To:** Gregory Colgan [REDACTED]  
**Cc:** Robin Presswood  
**Subject:** Re: Olympia

Hi Greg  
No at this stage it is not informed by those parties but on this afternoon's findings.  
Best wishes  
Judy

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**From:** Gregory Colgan <gregory.colgan@dundeeecity.gov.uk>  
**Sent:** Wednesday, November 17, 2021 10:07 pm  
**To:** Judy Dobbie [REDACTED]  
**Cc:** Robin Presswood  
**Subject:** Re: Olympia

Hi Judy

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**From:** Judy Dobbie  
**Sent:** 17 November 2021 22:12  
**To:** JUDY DOBBIE  
**Subject:** Fwd: Olympia

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**From:** Gregory Colgan <gregory.colgan@dundeecity.gov.uk>  
**Sent:** Wednesday, November 17, 2021 10:07 pm  
**To:** Judy Dobbie; [REDACTED]  
**Cc:** Robin Presswood  
**Subject:** Re: Olympia

Judy

Thanks for your email, for my own information the decision you and board members have reached that the training pool should not re-open until the bolts are inspected and replaced, was this decision informed by technical/professional advice from Health and Safety , Structural Engineers, Mechanical Engineers and other professional advisors ?

Kind regards,  
Greg

Gregory Colgan  
Chief Executive

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50 North Lindsay Street  
Dundee DD1 1NN  
01382 434431  
Email: [gregory.colgan@dundeecity.gov.uk](mailto:gregory.colgan@dundeecity.gov.uk)

Secretary: [REDACTED]  
Email: [REDACTED]

---

**From:** Judy Dobbie <judy.dobbie@leisureandculturaldundee.com>  
**Sent:** Wednesday, November 17, 2021 9:48 pm  
**To:** Gregory Colgan; [REDACTED]  
**Cc:** Robin Presswood  
**Subject:** Re: Olympia

Hi Greg

This afternoon [REDACTED] as Chair and Vice Chair, met on site with me, [REDACTED] for a walkround to discuss the option to reopen the pool in between works and assess measures which would need to be taken if this was agreed.

Contractors were working on the lights and confirmed which ones were unreachable without specialist equipment and therefore not repaired. During the course of the visit we were shown a severely corroded large bolt which had snapped and had come from one of the window fittings. On going to the top of the diving platform it was clear to

see that the same type of bolts which were holding the windows were significantly corroded. This caused concerns about the entire fittings. Similarly, the bolts holding a metal frame which ran across the ceiling over the pool were corroded.

In addition the contractor confirmed that they have been unable to inspect the speakers which are fixed to the ceiling above the pool and therefore couldn't confirm whether those bolts are also corroded.

Given these circumstances, the view of those present was that we cannot support a reopening of the pool in between works, as until the bolts are inspected and replaced, the potential risk is too high. Whilst there is recognition that the impact on the city of a longer period without access to the pool is significant, the safety of staff and customers is paramount. Staff will continue to work on plans to mitigate this impact through use of other pools.

Best wishes  
Judy

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**From:** Gregory Colgan <gregory.colgan@dundeecity.gov.uk>  
**Sent:** Wednesday, November 17, 2021 8:00:13 AM  
**To:** [redacted] Judy Dobbie <judy.dobbie@leisureandculturedundee.com>  
**Cc:** Robin Presswood <robin.presswood@dundeecity.gov.uk>  
**Subject:** Re: Olympia

[redacted] - thanks but before we speak with staff I want to clearly understand any views from LACD Board and also check in with the comms team  
Greg

Gregory Colgan  
Chief Executive

Dundee House  
50 North Lindsay Street  
Dundee DD1 1NN  
Tel: 01382 434431  
Email: gregory.colgan@dundeecity.gov.uk

Secretary :  
mail: [redacted]

---

**From:** [redacted]  
**Sent:** Wednesday, November 17, 2021 7:58 am  
**To:** Gregory Colgan; Judy Dobbie  
**Cc:** Robin Presswood  
**Subject:** RE: Olympia

Morning Judy,

If you can confirm the current L&CD position, CD staff can work with Olympia staff on a date for reopening and a strategy to implement.

Regards

[redacted]  
Head of Design & Property

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MGet Outlook for iOS

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**Subject:** Re: Olympia

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 Greg

Gregory Colgan  
 Chief Executive

Leisure House  
 50 North Lindsay Street  
 Dundee DD1 1NN  
 Tel: 01382 434431  
 Email: [gregory.colgan@dundeecity.gov.uk](mailto:gregory.colgan@dundeecity.gov.uk)

Secretary [REDACTED]  
 Email [REDACTED]

---

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Working in Partnership  
with Dundee City Council

**LEISURE & CULTURE DUNDEE HEALTH & SAFETY AND PROPERTY COMMITTEE**  
**Thursday, 26 August 2021 at 2.30 pm – via Video Conference**

**Present:**

- , Trustee, Vice-Chair (Chair of Health & Safety and Property)
- , Head of Support Services
- , Head of Leisure and Sport Services
- , Head of Cultural Services
- , Acting Head of Library and Information Services
- , Managing Director
- , Property Manager, DCC
- , Service Manager (Active City)
- , Service Manager (Active Living)
- , Service Manger, Adult Library and Information
- , Operations Officer, Cultural Services
- , Assistant H&S Advisor, DCC
- , Team Leader, Building Surveying Service, DCC

**Apologies:**

- , L&CD Chair
- , Service Manager Aquatics
- , Senior Health and Safety Adviser, DCC
- , Property Officer, DCC
- , Olympia Manager
- , Service Manager, Children's Library and Information
- , Caird Hall Manager
- , Senior Manager, City Development, DCC

**1 WELCOME AND APOLOGIES**

The Chair welcomed everyone and noted apologies as above.

**2 MINUTE OF MEETING HELD ON 10 JUNE 2021**

Minute approved.

**3 MATTERS ARISING**

There were no other matters arising which would not be covered by the agenda.

**5 OLYMPIA REMEDIAL WORKS UPDATE**

██████████ advised that ██████████ is currently dealing; the design staff are still working on the issues and a meeting has been set up with the contractor for week beginning 30<sup>th</sup> August. Invite to the meeting to be extended to ██████████

Latest indicated timescale for the works was requirement for 12 week closure although the possibility of the dry side of the building remaining open during the works is being explored.

## 6 OLYMPIA FLUME TOWER STRUCTURAL ASSESSMENT

During the scoping of the remedial works, the contractors expressed concern about the flume platform and the integrity of the structure of the tower. A structural assessment of the tower has been made to DCC by LACD and [REDACTED] confirmed that this had been passed to [REDACTED] City Engineers.

[REDACTED] will pursue an update from [REDACTED] on timescales for this to take place.

The closure of the flumes is having a financial impact on LACD and is resulting in numerous complaints



Working in Partnership  
with Dundee City Council

**LEISURE & CULTURE DUNDEE HEALTH & SAFETY AND PROPERTY COMMITTEE**  
**Thursday, 15 April 2021 at 2.00 pm – via Video Conference**

**Present:**

- , L&CD Vice-Chair (Chair of Health & Safety and Property)
- , Head of Support Services
- , Head of Leisure and Sport Services
- , Head of Cultural Services
- , Service Manager Aquatics
- , Acting Head of Library and Information Services
- , Senior Health and Safety Adviser, DCC
- , Service Manager (Active City)
- , Service Manger, Adult Library and Information
- , Service Manager (Active Living)
- , Team Leader, Building Surveying Service, DCC
- , Property Officer, DCC
- , Service Manager – Performance Sport
- , Olympia Manager
- , Service Manager, Performance Sport

**1 Welcome and Apologies**

██████████ welcomed all to the meeting and noted the above apologies.

**2 Minute of Meeting held on 11 February 2021**

**3 Matters Arising**

There were no other matters arising which would not be covered by the agenda.

**4 Olympia Remedial Works Update**

██████████ and ██████████ reported on progress since the last meeting. Discussions had continued, involving ██████████ and ██████████ working closely with colleagues in Property. The concern about including customer access to the gym has been addressed. The approval report had been delayed by a committee cycle and it was anticipated this would now be presented in April. Confirmation of dates was awaited and, with the delay in Committee approval, there was doubt whether the tentative dates over the summer were now realistic. A further meeting is scheduled for the following week to discuss public access to the building whilst the contractors are on site.

██████████ confirmed that he had not heard anything further than the regular meetings about specifications. ██████████ indicated that this had not been

included in the recent pre-agenda papers. He would check with Councillor [REDACTED] regarding Committee progress.

There was concern about the possibility of opening the building on 26 April, only to have to issue further notice to the public and clubs about the pool closing again within a short time for works. It was also noted that, although it was preferable for the works to be completed as soon as possible, the delay would not be unwelcome if it pushed the closure past the peak summer holiday period.

The above points notwithstanding, it was agreed that early notification of proposed dates was required.

**9 Health & Safety and Property Action Plan**  
External Link

[REDACTED] reported that he and [REDACTED] had met to work through the Action Plan, and indicated that it was good to see a reduction in the number of items as they are completed.

It was acknowledged that there was still a long way to go with the Olympia but that the situation was much more positive than previously and credit was noted to all those involved in this progression.

Updates intimated to the plan were as follows:

- Olympia – remedial works ongoing – confirmation of dates for major works and temporary closure anticipated – as noted above. On-going.
- [REDACTED]
- Play Structure and Flumes at Olympia [REDACTED] reported that this had progressed. Van Egdom had arranged for engineers to come to the UK, paperwork with freight companies had been completed, and the whole play structure and flumes had been redone and were looking magnificent. Thanks were expressed to all involved in progressing this, in particular [REDACTED] and his team. Completed.
- In terms of a condition report on equipment, it was noted that this would be held back until progression with the major capital works, when any issues can be identified. On-going.

2	Olympia - External Slabs/High Level roof Bullnose 6/11/13	[REDACTED] (CD) has advised that cleaning should be implemented once a year to avoid significant build-up of surface contamination, presenting higher slip risks. Spot cleaning/general power washing can be undertaken in between deep cleaning, as and when required	[REDACTED]	[REDACTED]	<p>City Development are investigating the suitability of retrospectively insulating the inside of the bullnose to reduce temperature difference between inside/outside. Natural ventilation is also being considered.</p> <p>Arrange a schedule to identify works.</p> <p>Dependant on repair of Bullnose rope light.</p> <p>Proposal is to have a closure to tackle this job and others. Dates to be proposed by [REDACTED] and agreed by LACD.</p>	<p>13th September 2018</p> <p>15th November 2018</p> <p>11th July 2018</p> <p>29th October 2019</p>
3	Olympia - Tread Failure to Flume 6/11/13	Reactive maintenance will continue, however remedial action will be postponed until CD are satisfied the environmental conditions have been suitably improved. A timescale, plan and guarantee on how the environmental conditions will be rectified has not been provided and this requires clarification.	[REDACTED]	[REDACTED]	<p>Records show a reduction in humidity to the pool hall area (following installation of poolside temperature and humidity sensors). City Development require reviewing material/adhesion options and procurement routes to overhaul the spiral stair treads/nosings. As stated previously a closure of 1 week to the spiral stairs is likely to be required in order to install new treads. LACD to advise on quietest trading period – this will be considered when programming.</p>	<p><del>12th July 2018</del></p> <p><del>13th September 2018</del></p>

				At a meeting on 6.8.18 it was agreed that [REDACTED] is to go to Procurement to identify whether this would need to go out to tender for replacement of the treads with a new adhesive, which Dive Gym have stated they can supply and install [REDACTED] to confirm that Dive Gym are happy with the environmental conditions and guarantee the work if they are the preferred contractor.	
				Tread replacement requires 1 week closure to replace treads and top platform tread. [REDACTED] work with CD to investigate whether a 1 week closure is feasible to complete all outstanding works.	<del>15th November 2018</del> 14th March 2018
				Report being compiled, by [REDACTED] of outstanding works and estimated costs. Secondary list of additional works being compiled, by [REDACTED] for consideration.	11th July 2019
				Proposal is to have a closure to tackle this job and others. Dates to be proposed by [REDACTED] and agreed by LACD.	29th October 2019
4	Olympia - Stainless Steel 2015	A written agreement is required from LACD to CD to detail that the responsibility of maintaining the condition of the stainless steel following a deep clean by metal tech. Steve had concerns around the additional staff time required to meet the level of cleaning on all stainless steel and health and safety concerns around hard to reach areas.	[REDACTED]	[REDACTED] The condition of the stainless steel is considered a result of poor maintenance (supported by reports and testing) and has been described as stage 2 corrosion. In an attempt to resolve, DCC propose appointing Metaltech to undertake a deep clean of all stainless steel in order to recover its condition, where possible and remove identified hard to reach areas. However, thereafter L&C will remain responsible for attending a cleaning programme	
				At a meeting with [REDACTED] on 6.8.18, requested a manufacturers cleaning regime so he can assess resources and operational implications. [REDACTED] is to progress this with a written agreement between L&CD and DC which will details maintenance requirements and responsibilities.	13th September 2018

				Any increase to the resources required to clean and maintain the stainless steel is likely to result in additional costs and an increase to the management fee. The converse of the reduction in the management fee due to the new Olympia requiring less staff than the old Olympia.	
				██████████ said on 13 <sup>th</sup> September that he would create a proposal for stainless steel works to be conducted which would cover this item and item 10. This is to be sent to ██████████ and	
				The painted steelwork on dive board platform and around flume column is to be considered during cleaning and replacement of any steelwork.	15th November 2018
				Report being compiled, by ██████████ of outstanding works and estimated costs. Secondary list of additional works being compiled, by ██████████ for consideration.	11th July 2018
				Proposal is to have a closure to tackle this job and others. Dates to be proposed by ██████████ and agreed by LACD.	29th October 2019
5	Olympia - Water Ingress in main plant room July 2013	City Development and Olympia to agree a plan to carry out this work.	██████████	Ingress from the ceiling has greatly reduced. Monitoring situation.	12th July 2018
				Ground water still a problem with rising water levels when there is heavy rain (water pooling on plant floor through concrete).	13th September 2018
				Metaltech are to install stainless steel kickplates to coved skirting areas in showers. Work will be undertaken out of hours. Flexi hoses to showerheads have also been replaced (previously leaking).	
				██████████ reported on 12 <sup>th</sup> July 2018 that water is now rising through the floor in the senior plant operators office	
				6.8.18 – ██████████ to progress work to kick plates in shower area. A similar issue seems to be occurring in the toilet areas when cleaning is taking place. is to investigate this.	
				As per update in item 8.	

				Metaltech are to set a date to resolve issue through a steel kick plate.	
				Report being compiled, by [REDACTED] of outstanding works and estimated costs. Secondary list of additional works being compiled, by [REDACTED] for consideration.	11th July 2019
				Metal Tech are due onsite to complete kick plate work in shower area prior to the end of October.	31st October 2019
				Proposal is to have a closure to tackle this job and others. Dates to be proposed by [REDACTED] and agreed by LACD.	29th October 2019
6	<b>Olympia - Dive Board Barriers 26.6.16</b>	A suitable solution is to be identified from 4 options provided by DCC. DCC previously agreed to fund up to £14,850.00 + VAT for the appropriate solution. [REDACTED] is to provide information on preferred option and confirm it complies to FINA regs.		Solutions to diving board barriers are as follows: 1. To supply and install 316L stainless steel flat bar to lower gap : £7,425.00 + VAT 2. To supply and install 316L stainless steel flat bar to two lower gaps : £14,850.00 + VAT 3. To remove existing barriers and supply and install new glass barriers: budget cost (@£906.00/m2): £40,800.00 + VAT 4. To supply and retrospectively fit glass to existing stainless steel barriers: £12,235.00 + VAT (as per attached sketch) DCC previously agreed to fund upto £14,850.00 + VAT for the appropriate solution. Please note option 4 only allows for glazing to the platform areas. Mobilisation for the above is likely to be four weeks from instruction, using Metaltech UK.	<del>12th July 2018</del> 13th September 2018
				At a meeting with [REDACTED] on 6.8.18, LACD confirmed that the preferred option would be option 4 and have taken advice from the club Dive coach and FINA who have informed them that there are no completion issues. [REDACTED] will now progress this option.	
				This work is to be tied into the steel work being planned in items 8 and 9.	
				A tender is currently being written to clean and replace steelwork all around poolhall as Metaltech have doubled their previous quote above.	

				Report being compiled, by [REDACTED] of outstanding works and estimated costs. Secondary list of additional works being compiled, by [REDACTED] for consideration.	11th July 2019
				Metaltech visited in October and stated that the price of toughened glass was now £48k. Proposal to retrofit a middle stainless steel rail to reduce gap. Proposal is to have a closure to tackle this job and others. Dates to be proposed by [REDACTED] and agreed by LACD.	29th October 2019
7	Olympia Play structure and Flumes	Engage with Van Egdome to arrange suitable checks are in place and that the service contract and H&S guidance are being adhered to. Liaise with DCC to clarify where the cost responsibility of any remedial action falls.	[REDACTED]	Email, dated 25/08/18, sent to [REDACTED] requesting way forward on inspection (DCC and Van Egdome) and the funding of works from inspection for Toddler Pool Paly Structure.	
				[REDACTED] said on the 13.9.18 that he would discuss this work with [REDACTED] and have the issue resolved.	
				Payment of invoices for servicing of play structure and flumes has been withheld [REDACTED] to discuss this legal and operational matter with [REDACTED] identify a resolution to contract and operational issue.	11th July 2019
				Van Egdome have inspected equipment to allow a contract to be developed. [REDACTED] has enquiries with procurement regarding suitable contractors for repairs and maintenance of the flumes and play structure for L&C, procurement have requested copies of the original contracts between L&C and Van Egdome/Slide/Dive Gym.	31st October 2019
				Documentation has been sent to procurement to appoint a contractor to maintain the play structure and flumes. [REDACTED] to speak with [REDACTED] to obtain an update and progress.	
				Work in progress.	21th October 2019
8	Olympia External Rope Light 50% working	Liaise with DCC to identify the issue and resolve.		[REDACTED] said on 13.9.18 that Edwardsons is to identify the what the cause of the issue is. [REDACTED] to be contacted for support in resolving the issue	15th September 2018

				Meeting held on 21 <sup>st</sup> January where the lighting department confirmed that all suitable tests had been completed and have provided a contact who could investigate further. It is thought that a replacement light is required but all possible issues are being ruled out prior to recommending this resolution.	
				Report being compiled, by [REDACTED] of outstanding works and estimated costs. Secondary list of additional works being compiled, by [REDACTED] for consideration.	11th July 2019
				This work is to be further investigated when the bullnose investigations are taking place and scaffolding has been erected.	
9	<b>Olympia - Water Ingress through floor in various locations of the main plant room including electrical store and office</b>	Highlight this issue in walk round with [REDACTED] and City Development senior officers. Risk Assessments should be reviewed and suitable control measures implemented.		Work station moved over to the other side of workshop. Excess water mopped up every morning. These issues have been reported various times request Nos140233-07/01/2016, No172486 15/01/2018,17610227/03/2018,186634 06/11/2018.	
				Report being compiled, by [REDACTED] of outstanding works and estimated costs. Secondary list of additional works being compiled, by [REDACTED] for consideration.	11th July 2019
				Proposal is to have a closure to tackle this job and others. Dates to be proposed by [REDACTED] and agreed by LACD.	29th October 2019
10	<b>Olympia – Condition report to be conducted on plant equipment.</b>	City Development to be contacted to request a condition report on plant equipment. Suitable back up plan identified if any of the essential equipment were to fail.		GVA submitted on 14/01/2019. Request No 189711. Ongoing. Currently awaiting response – DCC to provide feedback on servicing. No progress.	11th July 2019 29th October 2019

11	Olympia – Underwater cameras November 2018	The underwater camera system in place is now obsolete and will need replaced if one fails and impacts on bather safety. S. [redacted] liaise with [redacted] to identify if this is something that needs to be progressed or if it should be delayed until the system fails.	[redacted]	[redacted]	The cameras are currently working but if one were to fail then the whole system would have to be updated from Analog to digital at a cost of around £4,500. [redacted] has emailed [redacted] to request assistance in planning for the replacement. The cameras are part of the lifeguards scanning and are used for bather safety. If one of the cameras failed and an immediate fix wasn't available, increased staffing provision would have to be implemented to cover blind spots of the pool or pool usage would require to be curtailed.	
					SRSC has been requested to provide detail of required change.	
					Report being compiled, by [redacted] of outstanding works and estimated costs. Secondary list of additional works being compiled, by [redacted] for consideration.	11th July 2019
					This work is to be accelerated. [redacted] to speak with SRSC to identify the method of changing the cameras and if any closure of the pool is required.	31st October 2019
					2 x 1 feet were carried out. Investigating a retrofit for the number for Rapid River.	29th October 2019
			[redacted]	Property officer	GVA submitted by [redacted]	11th March 2020
	Olympia - Fitness studio Air Conditioning	Feedback from customers and staff have identified that there is an issue with the temperature in the fitness studio. The air temperature is too high in certain areas of the gym and there seems to be little circulation. This is likely having an affect on member satisfaction and potentially contributed to a customer faint in January 2020.	[redacted]	Property officer	Need to check on COVID consequences - update required	

13	<b>Olympia - Leak in Concret Bund in Plant Room Hypochloride Store April 19</b>	Concret bund in hypochloride store in plant room has two leaks and is causing water ingress into acid & dry chemical stores		<b>Property officer</b>	Issue first reported through GVA in February 19 but no further chasing until May by [REDACTED]. Again, no action until [REDACTED] chased again in September 19, and again in January 20. CD now dealing	
25	<b>Olympia - Water Ingress to Plant Area</b>	Highlighted during recent site visit (has been identified for a considerable time).		<b>DCC Officer</b>	Toddler pool area - access/egress vestibule from foyer to spectator [REDACTED] advised if this could be included in proposed "Closure" or out of hours work or behind the scenes work.	11.03.20
26	<b>Olympia - Competition Pool - Algaic Bloom</b>	Has been getting worse in lane 6 area of training pool - additional identified areas at dive pool also escalating.		<b>DCC Officer</b>	Has been reported through Property officers - consultant advice has been recommended to advise [REDACTED] above has been informed.	11.03.20
					recently saw a tv programme where they had a little robot thing cleaning the floor of a pool? Is this an option?	
27	<b>Olympia - Toddler Pool - Grill cover framework edging - crumbling &amp; deteriorating.</b>	Highlighted during recent site visit.		<b>DCC Officer</b>	[REDACTED] advised if this can be included in proposed Closure - out of hours works.	11.03.20
28	<b>Olympia - Poolside Fire Exit Door bolt mechanisms - corrosion.</b>	Highlighted during recent site visit.		<b>DCC Officer</b>	Replace all identified defective mechanisms. Priority H&S & security implications.	11.03.20
29	<b>Olympia - Green Flume - Electrical feature failure &amp; leaking.</b>	Engagement with specialist contractor required. (Maintenance contract review).		<b>DCC Officer</b>	Has been out of service for a considerable time. Creates customer dissatisfaction/reputational damage.	11.03.20
30	<b>Olympia - Competition pool - Water Polo Net suspension system</b>	System failure - current solution not fit for purpose.		<b>DCC Officer</b>	Replacement system needs to be decided and installed to restore previous acceptable provision.	11.03.20
31	<b>Olympia - Flume launch pad access stairs - Test tread nosing.</b>	Test assessment & evaluation.		<b>DCC Officer</b>	Replacement tread needs to be evaluated and a decision made on current issue resolution.	11.03.20

32	Olympia - High level lights out - Pool hall.	A number of lights are currently out in a number of different areas to include Dive Pool, competition pool and flume tower.		DCC Officer	Replacement assessment on Vital Energy installation. Replacement strategy for replacing lights in general.	11.03.20
33	Olympia - High level Spot lights fixture bracket corrosion - Pool hall.	Assessment on removal and replacement.		DCC Officer	Strategy for inspection/removal and replacement for ongoing H & S implications of failure. (Installation of secondary fall arrest systems).	11.03.20
34	Olympia - High level Speakers - Pool hall	Assessment on removal and replacement.		DCC Officer	Strategy for inspection/removal and replacement for ongoing H & S implications of failure. As above item 33.	11.03.20
35	Olympia - Plant Room Area - Various locations	Fire evacuation provision - Instal floor luminous direction tape.		N/A	Re-instal current provision. Explore a more permanent solution.	11.03.20
36	Olympia - Plant Room Area - Fire exit routes	Various pieces of equipment and combustible materials in these areas.		N/A	H & S Priority - Remove/relocate or dispose of items identified.	11.03.20
37	Olympia - Activity Pool - Electronic signage. Damage to LED output.	The sign is intelgible rendering the sign ineffective.		DCC Officer	H & S Priority - Crucial information on depth & NO DIVING are unavailable for public awareness.	11.03.20
38	Olympia - Housekeeping and Hygiene maintenance.	Building wide issues maintaining high standards of cleanliness and hygiene.		N/A	Particular issues observed on Poolside during recent site visit.	11.03.20
39	Olympia - Wave pool plant room - water ingress.	Investigate water ingress which appears to be coming up around the flume tower central support steel pillar.		DCC Officer	Investigate cause.	11.03.20
40	Olympia - Assisted Doors east to Gallacher retail.	Missing finger trap guard.		DCC Officer	GVA to be placed	12.03.20
41	Staff access/Fire exit -East.	Door remains unsecure.			Currently compromising security access/egress	12.03.20

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**From:** [REDACTED]  
**Sent:** 05 February 2021 11:43  
**To:** [REDACTED]  
**Subject:** Fwd: Recent Olympia Works  
**Attachments:** DCC Olympia Defects List - 28 01 2021.xlsx

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**From:** [REDACTED] <[REDACTED]@dundee.gov.uk>  
**Sent:** Friday, February 5, 2021 11:36:04 AM  
**To:** [REDACTED]  
**Cc:** [REDACTED] <[REDACTED]@dundee.gov.uk>  
**Subject:** Re: Recent Olympia Works

Good morning [REDACTED]

Please find attached the full list of issues and defects, which are being incorporated into the Capital Project which is currently in development.

We are within the design development stage of the project, which we will conclude this month prior to tendering the works. We will then present the project to committee in April.

The period of closure/works prior to Christmas were part of this development phase. We organised various surveys and investigations, the results of which are informing the design and development of the project.

Hopefully the above and attached gives you sufficient update for the meeting next week however, if you need any more detail, please do not hesitate to be in touch.

Best regards,

[REDACTED]

Senior Manager  
Capital Projects/Cost & Project Management  
City Development Department  
Dundee City Council  
Dundee House  
50 North Lindsay Street  
Dundee, DD1 1LS

Tel [REDACTED]  
Mob [REDACTED]

---

**From:** [REDACTED]  
**Sent:** 05 February 2021 09:56

RCG Ref	DCC Ref	Defect	Issue
		Category - URGENT	
1	5	Water ingress to main plant room.	Various tests have concluded that the water ingress is associated with movement/detailing of the coved upstand beneath IPS panels within the showering areas.
2	7	Corroding of stainless steel handrails, barriers, gates etc.	Investigations via Exova confirmed the grade of steel installed matched the specification. It has been concluded that the condition of stainless steel is a result of poor maintenance / housekeeping.
3	18	Rear fire door frames dislodged (next to revolving door).	Poor install and design.
4	19	Fixed balcony seating Mechanical fixings corroding.	Mechanical fixings corroding and seats failing.

5	21	Pool hall cameras failing.	The system is obsolete.
6	22	Staff Entrance Door	Door frame poorly fixed. Damaged hinges. Catches wind
7	24	Air Quality/Ventilation issues	

Category - MEDIUM		
8	2	Bullnose Air leakage / heat transfer resulting in condensation leading to wet/frozen footway and exposing bullnose elements to moisture.
9	6	Open rails on dive platforms. Falls have occurred as a result of open rails. Temporary barriers have been installed.
10	9	Bullnose rope light The rope light is installed in two parts. 50% of the rope light is not operating.
Category - LOWER		
11	3	Flume access treads Rubber treads and nosings to spiral staircase losing adhesion and shape leading to tripping hazard.

12	4	Flume upper deck/landing	Designed to be free draining however retrospectively altered to drain to a central location where surface water is collected and transferred to drain. The retrospective measures are failing resulting in water passing through the deck leading to discolouration/staining/rusting of the steel structure/components/light fittings and associated fittings. Sections of rust are spalling presenting a H&S issue. The water egress onto light fittings etc. will impact the life expectancy of these units and the staining /rust is also unsightly.
13	8	Corrosion to steel columns. Stairs and flanges	Poor paint application. Pool Hall environment leading to corrosion/staining.
14	10	Mechanical fixings to rainscreen cladding	Mechanical fixings to rainscreen cladding heavily corroded.
15	11	Fixings to structural steel	Mechanical fixings missing from structural connections.
16	12	Coating failure to cladding fins	Coating failure to paint finish on aluminium fins.
17	13	Ceiling Tiles	A number of ceiling tiles are showing failure as a result of high humidity levels.
18	14	Opening in floor to wave plant room	Void in floor allowing air to "below" into catchment tanks when wave machine is operating. Exposed reinforcement to concrete floor corroding.

19	15	Uneven floor at rotational doors resulting in draughts	Gap at base of door leads to draughts/air loss.
20	16	Heat loss to reception area	Heat loss via large rotational doors/stairs and rear exit.
21	17	Water ingress to basement workshop/store	Suspect defective tanking / membrane.
22	20	Foyer Windows "require anti glare"	Glare affecting staff and end users.
23	23	Gantry System for future maintenance.	
	24	New Speed Barrier entry system.	

	ADDED ITEMS 04/09/20	
25	Water ingress to Plant Area from Toddler Pool hose point	Insufficient height to existing tiled plinth to redirect water flow into the area.
26	<del>Algalic bloom in Competition Pool &amp; Plant areas</del>	<del>Unightly staining in pool which will only increase-- Plant room, hazardous to health</del>
27	Toddler pool area poolside wall - low level grill(s) framework	Grill Framework material is showing signs of deterioration/de-composition
28	Poolside Fire doors	Push bar mechanisms are showing considerable corrosion
29	Toddler pool play structure	Nuts and bolts showing considerable corrosion raising concerns on the structural safety of the whole feature
30	Air conditioning system	Building wide - Inconsistent and intermittent continual faults
31	Water polo net suspension system	Initial installation suspension system failed
32	Scaffold	Access Scaffold to reach flume deck

<p>2</p>	<p>Olympia - External Slabs/High Level roof Bullnose 6/11/13</p>	<p>(CD) has advised that cleaning should be implemented once a year to avoid significant build-up of surface contamination, presenting higher slip risks. Spot cleaning/general power washing can be undertaken in between deep cleaning, as and when required</p>	<p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>City Development are investigating the suitability of retrospectively insulating the inside of the bullnose to reduce temperature difference between inside/outside. Natural ventilation is also being considered.</p> <p>Arrange a schedule to identify works.</p> <p>Dependant on repair of Bullnose rope light.</p> <p>Proposal is to have a closure to tackle this job and others. Dates to be proposed by [REDACTED] and agreed by LACD.</p>	<p>13th September 2018</p> <p>15th November 2018 11th July 2018 29th October 2019</p>
<p>3</p>	<p>Olympia - Tread Failure to Flume 6/11/13</p>	<p>Reactive maintenance will continue, however remedial action will be postponed until CD are satisfied the environmental conditions have been suitably improved. A timescale, plan and guarantee on how the environmental conditions will be rectified has not been provided and this requires clarification.</p>	<p>[REDACTED]</p>	<p>[REDACTED]</p>	<p>Records show a reduction in humidity to the pool hall area (following installation of poolside temperature and humidity sensors). City Development require reviewing material/adhesion options and procurement routes to overhaul the spiral stair treads/nosings. As stated previously a closure of 1 week to the spiral stairs is likely to be required in order to install new treads. LACD to advise on quietest trading period – this will be considered when programming.</p>	<p><del>12th July 2018</del> <del>13th September 2018</del></p>

				<p>At a meeting on 6.8.18 it was agreed that [REDACTED] is to go to Procurement to identify whether this would need to go out to tender for replacement of the treads with a new adhesive, which Dive Gym have stated they can supply and install. [REDACTED] confirm that Dive Gym are happy with the environmental conditions and guarantee the work if they are the preferred contractor.</p>	
				<p>Tread replacement requires 1 week closure to replace treads and top platform tread [REDACTED] work with CD to investigate whether a 1 week closure is feasible to complete all outstanding works.</p>	<p><del>15th November 2018</del> 14th March 2018</p>
				<p>Report being compiled, by [REDACTED] of outstanding works and estimated costs. Secondary list of additional works being compiled, by [REDACTED] for consideration.</p>	<p>11th July 2019</p>
				<p>Proposal is to have a closure to tackle this job and others. Dates to be proposed by [REDACTED] and agreed by LACD.</p>	<p>29th October 2019</p>
4	Olympia - Stainless Steel 2015	<p>A written agreement is required from LACD to CD to detail that the responsibility of maintaining the condition of the stainless steel following a deep clean by metal tech. [REDACTED] had concerns around the additional staff time required to meet the level of cleaning on all stainless steel and health and safety concerns around hard to reach areas.</p>		<p>The condition of the stainless steel is considered a result of poor maintenance (supported by reports and testing) and has been described as stage 2 corrosion. In an attempt to resolve, DCC propose appointing Metaltech to undertake a deep clean of all stainless steel in order to recover its condition, where possible and remove identified hard to reach areas. However, thereafter L&amp;C will remain responsible for attending a cleaning programme</p>	
				<p>At a meeting with [REDACTED] on 6.8.18, [REDACTED] requested a manufacturers cleaning regime so he can assess resources and operational implications. [REDACTED] to progress this with a written agreement between L&amp;CD and DC which will details maintenance requirements and responsibilities.</p>	<p>13th September 2018</p>

				<p>Any increase to the resources required to clean and maintain the stainless steel is likely to result in additional costs and an increase to the management fee. The converse of the reduction in the management fee due to the new Olympia requiring less staff than the old Olympia.</p>	
				<p>██████████ said on 13<sup>th</sup> September that he would create a proposal for stainless steel works to be conducted which would cover this item and item 10. This is to be sent to ██████████ and ██████████</p>	
				<p>The painted steelwork on dive board platform and around flume column is to be considered during cleaning and replacement of any steelwork.</p>	15th November 2018
				<p>Report being compiled, by ██████████ of outstanding works and estimated costs. Secondary list of additional works being compiled, by ██████████ for consideration.</p>	11th July 2018
				<p>Proposal is to have a closure to tackle this job and others. Dates to be proposed by ██████████ and agreed by LACD.</p>	29th October 2019
5	Olympia - Water Ingress in main plant room July 2013	City Development and Olympia to agree a plan to carry out this work.	██████████	<p>Ingress from the ceiling has greatly reduced. Monitoring situation.</p>	12th July 2018
				<p>Ground water still a problem with rising water levels when there is heavy rain (water pooling on plant floor through concrete).</p>	13th September 2018
				<p>Metaltech are to install stainless steel kickplates to covered skirting areas in showers. Work will be undertaken out of hours. Flexi hoses to showerheads have also been replaced (previously leaking ██████████)</p>	
				<p>██████████ reported on 12<sup>th</sup> July 2018 that water is now rising through the floor in the senior plant operators office</p>	
				<p>6.8.18 – ██████████ to progress work to kick plates in shower area. A similar issue seems to be occurring in the toilet areas when cleaning is taking place. ██████████ is to investigate this.</p>	
				<p>As per update in item 8.</p>	

					Metaltech are to set a date to resolve issue through a steel kick plate.	
					Report being compiled, by [REDACTED] of outstanding works and estimated costs. Secondary list of additional works being compiled, by [REDACTED] for consideration.	11th July 2019
					Metal Tech are due onsite to complete kick plate work in shower area prior to the end of October.	31st October 2019
					Proposal is to have a closure to tackle this job and others. Dates to be proposed by [REDACTED] and agreed by LACD.	29th October 2019
6	<b>Olympia - Dive Board Barriers</b> 26.6.16	A suitable solution is to be identified from 4 options provided by DCC. DCC previously agreed to fund up to £14,850.00 + VAT for the appropriate solution. [REDACTED] is to provide information on preferred option and confirm it complies to FINA regs.	[REDACTED]	[REDACTED]	Solutions to diving board barriers are as follows: 1. To supply and install 316L stainless steel flat bar to lower gap : £7,425.00 + VAT 2. To supply and install 316L stainless steel flat bar to two lower gaps : £14,850.00 + VAT 3. To remove existing barriers and supply and install new glass barriers: budget cost (@£906.00/m2): £40,800.00 + VAT 4. To supply and retrospectively fit glass to existing stainless steel barriers: £12,235.00 + VAT (as per attached sketch) DCC previously agreed to fund upto £14,850.00 + VAT for the appropriate solution. Please note option 4 only allows for glazing to the platform areas. Mobilisation for the above is likely to be four weeks from instruction, using Metaltech UK.	<del>12th July 2018</del> 13th September 2018
					At a meeting with [REDACTED] on 6.8.18, LACD confirmed that the preferred option would be option 4 and have taken advice from the club Dive coach and FINA who have informed them that there are no completion issues. [REDACTED] will now progress this option.	
					This work is to be tied into the steel work being planned in items 8 and 9.	
					A tender is currently being written to clean and replace steelwork all around poolhall as Metaltech have doubled their previous quote above.	

				Report being compiled, by [REDACTED] of outstanding works and estimated costs. Secondary list of additional works being compiled, by [REDACTED] for consideration.	11th July 2019
				Metaltech visited in October and stated that the price of toughened glass was now £48k. Proposal to retrofit a middle stainless steel rail to reduce gap. Proposal is to have a closure to tackle this job and others. Dates to be proposed by [REDACTED] and agreed by LACD.	29th October 2019
7	Olympia Play structure and Flumes	Engage with Van Egdome to arrange suitable checks are in place and that the service contract and H&S guidance are being adhered to. Liaise with DCC to clarify where the cost responsibility of any remedial action falls.	[REDACTED]	[REDACTED]	[REDACTED]
				Email, dated 25/08/18, sent to [REDACTED] requesting way forward on inspection (DCC and Van Egdome) and the funding of works from inspection for Toddler Pool Paly Structure.	
				[REDACTED] said on the 13.9.18 that he would discuss this work with [REDACTED] and have the issue resolved.	
				Payment of invoices for servicing of play structure and flumes has been withheld. [REDACTED] is to discuss this legal and operational matter with [REDACTED] to identify a resolution to contract and operational issue.	11th July 2019
				Van Egdome have inspected equipment to allow a contract to be developed. [REDACTED] has enquiries with procurement regarding suitable contractors for repairs and maintenance of the flumes and play structure for L&C, procurement have requested copies of the original contracts between L&C and Van Egdome/Slide/Dive Gym.	31st October 2019
				Documentation has been sent to procurement to appoint a contractor to maintain the play structure and flumes. [REDACTED] is to speak with [REDACTED] to obtain an update and progress.	
				Work in progress.	21th October 2019
8	Olympia External Rope Light 50% working	Liaise with DCC to identify the issue and resolve.	[REDACTED]	[REDACTED] said on 13.9.18 that Edwardsons is to identify the what the cause of the issue is. [REDACTED] is to be contacted for support in resolving the issue	15th September 2018

				Meeting held on 21 <sup>st</sup> January where the lighting department confirmed that all suitable tests had been completed and have provided a contact who could investigate further. It is thought that a replacement light is required but all possible issues are being ruled out prior to recommending this resolution.	
				Report being compiled, by [REDACTED] of outstanding works and estimated costs. Secondary list of additional works being compiled, by [REDACTED] for consideration.	11th July 2019
				This work is to be further investigated when the bullnose investigations are taking place and scaffolding has been erected.	
9	<b>Olympia - Water Ingress through floor in various locations of the main plant room including electrical store and office</b>	Highlight this issue in walk round with [REDACTED] and City Development senior officers. Risk Assessments should be reviewed and suitable control measures implemented.	[REDACTED]	Work station moved over to the other side of workshop. Excess water mopped up every morning. These issues have been reported various times request Nos140233-07/01/2016, No172486 15/01/2018,17610227/03/2018,186634 06/11/2018.	
				Report being compiled, by [REDACTED] of outstanding works and estimated costs. Secondary list of additional works being compiled, by [REDACTED] for consideration.	11th July 2019
				Proposal is to have a closure to tackle this job and others. Dates to be proposed by [REDACTED] and agreed by LACD.	29th October 2019
10	<b>Olympia – Condition report to be conducted on plant equipment.</b>	City Development to be contacted to request a condition report on plant equipment. Suitable back up plan identified if any of the essential equipment were to fail.	[REDACTED]	GVA submitted on 14/01/2019. Request No 189711. Ongoing. Currently awaiting response – DCC to provide feedback on servicing. No progress.	11th July 2019 29th October 2019

<p>11</p>	<p>Olympia – Underwater cameras November 2018</p>	<p>The underwater camera system in place is now obsolete and will need replaced if one fails and impacts on bather safety. [redacted] to liaise with [redacted] to identify if this is something that needs to be progressed or if it should be delayed until the system fails.</p>	<p>[redacted]</p>	<p>[redacted]</p>	<p>The cameras are currently working but if one were to fail then the whole system would have to be updated from Analog to digital at a cost of around £4,500. [redacted] has emailed [redacted] to request assistance in planning for the replacement. The cameras are part of the lifeguards scanning and are used for bather safety. If one of the cameras failed and an immediate fix wasn't available, increased staffing provision would have to be implemented to cover blind spots of the pool or pool usage would require to be curtailed.</p>	
<p>SPSC has been requested to provide detail of required change.</p>						
<p>Report being compiled, by [redacted] of outstanding works and estimated costs. Secondary list of additional works being compiled, by [redacted] for consideration.</p>						<p>11th July 2019</p>
<p>This work is to be accelerated - [redacted] to speak with SPSC to identify the method of changing the cameras and if any closure of the pool is required.</p>						<p>31st October 2019</p>
<p>CAAT test were carried out, investigating - [redacted] to investigate for Rapid River.</p>						<p>29th October 2019</p>
<p>Microis x2 have been installed and [redacted] adjustment for [redacted] lifeguard visibility Rapid River [redacted]</p>						<p>11th March 2020</p>
<p>12</p>	<p>Olympia - Fitness studio Air Conditioning</p>	<p>Feedback from customers and staff have identified that there is an issue with the temperature in the fitness studio. The air temperature is too high in certain areas of the gym and there seems to be little circulation. This is likely having an affect on member satisfaction and potentially contributed to a customer faint in January 2020.</p>	<p>[redacted]</p>	<p>Property officer</p>	<p>GVA submitted by [redacted]</p>	
<p>Need to check on COVID consequences - update required</p>						

13	<b>Olympia - Leak in Concret Bund in Plant Room Hypochloride Store April 19</b>	Concret bund in hypochloride store in plant room has two leaks and is causing water ingress into acid & dry chemical stores		<b>Property officer</b>	Issue first reported through GVA in February 19 but no further chasing until May by [REDACTED]. Again, no action until [REDACTED] chased again in September 19, and again in January 20. CD now dealing	
25	<b>Olympia - Water Ingress to Plant Area</b>	Highlighted during recent site visit (has been identified for a considerable time).		<b>DCC Officer</b>	Toddler pool area - access/egress vestibule from foyer to spectator [REDACTED] advised if this could be included in proposed "Closure" or out of hours work or behind the scenes work.	11.03.20
26	<b>Olympia - Competition Pool - Algaec Bloom</b>	Has been getting worse in lane 6 area of training pool - additional identified areas at dive pool also escalating.		<b>DCC Officer</b>	Has been reported through Property officers - consultant advice has been recommended to advise [REDACTED] as above has been informed.	11.03.20
					recently saw a tv programme where they had a little robot thing cleaning the floor of a pool? Is this an option?	
27	<b>Olympia - Toddler Pool - Grill cover framwork edging - crumbling &amp; deteriorating.</b>	Highlighted during recent site visit.		<b>DCC Officer</b>	[REDACTED] advised if this can be included in proposed Closure - out of hours works.	11.03.20
28	<b>Olympia -Poolside Fire Exit Door bolt mechanisms - corrosion.</b>	Highlighted during recent site visit.		<b>DCC Officer</b>	Replace all identified defective mecahanisms. Priority H&S & security implications.	11.03.20
29	<b>Olympia -Green Flume - Electricai feature failure &amp; leaking.</b>	Engagement with specialist contractor required. (Maintenance contract review).		<b>DCC Officer</b>	Has been out of service for a considerable time. Creates customer dissatisfaction/reputational damage.	11.03.20
30	<b>Olympia - Competition pool - Water Polo Net suspension system</b>	System failure - current solution not fit for purpose.		<b>DCC Officer</b>	Replacement system needs to be decided and installed to restore previoud acceptable provision.	11.03.20
31	<b>Olympia - Flume launch pad access stairs - Test tread nosing.</b>	Test assessment & evaluation.		<b>DCC Officer</b>	Replacement tread needs to be evaluated and a decision made on current issue resolution.	11.03.20

32	Olympia - High level lights out - Pool hall.	A number of lights are currently out in a number of different areas to include Dive Pool, competition pool and flume tower.		DCC Officer	Replacement assessment on Vital Energy installation. Replacement strategy for replacing lights in general.	11.03.20
33	Olympia - High level Spot lights fixture bracket corrosion - Pool hall.	Assessment on removal and replacement.		DCC Officer	Strategy for inspection/removal and replacement for ongoing H & S implications of failure. (Installation of secondary fall arrest systems).	11.03.20
34	Olympia - High level Speakers - Pool hall	Assessment on removal and replacement.		DCC Officer	Strategy for inspection/removal and replacement for ongoing H & S implications of failure. As above item 33.	11.03.20
35	Olympia - Plant Room Area - Various locations	Fire evacuation provision - Instal floor luminous direction tape.		N/A	Re-instal current provision. Explore a more permanent solution.	11.03.20
36	Olympia - Plant Room Area - Fire exit routes	Various pieces of equipment and combustible materials in these areas.		N/A	H & S Priority - Remove/relocate or dispose of items identified.	11.03.20
37	Olympia - Activity Pool - Electronic signage. Damage to LED output.	The sign is inteligible rendering the sign ineffective.		DCC Officer	H & S Priority - Crucial information on depth & NO DIVING are unavailable for public awareness.	11.03.20
38	Olympia - Housekeeping and Hygiene maintenance.	Building wide issues maintaining high standards of cleanliness and hygiene.		N/A	Particular issues observed on Poolside during recent site visit.	11.03.20
39	Olympia - Wave pool plant room - water ingress.	Investigate water ingress which appears to be coming up around the flume tower central support steel pillar.		DCC Officer	Investigate cause.	11.03.20
40	Olympia - Assisted Doors east to Gallacher retail.	Missing finger trap guard.		DCC Officer	GVA to be placed	12.03.20
41	Staff access/Fire exit -East.	Door remains unsecure.			Currently compromising security access/egress	12.03.20



Working in Partnership  
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**LEISURE & CULTURE DUNDEE HEALTH & SAFETY AND PROPERTY COMMITTEE**  
**Tuesday, 24 November 2020 at 3.30 pm – via Video Conference**

**Present:** Trustee, Vice-Chair (Chair of Health & Safety and Property)  
Head of Support Services  
L&CD Chair  
Judy Dobbie, Managing Director  
Service Manager Aquatics  
Operations Officer, Cultural Services  
Senior Health and Safety Adviser, DCC  
Modern Apprentice, Occupational Health and Safety, DCC  
Property Manager, DCC  
Service Manger, Adult Library and Information  
Service Manager, Children's Library and Information  
Service Manager (Active Living)  
Team Leader, Building Surveying Service, DCC  
Property Officer, DCC  
Acting Head of Library and Information Services  
Caird Hall Manager  
Head of Cultural Services

**1 WELCOME AND APOLOGIES**

The Chair welcomed everyone and noted apologies as above.

**2 MINUTE OF MEETING HELD ON 16 SEPTEMBER 2020**

Minute approved.

**3 MATTERS ARISING**

There were no matters arising which would not be covered by the agenda.

**4 OLYMPIA UPDATE**

█ gave an update on the scheduled works for Olympia. A productive meeting had been held with City Development and the contractor, Robertsons. It was confirmed that there would be a 5 day closure from 14 December, to investigate both the Air Handling Unit and a flood test of the shower area above to plant room to ascertain where the water ingress was originating.

Some other minor works would be carried out during this period, including work on emergency doors and securing of the seating areas around the pool.

The remaining and substantive works represented potentially 8-10 weeks' worth of work during an extended closure next year. It was noted that some of this work could be undertaken concurrently to reduce the closure period.

Whilst it was acknowledged as a positive move forward in terms of the future of the Olympia, concerns were raised regarding the impact of this extended closure.

There was also concern expressed regarding the short notice for a closure on 14 December and [REDACTED] sought reassurance that notice of the longer closure dates next year would be given as soon as possible.

## **5 L&CD HEALTH & SAFETY AND PROPERTY ACTION PLAN**

City Development requested access to the document on Livelink in order to make direct updates. This would be investigated. [REDACTED] look at updating the document prior to next meeting.

## **7 REMEDIAL WORKS**

### **7.1 Olympia**

Closure for remedial works covered in item 4 above.

In terms of maintenance of the flumes and play structures, [REDACTED] confirmed that the intention to find a UK based company had been put to procurement and would be pursued. [REDACTED] confirmed that, in the meantime, [REDACTED] will request a visit from Van Egdom to do necessary inspection and works.

Reference was also made to other remedial works which would require further discussion. [REDACTED] would discuss with [REDACTED] separately to establish the most up-to-date position.



Working in Partnership  
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**LEISURE & CULTURE DUNDEE HEALTH & SAFETY AND PROPERTY COMMITTEE**  
**Thursday, 10 September 2020 at 3.00 pm – via Video Conference**

**Present:** Trustee, Vice-Chair (Chair of Health & Safety and Property)  
Head of Support Services  
L&CD Chair  
Judy Dobbie, Managing Director  
, Service Manager Aquatics  
Operations Officer, Cultural Services  
Senior Health and Safety Adviser, DCC  
Modern Apprentice, Occupational Health and Safety, DCC  
Property Manager, DCC  
Head of Leisure and Sport Services  
Service Manger, Adult Library and Information  
Service Manager, Children's Library and Information  
Service Manager (Active Living)  
Olympia Supervisor (Recovery and Reopening Coordinator)

**1 WELCOME AND APOLOGIES**

██████████ welcomed everyone to the meeting and noted apologies. He also noted the Scottish Government announcement from today and the new restrictions imposed.

**2 MINUTE OF MEETING HELD ON 16 JULY 2020**

Approved.

**3 MATTERS ARISING**

None

**5 WORKS DURING BULDING CLOSURES – UPDATE**

██████████ confirmed that he had received a briefing from ██████████ today regarding the works at Olympia. He confirmed that once Robertson had a look and realised the scale of the works required it was agreed that this could not be done without a proper plan. The contractors had been unavailable during lockdown and there was a significant degree of catch up required. There is a site visit scheduled for next week to inform a plan of work, and other additional works have been fed in to this process, such as the turnstiles. This was ongoing and progress would be reported.

**6 HEALTH & SAFETY AND PROPERTY ACTION PLAN UPDATE**

██████████ explained that the action plan, which had stalled early in the year due to Covid-19, was now to be revisited. He would liaise with ██████████ and ██████████ to properly update the plan. In the meantime, updates were given on issues as follows.

### Olympia Works

It was noted that the last update on the plan for Olympia Flumes and Play Structure was October 2019. [REDACTED] asked for an update on the situation and the status of repairs and maintenance contract inspections.

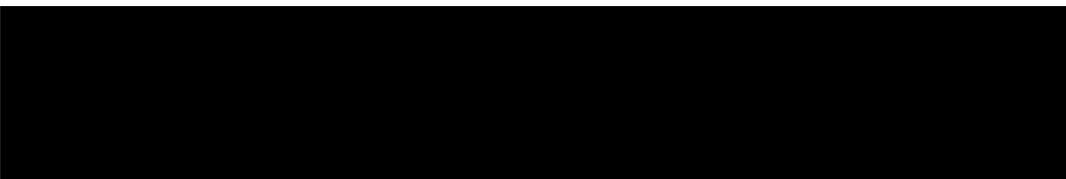
[REDACTED] confirmed that the green flume was still out of action. The equipment was getting a 15-20 minute flush through every day at present. [REDACTED] had been liaising with Procurement to get contracts in place but has heard nothing to date.

[REDACTED] indicated that the supplier is based in Holland and is reluctant to have frequent maintenance trips to individual facilities. The original contract was for biannual inspection and the last inspection period of six months is getting close to expiry for insurance cover.

[REDACTED] agreed to liaise with [REDACTED] over this. He also undertook to progress a report on capital works and keep the Committee in the loop prior to the next meeting.

In addition, [REDACTED] agreed to pursue and update the group on the water issues in the plant room.

[REDACTED] indicated that he had arranged with [REDACTED] from Architects for the contractors to do a walk round a couple of weeks ago, during which the scale of works became apparent and it was agreed that a complete condition survey would be arranged (taking place next week). Situation on-going. [REDACTED] welcomed the update and the movement to progress.



[REDACTED] confirmed that the air conditioning and air management systems have been addressed. Some areas still need attention but the system is working fine and there were no concerns.

Work was still in progress to source special sealant paid for the hyperchloride store. [REDACTED] asked [REDACTED] if there was anything which could be done to progress or expedite this concern, given the capacity for decay and spillage and the potential for a chemical incident. [REDACTED] noted this concern and undertook to pursue.

There was discussion about the algae bloom on the floor of Olympia pool and measures required to address it. [REDACTED] confirmed that robots were in use constantly but the most effective solution is full drainage of the pool, which is scheduled in capital works.

[REDACTED] also confirmed that addressing the water polo net suspension would be factored into next week's full condition survey. A makeshift system was currently in place.

Similarly, the issue of tread nosing on flume tower steps would also be addressed in the full condition survey.

[REDACTED] highlighted the issue with the LED "No Diving" signage as important to address. [REDACTED] had indicated that this had been deferred due to lockdown. [REDACTED] considered that this should be fixed as part of reopening plans.

**At a MEETING of the LEISURE & CULTURE DUNDEE HEALTH & SAFETY AND PROPERTY COMMITTEE held in McManus Galleries on Thursday, 15 March 2018**

**Present:** Trustee, Leisure & Culture Dundee (Chair)  
, Business Improvement Manager, Leisure & Culture  
Trustee, Leisure and Culture Dundee

**In Attendance:** Olympia Team Leader, Leisure and Culture Dundee  
Senior Health and Safety Officer, DCC  
, Caird Hall Manager, Cultural Services, Leisure & Culture  
Operations Officer, Leisure and Culture Dundee  
Libraries Performance and Resources Section Leader, LACD  
, Active Living Service Manager, Leisure and Culture Dundee

**Action by**

**1. Minute of Meeting held on Thursday, 11<sup>th</sup> January 2018**

Approved with minor changes requested

**4.2.2 Olympia Action Plan**

██████████ provided a status report on the Olympia plan. An update since the last update from CD at the H&S&P committee meeting on the 9<sup>th</sup> November 2017 is as follows –

CCTV – Due to little progress on this issue it has been agreed that McGills will provide IT with a diagnostics report from which they can work together to identify the main issue for CCTV dropping offline, leaving some areas without CCTV cover.

Polypropylene Rods - Edwardsons have been appointed to attend lighting and rod replacement. City Engineer ██████████ will be coordinating the project and is currently formalising Health and Safety documentation. Works are likely to commence mid April. All works will be undertaken out of hours.

██████████ and ██████████ are currently arranging clarification on a start date and programme. LACD were asked to provide lifeguard cover but there is no budget for this and finding staff to cover would be problematic. QLM have been consulted and they have advised that lifeguard cover is not required.

Acid Store – A full investigation of the acid store issue is required. An air circulation test has been completed but this doesn't seem to have identified any issue. ██████████ is to request an action plan update.

External Slabs - ██████████ of Environment has been requested to arrange the annual cleaning of the slabs.

The cleaning has improved the slip resistance and visual appearance of the surrounding footpath. [REDACTED] (CD) has advised that cleaning should be implemented once a year to avoid significant build-up of surface contamination, presenting higher slip risks. Spot cleaning/general power washing can be undertaken in between deep cleaning, as and when required.

IRTs thermography report has been reviewed and CD are currently considering options to alleviate condensation forming to the Bullnose. CD may need to open up of the bullnose with retrospective spray insulation applied within.

Protective Coatings - Remedial action will be postponed until CD are satisfied the environmental conditions have been suitably improved.

Very little to no progress made on resolving the environmental issues since the last update which is delaying other remedial works across the pool hall.

Tread Failure to Flume Stair – Currently investigating option 1) stripping off all treads and nosings and painting surfaces with an anti-slip paint (containing plastic, not metal, beads) suitable for a swimming pool environment or option 2) stripping off all treads and nosings and replacing with new, like - for - like but using a specialist adhesive. Either application would be subject to a successful test application and clarification on warranty. Progress is basically at the same position as 2 years ago.

There are 69 steps and we would anticipate works taking two weeks to complete and cure. A budget cost for tread renewal to the flume stairs was previously calculated at £45,000 and closure of the flumes would be required for at least one week where a loss of income will be incurred by LACD.

Reactive maintenance will continue, however remedial action will be postponed until CD are satisfied the environmental conditions have been suitably improved.

A timescale, plan and guarantee on how the environmental conditions will be rectified has not been provided and this requires clarification.

Stainless Steel – A written agreement is required from LACD to CD to detail that the responsibility of maintaining the condition of the stainless steel following a deep clean by metal tech. [REDACTED] had concerns around the additional staff time required to meet the level of cleaning on all stainless steel and health and safety concerns around hard to reach areas.

Replacement of rusty bolts on the play structure in the toddlers pool is required. DCC has stated to [REDACTED] that it is a LACD responsibility to progress this work and that it is not the responsibility of DCC to maintain this equipment as it doesn't form part of the building infrastructure.

*Following the meeting, [REDACTED] has written to DCC indicating that this response was not acceptable. Fixed installations commissioned by DCC have always been considered as part of the infrastructure.*

**Wave Plant Room – Repairs to the flume aqua catch requested and paid for by LACD to avoid further delays and debate were successful and no further water ingress has been experienced.**

**Water Ingress in main plant room – No progress since last update. A timescale and plan is required.**

**Coating failure to Rain Screen Cladding – CD are pursuing the contractor for rectification of this item.**

At a MEETING of the LEISURE & CULTURE DUNDEE HEALTH & SAFETY AND PROPERTY COMMITTEE  
held in Conference Room, Central Library on Thursday, 11 January 2018

- Present:** Trustee, Leisure & Culture Dundee (Chair)  
Managing Director, Leisure & Culture Dundee  
Business Improvement Manager, Leisure & Culture Dundee  
Head of Support Services, Leisure and Culture Dundee  
Trustee, Leisure and Culture Dundee
- In Attendance:** Aquatics Service Manager, Leisure and Culture Dundee  
Senior Health and Safety Officer, DCC  
Caird Hall Manager, Cultural Services, Leisure & Culture Dundee  
Operations Officer, Leisure and Culture Dundee  
Libraries Performance and Resources Section Leader, L&CD  
Maintenance Person, Libraries, Leisure and Culture  
Active Living Service Manager, Leisure and Culture Dundee
- Apologies:** Head of Cultural Services, Leisure & Culture Dundee  
Trustee, Leisure & Culture Dundee  
, Head of Leisure and Sport, Leisure and Culture Dundee

**Action By**

**1. Minute of Meeting held on Thursday, 9<sup>th</sup> November 2017**

Approved.

**4. Leisure and Sport Service Update**

**4.2 Property**

**4.2.1 Olympia Action Plan**

provided an update on the various issues at Olympia –

Tower Treads – Issue continues to be unresolved with specialist adhesive required to re-fix all treads. The issue remains that the pool hall environment needs to be improved before any works will be conducted.

Bullnose detail – Continues to drip with no further update.

Flume plant – The fix to the red aqua catch seems to have resolved the water ingress issue.

Pool Hall Temperature – The air and water temperatures are now at a suitable comfort level for both bathers and spectators.

Stainless Steel corrosion – Still being investigated – this is unsightly and gives customers/visitors a very poor impression.

Polypropylene rods – a method of work for the replacement of these rods to steel is ongoing.

Vital Energy Saving Proposals – The installation of pool covers had been proposed by the consultants to DCC. [REDACTED] raised concerns around the communication between DCC agreeing changes without consideration of operations. [REDACTED] is to arrange a meeting with [REDACTED]

*[At the meeting with [REDACTED] it was pointed out that this was still a proposal subject to satisfactory design, costing and consideration of operational requirements. The consultants are to discuss their proposals with QLM and return with recommendations. – [REDACTED]*

At a MEETING of the LEISURE & CULTURE DUNDEE HEALTH AND SAFETY MANAGEMENT GROUP held in Conference Room, Central Library on Thursday, 9 November 2017

**Present:** Trustee, Leisure & Culture Dundee (Chair)  
Managing Director, Leisure & Culture Dundee  
Business Improvement Manager, Leisure & Culture Dundee  
Trustee, Leisure and Culture Dundee  
Trustee, Leisure and Culture Dundee

**In Attendance:** Head of Cultural Services, Leisure & Culture Dundee  
Aquatics Services, Leisure and Culture Dundee  
Senior Health and Safety Officer, DCC  
Caird Hall Manager, Cultural Services, Leisure & Culture Dundee  
Operations Officer, Leisure and Culture Dundee  
Head of Support Services, Leisure & Culture Dundee  
Head of Leisure and Sport, Leisure & Culture Dundee  
Building Surveyor, City Development  
Building Service Engineer, City Development

**Action by**

**1. Minute of Meeting held on Thursday, 14<sup>th</sup> September 2017**

Approved.

**2. Matters Arising**

**2.1 Olympia Action Plan**

██████████ and ██████████ provided a detailed update on the following:

**Polypropylene Rods**

Rods to be changed to a painted steel and work is now out to tender to replace all rods across the pool environment. ██████████ asked that consideration be given to a pool closure rather than 3 months of erecting and dismantling suitable platforms over nightshifts. ██████████ suggested that if a closure was permitted then work could be completed within a 3 week period. The replacement of all lamps around the pool hall to a 5 year long life lamp would take place in conjunction to other works.

██████████ was requested to liaise with ██████████ and the Olympia team to identify a plan with costed options.

**Bull Nosing**

██████████ explained that the cause of the drip onto the path below the bull nosing was due to hot air in the in the bull nose heating up steel and on eternal temperature dropping, condensation was formed and dripped from the strip light along the length of the bull nose and onto the footpath below. Dundee City Council are to trial a solution in a small section before assessing and rolling out if successful.

Stainless Steel

The stainless steel in place at Olympia has been confirmed as 316L which was the original steel specified for the build. The position now taken by DCC is to commission work to remove or clean and replace the stainless steel to a level where there is no visible rust. It will then require a ridged cleaning regime implemented by Olympia staff. Remaining hard to reach areas will need to be identified for specialised cleaning contractors.

Dive Board Platforms

██████████ to discuss 2 options to resolve health and safety issue with FINA. Options include either adding glass to the railings or a kick plate at the edge of the platform. ██████████ will decide on preferred option and request that ██████████ progresses the work when a decision has been made.

Wave Plant Room

The water ingress to the plant room has now been resolved and there have been no further issues since the crack in the red aqua catch has been fixed.

Basement Plant Room

Flood testing of shower area above plant room now complete with an area at the bottom of the shower walls identified as the source for all leaks. CD now working with metal tech to identify a resolution and replace current set up.

Coating failure

All contractors who have provided a quote to fix the area where coating has failed have suggested that they can't provide a guarantee that the work will be successful due to the environment. Consideration would be given to include this work in any closure where the environmental conditions can be changed to a suitable level for the work.

Corroded items in Plant Rooms

Any equipment and fixing that are corroded due to water ingress are to be tested and cleaned on resolution of the water ingress issue.

Pool Hall Environment issues

██████████ provided an update on the environmental status of the pool hall. The humidity aim for the pool hall is 58% but it has historically been higher than this due to the difference between pool water and air temperature. Tests have been completed recently which have included increasing air temperature and decreasing water temperature with tests being assessed for effectiveness on humidity readings and customer complaints. The water and air temperature is now set at 29.5 degrees.

██████████ is to meet with Olympia staff and City Development to develop a plan to resolve all issues identified above and CD have been requested back at the next meeting in January to provide an update.

Stair Treads

The adhesive used initially has been identified as the cause of the stair treads having failed. A full like for like replacement is recommended with using an alternative adhesive. The contractors have also said that the humidity of the pool hall needs to be at an acceptable level for the

replacement materials to cure, therefore requiring to be completed during a closure.

**8. Date of Next Meeting**

Thursday, 11th January 2018 at 2.00 pm – Venue TBC



Working in Partnership  
with Dundee City Council

At a MEETING of the **LEISURE & CULTURE DUNDEE HEALTH AND SAFETY MANAGEMENT GROUP** held in Conference Room 4, Caird Hall on Thursday, 14 September 2017

**Present:** Trustee, Leisure & Culture Dundee (Chair)  
Vice Chair, Leisure & Culture Dundee  
Managing Director, Leisure & Culture Dundee  
Business Improvement Manager, Leisure & Culture Dundee  
Trustee, Leisure and Culture Dundee  
Trustee, Leisure and Culture Dundee

**In Attendance:** Head of Cultural Services, Leisure & Culture Dundee  
Aquatics Services, Leisure and Culture Dundee  
Senior Health and Safety Officer, DCC  
Caird Hall Manager, Cultural Services, Leisure & Culture Dundee  
Operations Officer, Leisure and Culture Dundee  
Head of Support Services, Leisure & Culture Dundee

**Action by**

**1. Minute of Meeting held on Thursday, 13<sup>th</sup> July 2017**

Approved.

**3. Matters Arising**

**3.1 Olympia Action Plan**

Update provided by [REDACTED] below:

Temperature and humidity in the pool hall - the 50m pool vent grilles have been overhauled with every second louver removed and a vent mesh installed; New Sensors have been installed outside and inside (a total of 6) to feed information to the building management system which will further inform on levels of heat/humidity; The two Air handling units are now running independently both units used to run at the same time, and new plant is planned to augment and improve the performance.

Stainless Steel - Company Exova have been in and conducted testing which to date has been inconclusive – they will be on site again 15<sup>th</sup> September to test. There are still 3 x tread strips missing from the flume tower stairs with various areas of lifting floor material – currently there is a test strip/stair nosing in place until a suitable long lasting method of floor covering and fixing is found.

Current energy efficiency surveys being carried out have opened up the potential solution to the polypropylene rod hanging system, replacing the current lighting specification to a LED light would dispense with the current tray system [REDACTED] has informed that [REDACTED] (City Engineers Dept) is still working up a proposal in that regard.

Wave pool plant room – leaks continue. No update on remedial strategy.

Bullnose condensation – no update on progress

**At a MEETING of the LEISURE & CULTURE DUNDEE HEALTH AND SAFETY  
MANAGEMENT GROUP held in Olympia Training Room on Thursday, 13 July 2017**

**Present:** Trustee, Leisure & Culture Dundee (Chair)  
Vice Chair, Leisure & Culture Dundee  
Managing Director, Leisure & Culture Dundee  
Business Improvement Manager, Leisure & Culture Dundee

**In Attendance:** Head of Cultural Services, Leisure & Culture Dundee  
, Aquatics Services, Leisure and Culture Dundee  
Senior Health and Safety Officer, DCC

**1. Minute of Meeting held on Thursday, 16<sup>th</sup> March 2017 Action by**

Approved.

**2. Matters Arising**

**2.1 Olympia Defects**

██████████ provided an update on progress made on the Olympia Defects, they are as follows:

Report for environmental condition completed by QLM. (See attached)

██████████ has requested that the stainless steel is to be tested to assess the grading of steel is as specified in the initial design.

Dive Board platforms – The alterations to the lower sections of the railings around the dive board platforms are still to be conducted. There is an ongoing discussion to identifying the most suitable design for the alterations.

Polypropylene rods – There is a proposal in place to replace the rods, but no discussions have taken place to cover the operational impact of the works. ██████████ asked what the impact is if the work causes a closure to the pool and who picks up the loss of income should this be an issue. It was highlighted that any Safe Systems of Work created should be done so in conjunction with Olympia management to ensure that operations are not affected.

██████████ mentioned that on a positive note, all remedial work on the rods taken place so far has been done so successfully. ██████████ raised concern that little progress and communication has taken place to resolve issues that have been highlighted and recognised by DCC. It is therefore requested that ██████████ should provide regular updates to Olympia management in as per the minute from March 2017.

**8. Date of Next Meeting**

Thursday, 14th September 2017 at 3.00 pm – Venue TBC



Working in Partnership  
with Dundee City Council

At a MEETING of the **LEISURE & CULTURE DUNDEE HEALTH AND SAFETY MANAGEMENT GROUP** held in McManus Galleries, on Thursday, 16 March 2017

**Present:** Vice Chair, Leisure & Culture Dundee  
Trustee, Leisure & Culture Dundee  
Business Improvement Manager, Leisure & Culture Dundee

**In Attendance:**, Caird Hall Manager, Cultural Services, Leisure & Culture Dundee  
Head of Cultural Services, Leisure & Culture Dundee  
, Operations Officer, Cultural Services, Leisure & Culture  
Aquatics Services, Leisure and Culture Dundee  
City Development, Dundee City Council

**Apologies:** Managing Director, Leisure & Culture Dundee  
Trustee, Leisure & Culture Dundee (Chair)  
Health and Safety Coordinator, Dundee City Council

**1. Minute of Meeting held on Thursday, 12<sup>th</sup> January 2017**

**Action by**

Approved.

**2. Matters Arising**

**2.1 Olympia Defects**

██████████ attended from City Development to provide an update on progress with the Olympia defect items identified in the previous site inspection.

**Polypropylene Rods** - The Polypropylene rods are to be replaced with a painted galvanised steel that would require an ongoing maintenance monitoring programme as they generally have a lifespan of 5 years. An alternative, more expensive metal is also being considered which would last the lifetime of the building and cost vs ongoing cost would have to be considered as part of the decision. This work would require a 1 – 2 month programme which will be conducted out of hours with no or limited service disruption. Since the meeting, special dispensation has been approved by chief executive to direct award the work to a contractor identified by City Development. City Development will now work with Olympia to create a suitable programme of out of hours work to complete the installation.

**Stair Treads** – The stair tread issue has been linked back to the environmental issues that are present in the pool hall area. A solution has been identified that would include stripping the current system back to the metal and replacing it with the very first design but using an alternative bonding solution. This would require a test strip to be conducted followed by a 1 – 2 week flume stair closure to carry out the work.

**Protective coating on steel columns** - The issue with the rusting of the steel and bolts have been connected to poor preparation prior to painting and the pool hall environment issues.

**Stainless Steel** - The cause of the stainless steel deterioration has been investigated and so far there is no evidence to say what is causing the issue

other than potential causes. A potential cause is that the grade of the stainless steel is that of a grade below what was specified for the build. City Development have identified 1 company who could carry out this test and are awaiting permission to approach them to do work.

Leisure and Sport appointed PHSC to conduct an assessment on the pool environment including pool water, air circulation, pool bather numbers, temperature of pool and air as well as humidity. PHSC will provide L&S with a report of findings along with improvement recommendations with a focus on improved pool hall environment [REDACTED] expecting this report within the next 2 weeks.

Plant Room Leaks – So far all investigations haven't provided a cause of the water ingress to the plant room but have eliminated some potential causes. The next test is to flood the shower area and monitor the water ingress to the plant room.

Bull nosing and slabs - [REDACTED] advised the group that the Caithness slabs under the bull nosings on the perimeter of the building have all been cleaned following poor results on a slip test conducted by DCC Health and Safety. There is still the issue with condensation dripping from the strip light on the bull nosing and this is to be referred back to Mansell for a solution. A thermographic survey of the building is being investigated to hopefully support any claim and confirm the air tightness failure in this area.

Wave Plant Leaks - A fracture to the fibreglass flume catchment has been identified as the cause of the water ingress into the wave plant. CD have identified this as a responsibility of LACD to resolve and [REDACTED] looking for clarity on this.

Catastrophic failure of equipment - [REDACTED] shared a list on the status of mechanical and electrical plant following a request from the group to consider impact should an essential piece of equipment fail. (See attachment 1). Olympia are to work with CD to risk assess the impact of a piece of equipment failing and consider keeping spares.

[REDACTED] raised an issue that hasn't been highlighted previously with the ceiling tiles in the shower area. These tiles have a lifetime guarantee and the contractor will be pursued to replace these tiles.

[REDACTED] requested that Olympia work with City Development to create a list of all defects with status and timescale of completion so this can be monitored.



Working in Partnership  
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At a MEETING of the LEISURE & CULTURE DUNDEE HEALTH AND SAFETY MANAGEMENT GROUP held in Conference Room 5, Caird Hall, on Thursday, 12 January 2017

**Present:** Trustee, Leisure & Culture Dundee (Chair)  
Vice Chair, Leisure & Culture Dundee  
Trustee, Leisure & Culture Dundee  
Managing Director, Leisure & Culture Dundee  
Business Improvement Manager, Leisure & Culture Dundee

**In Attendance:** Caird Hall Manager, Cultural Services, Leisure & Culture Dundee  
Senior Health and Safety Advisor, Dundee City Council  
, Operations Officer, Cultural Services, Leisure & Culture  
, Head of Leisure and Sport  
, Olympia Team Leader, Leisure and Culture Dundee  
, City Development, Dundee City Council  
, City Development, Dundee City Council  
, City Development, Dundee City Council

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|--|--|
| <p><b>1. Minute of Meeting held on Thursday, 17 November 2016</b></p> <p>Approved.</p>   | <p><b>Action by</b></p>  |
| <p><b>2. Matters Arising</b></p> <p><b>2.1 <u>Olympia Defects</u></b></p> <p>Polypropylene Rods – [REDACTED] informed the group that over torquing of the rods have likely caused the previous failing. DCC have highlighted that additional environmentally suitable steel rods with protection will be fitted to support the current situation. The unistruts will be secured to the ducts, therefore should the polypropylene rods fail the struts won't fall and the extra steel rods will support the ducts etc.</p> <p>Water Ingress to plant room – Further investigation is required to identify the cause of the water ingress now that the location has been identified. [REDACTED] to arrange tests around the shower area to identify the cause of the ongoing leaks.</p> <p>Water Ingress to wave plant - [REDACTED] has recently visited the wave plant and has identified the water ingress is caused by leakage from the flumes and City Development are progressing how the required remedial work is to be taken forward.</p> <p>Condensation issue to pavement from eaves detail – From investigation, [REDACTED] highlighted that the drip detail is the strip lighting and is caused by internal and external condensation. A positive grip system is to be implemented with a chevron detail which should increase the slip resistance of the pavement when wet. [REDACTED] highlighted that this will still require gritting during freezing conditions.</p> <p>Deterioration of Stainless Steel – The issue behind the stainless steel is thought to be the chloramines in the atmosphere, caused by the</p> | <p>DCC<br/>City Dev.</p> <p>DCC City<br/>Dev.</p> <p>DCC City<br/>Dev.</p> <p>DCC City<br/>Dev</p> |

hydrochloric acid which controls pH levels in the pool. [REDACTED] asked that Sheerwater Consultancy Ltd who were involved in the original design of the plant be included in determining what is causing the deterioration of the steel and how this can be rectified. [REDACTED] said that he has the skills within his team to assess air circulation flow levels as this can also be a factor. [REDACTED] has been asked to liaise with [REDACTED] to involve Sheerwater in determining the future course of action.

DCC City  
Dev.

Stair nosing - A test plate has been installed on the 12<sup>th</sup> January 2017. This was felt to be potentially too aggressive a surface. [REDACTED] has since used the leisure pool and found the test plate to be effective and not uncomfortable underfoot. Further sampling to be conducted. The installation time of this product should it be suitable would depend on access and curing time to minimise disruption to normal service.

DCC City  
Dev /

During the Olympia walk round on the 6<sup>th</sup> December 2016, it was highlighted that the flanges at the bottom of the pillars in particularly the pillar in the middle of the rapid river were rusting and this required investigation. This has now been completed and a new solution has been proposed to fix issue and protect to stop reoccurrence.

DCC City  
Dev.

[REDACTED] to produce a programme of work to rectify all items highlighted within the next 2 weeks. [REDACTED] requested that the subcommittee are updated on any progress and issues so that the current momentum continues. [REDACTED] to provide [REDACTED] with any update to share with the group at future meetings.

**5. Library and Information Services**

**8. Date of Next Meeting**

Thursday, 16th March 2017 at 3.00 pm – McManus Galleries

## LEISURE &amp; CULTURE DUNDEE / DUNDEE CITY COUNCIL

## OLYMPIA DEFECTS – NOTE FROM WALK ROUND ON 6 DECEMBER 2016

**Present:** , Olympia Team Leader, L&CD  
 , Business Performance Officer, Leisure & Sport, L&CD  
 , Aquatics Service Manager, Leisure & Sport, L&CD  
 , Property Maintenance Team Leader, DCC City Development  
 , Head of Design and Property, DCC City Development  
 , Managing Director, L&CD

**1. Exterior Lighting**

Was part of the design brief, funded as the “percentage for art”, and helps to make the building an urban feature. Lights have been out of order for best part of a year. It was suggested that the pavement drips might be attributed to the lights. There is no evidence for this. Basically, L&CD want to see the feature repaired and operational. The plasma rope light currently has a large section which will not illuminate, previously the light also had the capability for changing the colour, this function is also not operational. The only colour available is “RED”. **(Action – DCC)**

**2. Plant Room**

The main action is to convert the pool PH regulating system from bulk hydrochloric acid to CO<sup>2</sup>.

██████████ asked that an assurance be given that any change to the pool operating system is talked through with the pool designers to ensure integrity of the overall operating system. **(Action – DCC)**

**3. Water Ingress/Corrosion**

We looked in detail at the extent of water ingress and corrosion and the impact this has had, particularly on some of the pumps, valves, walls and floors (list not exhaustive).

DCC agreed to develop a strategy to ensure that any catastrophic failure of elements of the plant did not result in the pool closure, i.e. a standby supply route or standby pieces of equipment.

DCC to also put in place a planned maintenance strategy to catch water ingress and to direct it into appropriate drainage. **(Action – DCC)**

**4. Balance Tank Access Portholes and Viewing Windows**

These have to be accessed on two occasions a year to allow sludge to be removed. They are currently corroded shut and look in really poor condition.

Replacement or remedial action to bring these up to standard is urgently required including the testing of bolts around the viewing windows in plant. **(Action – DCC)**

**5. Stainless Steel**

Stainless steel throughout the pool hall is in really poor condition. This is attributed to the use of Hydrochloric Acid and condensation on the steel.

It was agreed that inaccessible areas of stainless steel should be removed and the existing stainless steel brought back up to appropriate condition. **(Action – DCC)**

Thereafter, L&CD would put in place an alternative maintenance regime using baby oil (replace “Baby Oil” with suitable cleaning solution) to maintain the stainless steel. **(Action – L&CD)**

**6. Hex Caps**

We noted that there were a number of hex caps missing from the children’s play area – these should be replaced. **(Action – L&CD)**

**7. Rubber Nosing at Corner of Seating Gallery by Children’s Play Area**

It was suggested that a marine rubber nosing or fender be sourced to replace the use of foam and grey tape. **(Action – L&CD)**

## LEISURE &amp; CULTURE DUNDEE / DUNDEE CITY COUNCIL

## OLYMPIA DEFECTS – NOTE FROM WALK ROUND ON 6 DECEMBER 2016

**8. Bolt Heads in the Rapid River**

Again, it was noted that the attempts to remove rust had failed and there needed to be remedial treatment to the bolt heads in this area including testing of bolts for internal cracking. **(Action - DCC)**

**9. Water Supply for Internal Water Screens on Red Flume**

This pipe work is redundant and unsightly. It should be stripped out, given the failure of this attraction. **(Action – DCC)**

**10. Basement/Wave Chamber**

- Ongoing water ingress and damage to plant.
- Serious rust.
- Escape hatch not fully functional.
- Electric cabinet locks corroded shut.

All need to be picked up as part of an overall maintenance strategy. **(Action – DCC)**

**11. Rust Staining in Pool Hall Floor**

De-scale to be used during a closure period to try and reinstate this. **(Action – L&CD/DCC)**

**12. Flume Tower Treads**

Serious trip risk. These need replaced and the nosing need to be re-fixed as a matter of urgency. **(Action – DCC)**

**13. Flume Tower Stair (Stainless Steel)**

Also badly corroded with rust. **(Action – DCC)**

**14. Platform on the Flume Tower**

Floor covering looks in poor condition. It really requires a more elegant solution to make this fit for purpose. **(Action – DCC)**

**15. Roof above the Flume Tower**

This area has more rust in evidence than any other part of the main pool hall roof. It needs to be repainted. **(Action – DCC)**

**16. High Level Lighting**

Evidence of the failure of high level lighting throughout the pool hall which needs to be addressed. **(Action – DCC)**

**17. Suspension Ties**

There is evidence that the suspension ties holding a number of fittings to the ceiling have failed. DCC have suggested "doubling up" these fixings with galvanised bars. **(Action – DCC)**

NB - This will require a period of closure to allow access to the ceiling above the pools. Wave pool should be drained sufficiently making the beach area accessible for scissor lift/access platform. A wooden ramp will need to be constructed on-site over the beach stairs to allow the aforementioned vehicle access to the area.

**18. Speakers, etc.**

It was suggested that safety ties (aka stage lighting – secondary fall arrest system) be added as a safety feature to protect against any failure of fixings. **(Action – DCC)**

DUNDEE CITY COUNCIL

NOTE OF MEETING

DEPARTMENT OF CITY DEVELOPMENT

**Subject:** Olympia Defects  
**Date:** 24 November 2016  
**Location:** Room 4.13

**Officers Ext:** 4115**File Ref:** [REDACTED]**Present:** [REDACTED]

**Subsequent meeting on site on 6 December 2016:**  
 [REDACTED]

Item		Action	By Date
<b>1</b>	<b>INSPECTION OF POLYPROPYLENE RODS</b>		
1.1	[REDACTED] stated that closing the Olympia would prove difficult and with this in mind [REDACTED] will furnish the group with possible times contractors can gain access.		
1.2	[REDACTED] confirmed that DCS did not have the skill levels to carry this out. The proposed works comprised of the following.		
<b>2</b>	<b>POLYPROPYLENE RODS</b>		
2.1	Polypropylene rods can be supplemented with galvanised painted steel rods on a uni-strut system throughout the premises. The uni-strut should be secured to the busbar by a suitable means (cable tied/polypropylene nuts and bolts) in order to prevent the uni-strut falling from height in the event of rod failure. This method should also reduce the likelihood of any failing rods falling as the supported uni-strut should arrest them.		
2.2	High level platforms will be required for access. We have been advised a Nifty HR15 from Nationwide was previously used for lighting maintenance, however, we would suggest meeting Nationwide (or similar) on-site to discuss access routes, width, loading restrictions etc in order to determine a suitable platform(s). Storage whilst not in use and during pool operational periods will also require to be considered.		

Item		Action	By Date
2.3	It would also be prudent to check all high level fitting and structural elements for signs of deterioration while high level equipment is being used. Re-lamping of the high level fittings should also take place while the equipment is on site.		
<b>3</b>	<b>WATER INGRESSES TO PLANT ROOM</b>		
3.1	Water ingress is being experienced in the plant room at basement level. Water test results suggest that the water ingress is from the shower area and not the pool or balance tanks. We suspect the water ingress is a result of poor detailing to the floor where services penetrate for the showers and poor detailing to the IPS system. The floor comprises precast hollow core slabs which we suspect are retaining water prior to discharging from joints/ends. [REDACTED] will arrange with Contract Services the following works without further delay.		
3.2	<p><u>Invasive Inspection of Concrete Floor</u></p> <p>Arrange to scan for rebar/services and core 50mm hole within the hollow section, in close proximity to the service riser/penetration. A suitable means for coring will be required as water is likely to discharge from the slab whilst drilling. A means of capturing any water discharge is also required. Visual inspection to follow and findings to be reported.</p>		
<b>4</b>	<b>CONDENSATION ISSUE TO PAVEMENT FROM EAVES DETAIL</b>		
4.1	<p>Various proposals have been discussed for consideration:</p> <p>a Proposal to review pavement widths and introducing street furniture (sculptures and/or benches) to divert pedestrians away from the wet areas, where pavement widths permit. Where the pavement becomes narrower, towards the traffic light crossing, we propose the introduction of textured/tactile paving to divert any surface water to the road and to maximise traction.</p> <p>b [REDACTED] met Belzona on-site and discussed the issues being experienced. Belzona are preparing a quotation for consideration comprising a weather, abrasion and salt resistant positive grip system on the footpath in detailed chevron sections to prevent slips and falls. The proposed material is similar to that used on the 'Discovery' access steps.</p>		

Item		Action	By Date
c	Neither of the above will alter the issue being experienced at high level, however, it will assist in either diverting the public away from the areas of slip risk and/or introduce a "non slip" surface for pedestrians.	[REDACTED]	
d	During an inspection on Tuesday 29 November 2016, the bullnose appeared dry yet regular dripping was occurring from the drip detail created by the lighting strip. [REDACTED] These findings support the suspicion of condensation forming within the bullnose due to hot air leakage from the building (external temperatures during inspection were low). It was also noted that water was discharging from the base of the intermittent mullions at sill height - with the mullions acting as downpipes, from the lower section of steel sheeting forming the bullnose. The introduction of natural or mechanical ventilation to the bullnose could be considered in order to provide circulation of air to the void in question, balancing external and internal bullnose temperatures, however, this action may result in the dew point being moved, and condensation forming elsewhere.		
e	The removal of the strip light, which is currently creating a drip detail, has joint(s). An opening towards the rainscreen cladding will be required to allow any moisture/water build up to discharge and this may lead to staining/tracking on windows, but should reduce the amount of water reaching pavement level. It is perhaps worth considering whether the mullions can be utilised/adapted as downpipes and the eaves detail reviewed to divert all moisture gathered to ground. Downpipes can be selected as the gradient permits and where it is convenient for a drainage connection at ground level. Further investigations to this option are required. [REDACTED] confirmed that the strip light was a central element of the design of the building and should needs to be retained and repaired. If filling recess is the way forward, the possibility of 'hanging' a strip light from a bracket to retain strip light and allow water to pass through without forming a drip check should be looked at.	[REDACTED]	
5	<b>DETERIORATION OF STAINLESS STEEL</b>		
5.1	The stainless steel supplied by Metaltech UK is showing signs of deterioration and if this is not addressed in the near future it is inevitable that areas will require to be replaced at a large cost.		
5.2	Metaltech UK have supplied a quote of £14,832 to carry out maintenance works to the stainless steel balustrades.		

Item		Action	By Date
	<p>██████ to proceed once CO<sub>2</sub> dosing system has been introduced. It is also suggested that CO<sub>2</sub> be introduced to the main pool rather than Hydrochloric Acid which will reduce the corrosion to the stainless steel.</p>		
5.3	<p>A new cleaning regime for the staff will also be introduced.</p>		
5.4	<p>████████████████████ and ██████████ to discuss with Metaltech.</p>	████████████████████	
5.5	<p>██████████ proceed with installation of CO<sub>2</sub> dosing system.</p>		
5.6	<p>██████████ and ██████████ to agree a new cleaning regime with ██████████ and Metaltech.</p>		
6	<p><b>REPLACEMENT OF STAIR NOSINGS TO FLUMES</b></p>		
6.1	<p>The stair nosings are not sufficient for purpose.</p>		
6.2	<p>██████ subsequently met on site with Belzona. Belzona consider the existing rubber treads and nosings to be in good order - only the adhesive is failing. Belzona are to review and propose an adhesive application, reusing the current treads and nosings. They are prepared to undertake repairs to a sample batch for approval. The guarantee/warranty is yet to be presented and we await their quotation. Belzona also commented that they could attend repairs to corroding flanges, columns and diving board stairs/platforms if required. ████████ arrange access with ██████████ and proceed without further delay.</p>	██████████	
6.3	<p>██████████ has costs to replace from ██████████ carpet fitter.</p>		
6.4	<p>██████ has arranged for a sample of the nosing to make sure it is suitable for purpose.</p>		
7	<p><b>WATER INGRESS TO WAVE POOL PUMP ROOM</b></p>		
7.1	<p>There is water ingress to the wave pool which seems to be a breakdown of the tanking. The water ingress occurs when the wave pool is in operation.</p>		
7.2	<p>This will be very difficult to remedy as major structural work would be required to expose the tanking.</p>		
7.3	<p>Gulley to be formed where water is most prevalent and drainage taken to existing.</p>		

**From:** [REDACTED]/CD/dundeecity  
**To:** [REDACTED]\_ACD/dundeecity@dundeecity  
**Cc:** [REDACTED]CD/dundeecity@dundeecity [REDACTED]CD/dundeecity@dundeecity

**Date:** Thursday, November 10, 2016 04:06PM

**Subject:** Re: Olympia update

History: This message has been replied to.

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We await a quote, clarification on availability and timescales for inspecting, tagging and recording the condition of the polypropylene rods from DCS. We are proposing 25% of the rods are inspected, evenly spread throughout the building on an annual basis - taking four years to cover the installation. Should any significant defects be identified during earlier inspections the programme would be altered accordingly. We will require liaising with L&C on-site staff to coordinate out of hour working and access. Clarification on funding also requires being determined. An update will be forwarded in due course.

A GVA has been issued for DCS to install replacement rods to the head of the flume stairs, allowing the timber supports to be removed. We have also requested the remains of the defective rods and associated components to be gathered and laid aside for inspection.

A request to core the hollowcore slab (50mm) has been made to allow water to escape and permit further inspection by camera or similar. This action should assist determine the route of water ingress (suspect service riser as previously discussed).

A request has been made for a condition survey and report on all basement plant and pumps. This will be reviewed upon receipt (10 day instruction).

We are contemplating retrospective ventilation/paint coatings to reduce/suspend moisture droplets collecting in mass and discharging to ground from the bullnose. This is ongoing an we have meetings next week to discuss further. Our proposed solution will be bespoke therefore we would propose applying to a sample area initially and extend throughout if successful.

Should you wish to discuss the above in greater detail please do not hesitate to contact me.

Do you require our attendance at the next meeting?

Regards.

[REDACTED]  
Building Surveyor

Dundee City Council  
City Development Department  
Floor 5  
50 North Lindsay Street  
Dundee, DD1 1LS.

Tel: [REDACTED]  
Mob: [REDACTED]  
Ema: [REDACTED]



Working in Partnership  
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At a MEETING of the **LEISURE & CULTURE DUNDEE HEALTH AND SAFETY MANAGEMENT GROUP** held in Olympia Training Room, on Thursday, 15 September 2016

**Present:** [REDACTED] Trustee, Leisure & Culture Dundee (Chair)  
[REDACTED], Vice Chair, Leisure & Culture Dundee  
[REDACTED] Trustee, Leisure & Culture Dundee  
[REDACTED], Head of Support Services, Leisure & Culture Dundee  
[REDACTED] Business Improvement Manager, Leisure & Culture Dundee

**In Attendance:** Building Surveyor, City Development, Dundee City Council  
[REDACTED], Senior Health and Safety Advisor, Dundee City Council  
[REDACTED], Operations Officer, Cultural Services, Leisure & Culture Dundee  
[REDACTED] Head of Cultural Services, Leisure & Culture Dundee

**Apologies:** [REDACTED], Managing Director, Leisure & Culture Dundee

**1. Minute of Meeting held on Thursday, 14 July 2016** **Action by**

Agreed.

**2. Matters Arising**

**2.1 Olympia Defects**

[REDACTED] gave an update on three main outstanding areas at Olympia.

**2.1.1 Unistruts/Ceiling Fixings**

There have been two failings to date in different parts of the pool hall. Remedial works to increase the number of fixings was undertaken following the first failure, no further incidents in that area have been notified. The reason for the second failure is unclear, temporary measures have been taken to 'make safe' the affected areas.

The proposal is to undertake inspection, repair and report on sample fixings throughout the pool hall area. DCS are to undertake the work, which would take place during the evening/night to minimise disruption to service.

[REDACTED] advised this work could be progressed immediately. [REDACTED] to liaise with DCS and advise of timescale.

[REDACTED] confirmed arrangements would be put in place for routine inspections annually.

**2.1.2 Plant Room**

[REDACTED] advised testing had proved the water ingress in the plant room was coming from the showers.

The proposal is to expose the area around and under the showers and to undertake coring samples from underneath risers to check if water is pooling there. [REDACTED] to advise of the timescale for this work to be

undertaken.

██████ queried the damage to the plant and ██████ undertook to inspect and report back his findings. An update is to be brought to the November meeting.

Water ingress at aqua catchers – remedial works have been completed and confirmation of success is to be sought.

### 2.1.3 Bullnose Condensation

██████ advised that the ground light fittings had been replaced to reduce risk of slip hazard.

Slabs used around the facility are a standard type used throughout Dundee. ██████ is to liaise with DCC Legal and Risk Management to seek a solution that is commensurate with risk and cost.

An update will be provided at the November meeting.

## 11. **Date of Next Meeting**

Thursday, 17 November 2016 at 3.00 pm – venue to be confirmed.

**At a MEETING of the LEISURE & CULTURE DUNDEE HEALTH AND SAFETY  
MANAGEMENT GROUP held in Olympia Training Room, on Thursday, 14 July 2016**

**Present:** Vice Chair, Leisure & Culture Dundee  
Head of Cultural Services, Leisure & Culture Dundee  
Employee Support Section Leader, Leisure & Culture Dundee  
Business Improvement Manager, Leisure and Sport, Leisure & Culture Dundee  
Operations Officer, Cultural Services, Leisure & Culture Dundee

**Apologies:** Trustee, Leisure & Culture Dundee  
Trustee, Leisure & Culture Dundee  
, Managing Director, Leisure & Culture Dundee (Chair)  
, Head of Support Services, Leisure & Culture Dundee  
, Health and Safety Coordinator, Dundee City Council

**1. Minute of Meeting held on Thursday, 12 May 2016 Action by**

This was proposed as an accurate record by and agreed.

**2. Matters Arising**

**2.1 Olympia Plant Room Visit**

██████████ met with ██████████ Olympia Manager on Tuesday 12 July 2016 to undertake an inspection of the plant room and assess the ongoing issues which still required action. ██████████ asked it be noted that the plant room continued to be a health and safety concern and that ██████████ DCC, City Development Department, should be asked to report back to the next meeting on 15 September 2016. This report should detail the proposed remedial actions for the issues raised in his email dated 20 June 2016 to

**Ongoing**

██████████ suggested that the Group should consider alerting the Board to these outstanding issues. Should the Group not receive a satisfactory report for the next meeting the Board should bring this to the attention of DCC, Chief Executive.

**3. Leisure and Sport Update**

**3.2 Olympia Cable Support System – Fixture Failure**

It was noted that temporary measures were in place to support the cable support system following the failure of the ceiling fixtures. DCC City Development has identified officers to carry out further investigation to resolve this failure.

Following further discussion, the Group expressed its concern that as there had now been two failures of ceiling fixtures i.e. unistruts and cable support system, all ceiling fixtures should have regular maintenance programmes in place. Maintenance checks shouldn't just be carried out when faults occur and the Group has requested details of what maintenance programmes are in place for the next Group meeting on 15 September 2016.

**7. AOCB**

No other business was raised.



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**At a MEETING of the LEISURE & CULTURE DUNDEE HEALTH AND SAFETY MANAGEMENT GROUP held in Olympia on Thursday, 14 May 2015**

**Present:** Head of Support Services, Leisure & Culture Dundee  
Trustee, Leisure & Culture Dundee City Council  
Trustee, Leisure & Culture Dundee  
Managing Director, Leisure & Culture Dundee

**In attendance:** Senior Health and Safety Adviser, Dundee City Council  
Head of Cultural Services, Leisure & Culture Dundee  
Business Performance Officer, Leisure and Sport, Leisure & Culture Dundee

**1. Minute of Meeting held on Wednesday, 4 March 2015**

Approved.

**2. Matters Arising**

**3. Leisure and Sport Update**

**3.1 Olympia**

- Nosings on tower stairs – additional screws had to be added to address a potential tripping hazard. Now a workable solution has been identified, the remaining nosings (3 approx) will be fixed.
- The two gullies required to address water ponding following the construction of the wave wall will be installed on Sunday, 17 May (from 5.30 pm).
- Plant room water penetration – remedial works have significantly reduced the volume of water. The current position is as follows:
  - North side of Pool Plant Room basement wall, leaks down face from floor interface above – seems to be mostly cleared now.
  - NW corner of plant room, same issue, reduced but still ongoing.
  - Pool Plant Room under the showers, had been mostly resolved however the closure seems to have reopened some of the problems that had previously been resolved, possibly because of the building cooling down and heating back up.
  - Discussion ongoing re a permanent remedial solution. This is quite tricky because among the potential solutions is yet more invasive work in the pool hall which on a technical level carry a risk on how effective they might be.
  - There is still some outstanding cleaning and remedial work to equipment which won't be completed until this area is signed off.
  - Water leaks into Wave Plant Room, Mansell have carried out extensive investigations and have tried a few remedial actions. Water path very unclear. They have suggested a GRP skirt or flashing bridge from flume aquacatch to adjacent channel. Under consideration.
- Pool length – fully addressed.



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## HEALTH AND SAFETY MANAGEMENT GROUP

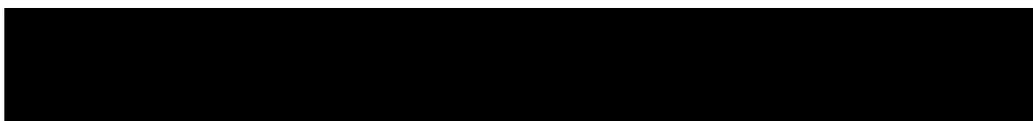
### UPDATE BRIEFING – OCTOBER 2014

#### 1. UNAPPROVED MINUTE OF MEETING HELD ON THURSDAY 11 SEPTEMBER 2014

Copy attached.

#### 2. MATTERS ARISING

##### 2.1



#### 3. LEISURE AND SPORT

##### 3.1 Olympia Update

Following the last meeting [REDACTED] discussed snagging/post contract works list with [REDACTED] and a full list of all items has been forwarded from [REDACTED] to [REDACTED]. A meeting has been arranged between the City Council and the contractor to review any outstanding issues.

[REDACTED] met with [REDACTED] on 25 September to discuss works to be carried out that would mean some type of closure of the pool area of Olympia. No dates were confirmed but it is envisaged that it will require a four/five week closure in January 2015. A further detailed brief will be provided with expected impact of the closure once dates are confirmed, but the potential loss of income to Leisure & Culture Dundee will be significant.

The contractor is currently undertaking remedial work and the apparent cracks in the gym wall were as a result of loose pointing being ragged prior to being repointed – work undertaken by the contractor.



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At a MEETING of the **LEISURE & CULTURE DUNDEE HEALTH AND SAFETY MANAGEMENT GROUP** held in the Reading Room, Arthurstone Community Library on **THURSDAY, 11 SEPTEMBER 2014**

**Present:** Employee Support Section Leader, Leisure & Culture Dundee  
Senior Health and Safety Adviser, Dundee City Council  
Trustee, Leisure & Culture Dundee  
Trustee, Leisure & Culture Dundee (Chair)  
Managing Director, Leisure & Culture Dundee

**In attendance:** Head of Library and Information Services  
Head of Cultural Services, Leisure & Culture  
Business Performance Manager, Leisure & Culture Dundee

**Apologies:** Trustee, Leisure & Culture Dundee  
Head of Support Services, Leisure & Culture Dundee  
Health and Safety Co-ordinator, Dundee City Council

**1. Minute of Meeting Held on 2 July 2014**

Approved.

**3. Olympia Update**

██████████ reported that the stair nosings had continued to fail and that a permanent screw fixing had been recommended. Staff were concerned that there was a greater likelihood of this resulting in scratches and, as an alternative, the idea of etching the stainless steel steps to improve an adhesive bond with the rubber nosing was being investigated.

The list of snagging issues which rested with the contractor remained significant but was being worked through.

The City Council and the contractor were in discussion with Leisure & Culture Dundee about closing the pool for a number of weeks to carry out post contractual work, address issues like the store walls (which was showing significant mould growth), and deal with outstanding snagging issues.

The Chair was concerned to minimise the duration of any closure and to ensure that, if there was to be a closure, it happened at the time of year when, on past performance, there would be lowest user numbers.

██████████ was asked to circulate a briefing note, either separately or with the minute, and it was suggested that the Finance Committee be alerted to the implications of a potential closure on the current year budget. (Action – ██████████)



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**At a MEETING of the LEISURE & CULTURE DUNDEE HEALTH AND SAFETY MANAGEMENT GROUP held at Dundee Ice Area on Thursday 8 May 2014**

**Present:** Trustee, Leisure & Culture Dundee  
Health and Safety Co-ordinator, Dundee City Council  
Head of Support Services, Leisure & Culture Dundee  
Trustee, Leisure & Culture Dundee  
Managing Director, Leisure & Culture Dundee (Chair)

**In attendance:** Manager, Dundee Ice Arena, Leisure & Culture Dundee  
Head of Cultural Services, Leisure & Culture Dundee  
Business Performance Manager, Leisure & Culture Dundee  
Olympia Leisure Centre Manager, Leisure & Culture Dundee

**Apologies:** Trustee, Leisure & Culture Dundee

**1. Minute of Meeting Held on 13 March 2014**

Approved.

The content of the briefing note circulated in April 2014 was also approved.

**3. Olympia Update**

A making good defects list for the Olympia Leisure Centre prepared by Balfour Beatty, the contractors, on 4 April 2014 was tabled for information. [REDACTED] highlighted that the improvement work to the bullnose of the roof to increase insulation with a view to reducing condensation was currently being undertaken.

He also highlighted that over 80% of the leaks which were coming into the basement had been traced and rectified and work to track down the remaining leaks was ongoing.

The challenge to lifeguards posed by aerated water had been addressed.

There were a number of other issues which were the subject of ongoing work.

One issue of concern was that the flume tower treads, which had been replaced, had started to fail again within days. This has been raised with the Architect, but it was clear after twelve months that a more radical solution was needed to address this issue. [REDACTED] asked if there had been any accidents attributed to the absence of stair tread nosings over the past twelve months and it was confirmed that there had been no accidents directly attributed to the absence of treads. On this basis, it was agreed to continue operations and to push for a longer term solution to the issue. **(Action: ')**

**HEALTH AND SAFETY MANAGEMENT GROUP**

**UPDATE – APRIL 2014**

**1. UNAPPROVED MINUTE OF MEETING HELD ON THURSDAY 13 MARCH 2014**

Copy attached.

**These works are scheduled to start on Monday 28 April (Restrictions for access/egress to Olympia during the programme of works will be assessed and implemented.)**

**3.3 Olympia Flume Tower Stairs**

Stair Treads – a number of stair treads continue to fall off (11 are now currently missing). This has been continually raised with the contractors and DCC Architects for action. This job has been allocated and should now be completed in a few weeks, time.

**3. LEISURE AND SPORT UPDATES**

**3.1 Olympia Plant Room**

The main plant area still has a few leaks which are still being actioned. 95% of them have been sourced and repairs effected. Wave pool plant area which is accessed from poolside still has leaks that require additional investigation/subsequent action. Plant and associated equipment/fixtures and fittings have been assessed for the effects of twelve months of being subjected to the leaking roof. Plant and equipment has been cleaned and restored to an acceptable level of cleanliness/presentation.

**3.2 Olympia External Roof Condensation – Public Access Slip/Trip/Impact Risk**

Architects/Contractor have investigated the problem. It would appear that the area concerned should have been insulated. This task has still to be completed but a remedial programme has been agreed. The slip/trip/impact risk still remains until this work has been completed.

Client CD & L&C	Project Reference 09-011	Project Title/Description East Marketgait Development
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## Minute of Rectification Period Completion Review Meeting

Date: 28.03.14

Present: [REDACTED] Leisure and Culture Dundee  
 [REDACTED] Leisure and Culture Dundee  
 [REDACTED] City Development  
 [REDACTED] City Development  
 [REDACTED] Mansell plc  
 [REDACTED] Mansell plc

Apologies:  
 [REDACTED] Dundee City Council  
 [REDACTED] Leisure and Culture Dundee  
 [REDACTED] Mansell plc

ITEM	MINUTE	ACTION
1.	<b>Agenda as circulated previously by [REDACTED]</b>	
1.1	<p><u>Bullnose -</u></p> <ul style="list-style-type: none"> <li>Insulation missing and air-tightness incomplete.</li> <li>Remedial work to involve inserting insulation as per detail and check air-tightness and resolve as work progresses. Scope of work – entire perimeter of bullnose detail.</li> <li>[REDACTED] to provide programme for executing work. Effect on operational matters to be assessed. Dates to be agreed. [REDACTED] requested that work be carried out outwith peak periods. Pavement closure will be required.</li> <li>Target to get work done - w/c 28<sup>th</sup> April 2014.</li> </ul>	
1.2	<p><u>Plant Room Leaks -</u></p> <ul style="list-style-type: none"> <li>Showers – most of the leaks at the showers appear to be resolved. The hexagonal shower unit still needs to have the same remedial exercise carried out as was done at all other pipework penetrations. [REDACTED] to advise dates to be carried out.</li> <li>Perimeter – investigations need to move onto poolside to progress the diagnosis of this. Track to be opened up on poolside from edge of Toddler Pool to shower entrance.</li> <li>Co-ordination with client's operations required. Plastic protection boards can be used over open tracks to maintain safety while investigations are being done. [REDACTED] to programme. Possible date – w/c 28<sup>th</sup> April.</li> <li>[REDACTED] to provide mark-up showing location.</li> <li>It is considered that there may be a persistent leak remaining after works are complete – as a result it was agreed that a internal gutter will be installed to discharge to drain, complete with lead bandage to isolate steelwork.</li> <li>Toilet areas – also need to be investigated, tested and remedial work carried out as required. It is anticipated that this will be similar in nature to the work carried out at the showers [REDACTED] to programme.</li> <li>Firestopping details – revised firestopping details to the underside of the penetrations through the compartment floor are required – these are awaited from PFP – [REDACTED] to chase up.</li> <li>Services – Services Section to carry out tests and verification prior to end of Rectification Period to verify no permanent ill effect on services as a result of the leaks. (Action – Clerk of Works)</li> </ul>	[REDACTED]
1.3	<p><u>Moveable floor -</u></p> <ul style="list-style-type: none"> <li>Remedial work carried out – some caps have become loose [REDACTED] to fit new caps.</li> <li>Report to be provided by [REDACTED] on the full circumstances of the failure, the November maintenance inspection and the remedial work required.</li> </ul>	[REDACTED]
1.4	<p><u>Shower Valves -</u></p> <ul style="list-style-type: none"> <li>One replacement valve done as a trial, this has been successful and can now be rolled out to all pool showers.</li> </ul>	
1.5	<p><u>Lifts -</u></p> <ul style="list-style-type: none"> <li>This matter appears to be resolved.</li> </ul>	

- 1.6 Competition Store -
- Water ingress from poolside causing mould and general deterioration in walling.
  - Investigations within store have shown water is getting into the bottom of the wall. Further investigations are proposed on poolside, similar to the exercise at the Toddler Pool.
  - [REDACTED] to programme exercise and [REDACTED] to provide mark up for location.
- 1.7 Café Roof -
- Remedial work has been carried out to a leak at the outlet – to be reviewed if problem recurs.
- 1.8 Corrosion in Pool Hall -
- Flume columns – rust on inner edge of fins. Metaltech are to schedule a remedial exercise to the corrosion protection system – RAMS required due to nature of materials and access arrangements.
  - [REDACTED] to programme, hopefully arrange for w/c 28<sup>th</sup> April.
  - Two flume columns had shrouds fitted to them, it was queried whether this would offer enough protection to the steelwork underneath. [REDACTED] suggested drilling a pilot hole for a camera to check.
- 1.9 Condensation from Vent Plant Room -
- Further investigation into cause required. Area affected was under AHU 3 where dirty water was dripping through the ceiling near the server. McG have now fitted insulation, problem may now be solved – watch and wait.
- 1.10 Pool Hall Temperatures -
- [REDACTED] has recent data on temperature and humidity – to be reviewed with client along with engineering comment from ESG and DCC mech engineers.
  - [REDACTED] suggested a trial exercise, running fans to see if inducing some air movement can help – this can be further discussed with engineers.
2. **Further Items**
- 2.1 Pool Hall Seating -
- Azzurro have carried out pull-out tests – info to be passed on. [REDACTED] explained the background to the problems [REDACTED] to chase up Azzurro on actions.
- 2.2 Van Egdon / Splash Encounters -
- To date remedial work carried out has failed to close out this issue. As of the date of this meeting [REDACTED] are currently on site to carry out further remedial work, specifically to the touchscreen. However, the performance of the Splash Encounters installation still falls significantly short of expectations, touchscreens respond poorly, images are unclear or absent and remedial work to a leak from the green flume has now made the situation worse and there is now a very serious leak from the red flume.
  - [REDACTED] and [REDACTED] to meet with VE engineer after meeting and review flumes.
- 2.3 Fitness Suite Floor -
- Investigations have indicated the nature of the failure – impact damage from weights being dropped.
3. **Agreed Outcomes**
- 3.1
- The client is currently considering a partial closure (Leisure Water only) and will consider the extent of closure which can be offered to facilitate the execution of the remedial works. [REDACTED] to fully programme the works and liaise closely with the client to minimise operational impact.
  - The target date for these operations would be w/c 28<sup>th</sup> April.
  - Exercise to be logged in detail by [REDACTED] and all sub-contractors to be fully on board with this.
- 3.2 Public Relations -
- The PR implications of this were considered and it was felt that the best way to handle this is to have just one fully co-ordinated exercise which is flagged up as giving the contractors access to the building to allow them to deal with final snagging ahead of the end of the Rectification Period.

Circulation – All present plus -

[REDACTED]

## HEALTH AND SAFETY MANAGEMENT GROUP

UPDATE – 13 FEBRUARY 2014

1. **UNAPPROVED MINUTE OF MEETING HELD ON THURSDAY 16 JANUARY 2014**  
Copy attached.

2. **LEISURE AND SPORT UPDATES**

2.1 **Olympia Plant Room**

The main plant area still has leaks that have still to be sourced and rectified. Wave pool plant area accessed from poolside also has leaks that require investigating, with subsequent action taken to rectify the issues. Plant and associated equipment/fixtures and fittings have still to be assessed for the effects of the months of being subjected to flooding from the leaking roof. Plant and equipment still have to be cleaned and restored to an acceptable level of cleanliness/presentation. **(Action – DCC Architectural Team)**

2.2 **Olympia External Roof Condensation – Public Access Slip/Trip/Impact Risk**

Architects/Contractor have investigated the on-going problem. It would appear that there is no insulation in the area concerned. This task of installing insulation has still to be completed. The slip/trip/impact risk remains until this necessary work has been completed. Warning signs are in place, as required. **(Action – DCC Architectural Team)**

2.3 **Olympia Flume Tower Stairs**

Stair treads continue to fall off (9 are currently missing). This was picked up by the HSE visit in November. This has been continually raised with the contractors and DCC Architects for action. This job has been allocated and should be completed in a few weeks time. **(Action – Contractor)**

2.4 **Olympia Wave Pool – Depth & Clarity Issues – Recent Inspection Report**

- Water depth in leisure pool is compromised from 1.6m to 1.4m before, during and immediately after every wave session when the pool is operated in leisure mode. Architects are aware of the issue and are working on a solution – which will possibly require a pool closure to alter the structure/layout and gradient of the wave pool beach area. Leisure & Culture Dundee have increased lifeguard cover until this is resolved. **(Action – DCC Architectural Team)**
- East Corner of Leisure Pool – there is a system of inlets which returns water to the leisure pool from pipe work. Within this pipe work, which drops from the flume splash down troughs, the water is being filled with air. When this aerated water is returning to the pool area it bubbles quite furiously, causing the lifeguards issues with visibility to the bottom of the pool in that area. This was seen as a significant health and safety risk and, to avoid delays, Leisure & Culture Dundee have instructed remedial works. The work has been arranged with FT Leisure and should be completed in a matter of weeks. **(Action – Leisure & Culture Dundee)**



Working in Partnership  
with Dundee City Council

At a MEETING of the **LEISURE & CULTURE DUNDEE HEALTH AND SAFETY MANAGEMENT GROUP** held in **The McManus: Dundee's Art Gallery and Museum** on **Thursday 16 January 2014**

**Present:** , Trustee, Leisure & Culture Dundee  
Health and Safety Co-ordinator, Dundee City Council  
, Head of Support Services, Leisure & Culture Dundee  
, Trustee, Leisure & Culture Dundee  
, Trustee, Leisure & Culture Dundee (Chair)  
, Managing Director, Leisure & Culture Dundee

**In attendance:** , Head of Cultural Services, Leisure & Culture Dundee  
, Olympia Leisure Centre Manager, Leisure & Culture Dundee

**1. Minute of Meeting Held on 14 November 2013**

Approved.

**3. Matters Arising**

Progress with a range of building related issues was referred to in the note circulated mid December 2013.

The key issues discussed at the meeting and to be progressed as priorities were as follows:

**3.1 Olympia**

Remedial work to the plant room, noting that the end of the twelve month maintenance is 27 May 2014. We understand that the Architects/Property Unit are to carry out an assessment of the condition of plant which was affected by leaks from the pool and that this condition survey will form part of the longer term agreement with the builders.

External roof condensation/ice risk – there appears to be no progress.

Flume tower stairs – there appears to have been no progress.

Wave pool depth – there appears to have been no progress.

Aerated water (east corner of leisure pool) – Given the importance of rectifying this it was agreed that Leisure & Culture Dundee would not wait for the City Council to carry out work but would move immediately to instruct FT Leisure to undertake remedial work.

**6. Date of Next Meeting**

Subject to their being no urgent items of business there will be no February meeting and an **Update Briefing** will be issued on or around **13 February 2014**.

The next scheduled meeting will take place on **Thursday, 13 March 2014 at 3.00 pm in Conference Room C**.



Working in Partnership  
with Dundee City Council

At a MEETING of the **LEISURE & CULTURE DUNDEE HEALTH AND SAFETY MANAGEMENT GROUP** held in Activity Room, Olympia, East Whale Lane on Thursday 14 November 2013

**Present:** Trustee, Leisure & Culture Dundee  
Trustee, Leisure & Culture Dundee  
Trustee, Leisure & Culture Dundee (Chair)

**In attendance:** , Employee Support Section Leader, Leisure & Culture Dundee  
, Senior Health and Safety Advisor, Dundee City Council  
, Head of Cultural Services, Leisure & Culture Dundee  
, Halls & Music Development Section Leader, Leisure & Culture Dundee  
, Olympia Leisure Centre Manager, Leisure & Culture Dundee

**Apologies:** Health and Safety Co-ordinator, Dundee City Council  
, Head of Support Services, Leisure & Culture Dundee  
, Managing Director, Leisure & Culture Dundee

#### 1. Olympia Plant Room Inspection Walk Through

Prior to the meeting [REDACTED] escorted the Management Group through an inspection of the plant room. The walkthrough of the area highlighted the water leak issues which had been experienced since the handover of the facility and its opening to the public.

It was noted that Mansell, the contractor for the capital project, had been back onsite on a number of occasions to identify and rectify the cause of the leaks. Remedial action had still to be complete, however [REDACTED] did indicate that although there were still a handful of continuing leaks which required attention the current position was a vast improvement and only a fraction of the original leaks experienced.

One of the disappointing and evident results of these leaks was the signs left on the plant equipment and building fabric of unsightly and potentially corrosive residue.

It was also noted that enquiries should be made if the residue was in fact corrosive and whether this would affect the lifespan of the equipment and services that it had come into contact with.

The walkthrough of the plant room ended with the agreement that contact be continued with the contractor to ensure that the issues raised were addressed. (Action: [REDACTED])

#### 3.3 Feedback from QLM Visit

[REDACTED] updated the Group of the recent QLM visit, the following was noted:

[REDACTED]

- [REDACTED] and [REDACTED] carried out a building tour of Olympia and discussed on-going health & safety issues.
- [REDACTED] provided an update on industry related issues, including recent court case outcomes for pool related fatalities.
- [REDACTED] requested [REDACTED] to schedule a health & safety audit for Olympia, proposed date Thursday 30 January 2014.

#### 4. New Olympia – Updates and Issues

[REDACTED] provided an update of Olympia issues, the following was noted:

- Viewing Gallery, Competition Pool - damaged chairs and inappropriate wall fittings had now been rectified.
- Stair Treads – a handful of stair treads continue to fall off, this was raised this with the contractors and DCC Architects for action.
- East Corner of Leisure Pool – there are a system of inlets which return water to the leisure pool from pipe work. Within this pipe work, which drops from the flume splash down troughs, the water is being filled with air. When this aerated water is returning to the pool area it bubbles quite furiously, causing the lifeguards issues with visibility to the bottom of the pool in that area. Again this issue has been raised with the contractors and DCC Architects. Post meeting, contractors FT Leisure, have provided [REDACTED], Active Communities Manager, with a cost of £5,000 to rectify this issue.

[REDACTED] undertook to discuss Olympia issues with [REDACTED] and [REDACTED]. (Action: [REDACTED])



Working in Partnership  
with Dundee City Council

At a MEETING of the **LEISURE & CULTURE DUNDEE HEALTH AND SAFETY MANAGEMENT GROUP** held in Conference Room C, 21 City Square on Thursday 12 September 2013

**Present:** Trustee, Leisure & Culture Dundee  
Trustee, Leisure & Culture Dundee (Chair)  
Managing Director, Leisure & Culture Dundee

**In attendance:** Senior Health and Safety Advisor, Dundee City Council  
Employee Support Section Leader, Leisure & Culture Dundee  
Duty Officer, Leisure & Culture Dundee  
Head of Cultural Services, Leisure & Culture Dundee

**Apologies:** Trustee, Leisure & Culture Dundee  
Health and Safety Co-ordinator, Dundee City Council  
Head of Support Services, Leisure & Culture Dundee  
Olympia Leisure Centre Manager, Leisure & Culture Dundee

### 3.3 Feedback From QLM Visit

#### 3.3.1 Flumes

Van Egdom are to carry out modifications to the flumes in the period before the October school holidays.

#### 3.3.2 Chemical Deliveries

One of the plant room staff had incurred a back injury while moving one of the 30kg carboys.

A new protocol for chemical deliveries has been agreed. The first delivery will take place on 30 September and the supply will be gravity fed.

#### 3.3.3 Sprinkler System

A protocol for the weekly testing of the fire alarm/sprinkler system is still awaited from the City Architect. [REDACTED] was asked to establish a timescale for this protocol being supplied. (Action [REDACTED])

#### 3.3.4 Sodium Bicarbonate Dosing

A new protocol has been put in place for the dosing of the pool and this appears to be working well.

## 4. **New Olympia Update**

The list of outstanding snags and works to be implemented was being worked through slowly.

The major concern for management and staff was the continued leakage from the showers into the plant room. Mansell had been onsite to try and trace the leak but had been unable to do so. Dyes are now going to be used to try and establish where the problem was occurring.

The Health and Safety Management Group were concerned that working conditions for staff were unacceptable and that while a safe system of work for plant operators had been put in place, it was not a satisfactory work environment.

Apart from the health and safety issues, the deterioration of the plant room infrastructure after only 6/8 weeks of operation was shocking. The City Council Chief Executive had written to Mansell following a visit to see for himself the conditions in the plant room.

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